

1990

Responding
to the Challenge:

1991

Agricultural and Rural
Development Strategies
for the 1990s

1992

1993

Agriculture and Rural
Development Officers'
Conference

1994

1995

February 19-24, 1989

1996

1997

Agency for International Development
Asia and Near East Bureau

1998

1999

Hassan II
Agronomic and Veterinary Institute
Rabat, Morocco

RESPONDING TO THE CHALLENGE:
AGRICULTURAL AND RURAL
DEVELOPMENT STRATEGIES FOR THE 1990's

Agricultural and Rural
Development Officers' Conference

Agency for International Development
Asia and Near East Bureau

Hassan II
Agronomic and Veterinary Institute
Rabat, Morocco

February 19-24, 1989

CONFERENCE HANDBOOK INDEX

I. CONFERENCE ORGANIZATION

- A. Summary Report on the Follow-up to the Recommendations from the 1987 ARDO Conference in Bangkok
- B. Changes in ANE Agriculture: Trends and Issues - A Reappraisal

II. RESOURCE PAPERS

- A. Food For Thought: Technological Challenges in Asian Agriculture in the 1990s - Derek Byerlee
- B. ANE's Human and Institutional Development in the 1990's: Strategic Considerations for AID - Marcus Ingle
- C. A Rural Economic Growth Strategy for Asia and the Near East - the 1990's - The Impact on A.I.D.'s Agricultural Development Officers - Richard C. Meyer
- D. A Review of the ANE Bureau's PL-480 Title I and III Programs: A Summary of Key Findings and Issues - Chris Herman
- E. Networking ARDO's CGNET - Telecommunications: A Resource for Responding to the Challenge - Robert Blumberg
- F. Higher Agricultural Education in Asia and the Near East - Lawrence Busch

III. STRATEGY

A Rural Economic Growth Strategy for Asia and the Near-East in the 1990's (draft) - ANE/TR/ARD

IV. NETWORKING INFORMATION

- A. Current Indefinite Quantity Contracts Awarded by M/SER/OP
- B. Office Overview - ANE/TR/ARD

- A. Hamilton Task Force Report: Presentation of the Task Force on Foreign Assistance to the House Foreign Affairs Committee
- B. Food and Agriculture Task Force Report: Food and Agriculture Goals, Directions, and Operations for the 1990s - Duane Acker
- C. Agriculture in the 1990's: Strategy Choices for Asia/Near-East Countries - Symposium Proceedings - HIID & ANE/TR/ARD

VI. HANDOUTS FOR CONFERENCE

- A. Agenda
- B. Roster
- C. Bio-datas of Speakers External to A.I.D.
- D. Strategic Planning - A Process of Organization Learning - Richard Bawden
- E. Building Agricultural Support at Home for Agricultural Development Abroad - Keynote Remarks - Robert Paarlberg
- F. Employment, Price Stabilization, and Consumption Diversification in the ANE Agricultural Strategy - Richard H. Goldman
- G. Natural RESources and the Rural Economic Growth Strategy for Asia and the Near-East in the 1990's - Theodore Panayotou
- H. Economic, Environment and Development - Theodore Panayotou
- I. Research, Extension, Infrastructure and Productivity Change in India Agriculture - Robert E. Evenson & James W. Mckinsey
- J. Encouraging Agribusiness Development in Asia and the Near-East - Draft - Mark D. Newman
- K. Lessons from Development Assistance: Implications for Agricultural and Rural Development - Vernon W. Ruttan
- L. Sustainability is not enough - Vernon W. Ruttan

- M. Macroeconomic Statistics for ANE's Rural Economic Growth Strategy - ANE/TR/ARD & HIID
- N. Environment and Natural Resource Strategy Project of the Asia and Near-East Bureau
- O. Settlement and Natural Resource Systems Analysis Research on Women's Contributions to Income Generation and Market Town Development - Eric Chetwynd
- P. Asia and the Near East Rolling Agricultural Research Agenda, ANE Rural Economic Sector Strategy
- Q. Status of ANE Strategy in Science and Technology - Robert F. Ichord
- R. Japanese ODA Process - OD/PE
- S. Remarks of Mr. Mustapha Faris

VII. BACK POCKET

- A. Reforms Needed in U.S. Assistance to Developing Countries - The Phoenix Group
- B. Networking ARDOs in Asia and the Near East January 22, 1989
- C. AID Funding for ANE Bureau (Chart)

SUMMARY REPORT ON THE FOLLOW-UP TO THE RECOMMENDATIONS FROM THE 1987 ARDO CONFERENCE IN BANGKOK

1. The "Tidewater" Paper

Recommendation:

Rework the Tidewater Poverty Paper taking into consideration the Administrator's focus statement and ANE regional trends noted in Module I, Session I of this report. (Responsibility: ANE/DP and ANE/TR)

This recommendation was met by ANE/DP with input from ANE/TR/ARD. The "Tidewater" paper, now referred to as the "Poverty in Asia" paper was finalized in spring 1988 as has been used as the foundation for negotiating ANE's strategy regarding poverty in Asia with the Japanese.

2. Communicating the Focus Statement

Recommendation:

The Administrator's focus statement should be put in a form and format which is marketable to outside constituencies. (Responsibility: Agricultural Sector Council)

- High quality briefing materials on the new ARD focus should be prepared and distributed to all ARDO's for use in developing internal and external constituencies. This effort should be grounded on the premise that a professional public relations effort is now needed to effectively tell the international agricultural and rural development story.
- Consideration should be given to using ARDO's to assist the Agency in developing stronger constituency support for the focus statement, e.g. by presentations on their programs to Congressional staff, Rotary, League of Women Voters, PVOs, etc.
- Special attention should be given to communicating the focus statement to multilateral and other bilateral assistance agencies involved in agricultural and rural development in Asia and the Near East, and to other sector specific institutions such as the International Agricultural Research Centers and non-governmental organizations.

The Administrator's Food and Agriculture Task Force, chaired by Duane Acker, had as its specific objective "to establish a single, fully coordinate set of policies and programmatic direction for all of AID's work on food and agriculture matters" and to communicate that vision to "the U.S. agribusiness community and with groups that are concerned with international food issues." The conference notebook includes a copy of the final draft task force report. Duane Acker will discuss the major findings of the report and the efforts made to improve communications with outside constituencies.

ANE has experimented with arranging for senior field ARDO's to brief Hill staffers concerned with U.S. agriculture and foreign aid. ANE/TR/ARD has up-dated the summary statistics introduced in Bangkok (copies included in your notebook) and is in the process of developing high quality briefing materials for use by ARDOs in their missions, to host country audiences, and in the U.S. These materials will be finalized when ARDO reach consensus on the 1990's strategy. Finally, Gordon Murchie, senior development communications specialist for External Affairs will lead a session in Rabat on communications skills for ANE's ARDO's.

3. ANE's Bureau-specific Strategy for the 1990's

Recommendation:

An ANE Bureau-specific formulation of the Administrator's focus statement should be adopted and used as the basis for preparing CDSS's, action plans, and new programs/projects. (Responsibility: AA/ANE)

- The ANE Bureau formulation of the Focus may seek to elaborate on broad strategic issues of the income, consumption and natural resource components but should allow for country (Mission)-specific articulation in light of the diversity of ANE countries.

Over the past fourteen months, ANE/TR/ARD has initiated a process of draft strategy development, including developing a scope of work for preliminary analysis, contracting with the Harvard Institute for International Development, organizing a strategy symposium to review the analysis ("Proceedings" in conference notebook), and developing an initial draft of the strategy for review by ARDO's in Rabat (distributed to all Missions).

4. New Ways of Doing Business

Recommendation:

Specific follow-on actions for implementing the focus should be initiated.

- In order to respond to new challenges, opportunities and resource mixes, old ways of doing business need to be reassessed. ARDOs are frequently bogged down by implementation overload in the current project mode of operation (ANE/PD, Missions).
- To capture the full development potential of food aid resources, multi-year planning and greater decentralization of decision making is needed (FVA, ANE/DP).
- A strategy should be developed for recruiting new technical resources into the Agency (career and non-career) to implement the focus (PM, Ag Sector Council, ANE/TR/ARD).
- The in-service training needs of ARDOs should be reassessed. Attention should be given to regional training opportunities. Responsibility for implementing training should rest primarily with Missions in light of

the highly specific nature of training needed by each ARDO. Immediate consideration should be given to establishing "Mission dedicated" funds for formatting and participating in regional networks (PM, Agricultural Sector Council, ANE/TR/ARD).

- A Mission level assessment of appropriate office structure and staffing for implementing the focus should be conducted. Attention should be given to opportunities for integrating various types of resources into Agricultural and Rural Development programming. Opportunities for enlarging the role and responsibilities of FSNs should be examined (USAIDs).

A number of groups have investigated reforming both the structure and the process of how AID does business. The preliminary thinking of those groups is reported in the Food and Task Force Draft Report (notebook), the Hamilton Sub-Committee Report (notebook), the Phoenix Report (notebook), and the Administrator's Task Force Report (to be released Feb. 17, copies available at the conference). ANE/TR/ARD and the Administrator have commissioned reports on personnel issues, including recruitment and training. Richard Meyer, who served as the Executive Secretary to the Administrator for three years and who directed all of these efforts, will report on the findings at the conference (Meyer's Phase II report conducted for ARD is included in the conference papers).

5. Continuing Field Input

Recommendation:

In implementing the focus statement, mechanisms to provide continued field input to the ANE Bureau should be maintained. (Responsibility: ANE/TR)

- ANE/TR should inform Missions and ARDO's of progress in implementing the new focus statement and seek input before key implementation decisions are taken.
- Adequate travel funds should be provided to facilitate AID/W and Mission dialogue on the new ANE Agriculture focus.

ANE/TR/ARD has invested substantial effort in disseminating information to the field concerning all steps taken to develop a draft Agriculture and Rural Development strategy for the 1990's. The draft scope of work was distributed to the field as well as the analytical papers commissioned for the Strategy Symposium (September 1988), the Proceedings of the Strategy Symposium, and the draft strategy. In addition, ARD distributed a video tape of the summary debates of the Symposium to all Missions. ARD inaugurated a newsletter: "Networking ARDO in Asia and the Near East" as a two-way vehicle for keeping the field up to date on the progress of the Bureau in moving toward a region-specific formulation of the focus statement and to provide a forum for field feedback (latest issue enclosed in conference notebook). All ARDO's visiting AID/W were briefed on the most recent activities associated with preparing the draft strategy. Three senior ARDO's attended the Strategy Symposium to assure on-going field input to the strategy development process. Finally, the 1989 ARDO conference was

organized in such a way as to promote full participation of the field in the determination of strategic priorities for the 1990's.

6. Briefing the Missions on ARDO 1987

Recommendation:

Conference participants should fully brief their staff and Mission leadership on the substance, conclusions, and recommendations of the Conference. (Responsibility: Mission ARDO's)

- ARDO's should thoroughly discuss conference proceedings with host country agricultural and rural development professionals to assess appropriateness of the new focus statement for the country-specific setting.

Although a number of senior ARDO's reported briefing Mission staff on the outcomes of the 1987 ARDO conference, it is clear that we must do a better job involving Mission leadership in the new strategic orientations. Wide distribution of strategy-related materials should help in preparing Mission leadership for this year's outcomes. ANE/TR/ARD will rely on field guidance on how to improve this process for the coming year.

7. Centrally-funded Activities

Recommendation:

As development opportunities change in ANE countries, country based reassessment of the continuing appropriateness of centrally funded activities will be needed. Specifically, the role of International Agricultural Research Centers needs to be evaluated in the light of Mission approval of the contributions of IARCs to the country program. (Responsibility: Missions, S&T)

One of the major findings emanating from the Strategy Symposium is that bilateral and multilateral development assistance organizations will have to maintain or increase support for basic research in cereals. This support is required to assure that the productive potential of basic food grains technologies will keep pace with burgeoning population growth. Symposium participants felt that IARC's should limit their core-funded activities to the biological research, germplasm conservation and networking roles most closely associated with those needs. Mission-specific activities in support of national agricultural research services would be funded on a bilateral basis. ANE/TR/ARD will pursue, as part of its analytical research agenda, a clearer definition of how IARC's will relate and reinforce NAR's in the coming decade.

8. Implementation Plan

Recommendation:

A plan of operation should be prepared for implementing program, personnel, and process recommendations emanating from this Conference.

(Responsibility: ANE/TR)

- Periodic reports on implementation of the plan suggested above should be provided to all ARDO's.
- The next ARDO Conference should begin with a full review of the plan's implementation, including accomplishments and outstanding issues.

ANE/TR/ARD, with the assistance of the University of Maryland's International Development Management Center, has attempted to plan systematically for the implementation of the recommendations of ARDO 1987. Periodic summaries to the field, including STATE 236079, July 1988, as well as Networking and related publications, have reported on the status of ARDO 1987 recommendations. This overview provides the cumulative report of those efforts on the eve of ARDO 1989.

Draft: ANE/TR/ARD, JLowenthal, 2/11/89

Changes in ANE Agriculture: Trends and Issues

A Reappraisal

Below are trends developed at the 1987 Agricultural and Rural Development Officers' Conference in Bangkok. Trends are presented in four groupings: policy variables, technology, social and political environment, and human and institutional needs. Judge for yourself how ARDO's have done as prognosticators-two years have passed.

A. Trends in Policy Variables

International Trends

1. Food surpluses from developed economies will increase
 - o food "dumping" will continue
 - o artificially low international food prices
 - o food aid will be increasingly available
 - o ANE regional food grain exporters will face increasing competition and shrinking markets
2. Major shifts in inter or intra regional trade and commercial conditions
 - o oil prices will rebound to the levels of the 1970's
 - o regional debt burdens will not shrink
 - o intra-ANE regional income disparities will increase
 - o U.S. policy interests will reflect the increasing importance of oil-producing economies
 - o developed economies' protectionist policies will increase
 - o agricultural energy and fertilizer costs will soar
 - o demand for unskilled labor in oil producing countries will shrink relative to previous levels
 - o oil-based aid flows will increase, especially to Islamic economies

Trends in ANE Countries

3. Need for increased employment (especially in urban areas) will dominate policy decisions
 - o agricultural production will not absorb all the growth in the labor force
 - o export based employment generation trade will become increasingly competitive

4. Urban consumption needs will outweigh those of rural agriculture producers
 - o terms of trade between urban and rural areas will favor urban areas
 - o rural savings will increasingly flow into urban markets
 - o food surplus economies will increasingly face problems of equitable food distribution
5. Environmental degradation and concern for sustainability of the natural resource base will become increasingly important policy concerns.
6. Population growth will continue to reduce benefits of economic growth, and population policy will receive greater attention.

B. Trends in Technology

1. Food crop technology needs will change
 - o focus will shift from single-crop cultivation in irrigated areas to integrated multi-cropping systems in uplands and rainfed areas
 - o varietal development will no longer be the single objective; more attention will be paid to post-harvest technologies
 - o self-sufficiency goals are being replaced by technologies that will meet changes in consumer tastes for meat products and processed foods
 - o food crop production technologies will be inter-woven with agro-industry development
2. Technological emphasis shifting from production productivity and sustainability
 - o additional food supplies will come primarily from intensification on existing land resources
 - o greater attention will be given to cost reduction and alignment to competitive comparative cost pricing
 - o low-input, sustainable and regenerative technologies will be sought
 - o new sources of productivity and sustainability will come from biotechnology in collaboration with conventional agricultural research

3. Leadership in development of technologies is changing
 - o biotechnology will generate new relationships between U.S. and ANE countries
 - o technology needs will be more complex and region-specific
 - o LDC'S will have the scientific expertise to do their own varietal improvement work
 - o management of technology development will be a major concern
 - o role of IARC's will diminish, with a complementary shift to the private sector, as well as to LDC's themselves
4. Post-harvest and marketing technology will become more important
 - o primary initiative will come from the private sector in developing more complex domestic/export marketing systems
 - o need for infrastructure

C. Trends in the Social and Political Environment

1. The region will be widely characterized by an increased drive for democracy, political instability associated with ethnic and religious strife.
2. Decentralization will be driven by the inability of existing central governments to provide basic goods and services to both urban and rural populations.
3. Women and youth will be making more significant contributions to political, economic, and social spheres of national-level activity.
4. By the end of the century, countries' institutional settings will be characterized by a much increased complexity in institutional forms of over-lapping memberships and of resource exchange patterns among institutional forms.
5. By the end of the century, eighty percent (80%) of the pace of technology transfer will be determined by advances in information technology, not by agronomic research on production technologies.
6. AID relationships for countries in the region with rapidly maturing economies will be transformed, both in composition and in the level of resource flows.
 - o total ODA resource flows to these countries will be significantly decreased

- o increasing priority focus on sustaining the viability of institutions
- o the technical competence of the human resource base will be stressed rather than support for developing a single production technology

D. Trends in Human Capital and Institutional Needs

1. Human capital and institutional agility will determine the nature and pace of economic development in the ANE region.
 - o trade and modern telecommunications will continue significantly to integrate the world
 - o excellence and entrepreneurship in the management and application of science and technology is a central strategic issue for all LDC's
 - o agriculture and rural development will be infinitely more complex as land and water frontiers are reached and income growth leads to a complex set of new consumer demands
2. The nature and composition of AID relationships will be significantly different
 - o lower 'real' resource levels
 - o political maturity will make "aid" increasingly less acceptable
 - o LDC's will not necessarily accept current modes of U.S. capital and technical assistance but will want access to U.S. knowledge and skills through more collaborative, mutually beneficial working relations
 - o the most important technological/skill transfers will be via the private sector
 - o U.S. government support and influence on multilateral aid institutions will become relatively more important than bilateral modalities
 - o effectiveness of AID relationships will be dependent on the sustained excellence of AID staff and ability to adapt to the changing comparative advantage of U.S. assistance
 - o the development of sustainable, mutually beneficial links between U.S. and LDC institutions/individuals concerned with agriculture and rural development will be seen as an important U.S. government objective

**Food for Thought:
Technological Challenges in Asian Agriculture
in the 1990s**

**Derek Byerlee
Economics Program
CIMMYT**

Background paper prepared for the Conference of Asian and Near East Bureau's Agricultural and Rural Development Officers, USAID, 19-24 February, 1989, Rabat, Morocco.

The author is grateful to D.L. Winkelmann, R.A. Fischer, R. Paliwal, R. Tripp, M. Morris, and K. Cassaday for reviewing an earlier draft of this paper.

Food for Thought: Technological Challenges in Asian Agriculture in the 1990s

This paper outlines the emerging challenges for Asian agriculture in the 1990s. To do this, I first briefly recapitulate the major sources of growth in Asian agriculture in recent decades--that is, the spread of modern varieties accompanied by increased use of fertilizer and improved irrigation water supplies. I argue that the contribution of these factors to increased food production in the future will be much smaller compared to recent decades, and that to sustain growth into the 1990s and beyond, we need to seek new sources of growth. Indeed the current prognosis is that without a renewed effort in food grain production, the 1990s will be a period of increasing food grain deficits in the major countries of Asia and the Near East, even countries such as India and the Philippines which have been self-sufficient for much of the past decade. The major ingredients of a strategy to reverse these trends are discussed with respect to both the technical-scientific issues and the institutional issues in technology development and transfer.

Given the size and complexity of agriculture in the region, this review is necessarily restricted. It focuses more on food grains, especially wheat and rice, and on the favorable areas of South and Southeast Asia which have made the major contribution to rapid increases in food grain production over the past two decades.

Technological Change in Cereals in Recent Decades

Over the past three decades there has been a major switch from area increases to yield increases as the major source of growth in world cereal production (Figure 1, page 3). This phenomenon is true for the developing world as a whole and is especially marked in Asia and the Near East. As recently as the decade of the 1950s, expanding area was the major source of increased cereal production in South Asia and West Asia/North Africa (WANA). For many countries, area increases now make a negligible contribution to raising cereal production. In a few countries, such as China, the area sown to cereals has actually declined in the past decade.

Technological Change in Favorable Areas

The chief reasons that the source of increased food grain production has switched from area increases to yield increases are the lack of new land to bring into cultivation and the remarkable progress made over the past two decades in raising yields of the two major cereals, rice and wheat, in much of Asia. Three important changes in production technology have contributed to these yield increases, but each is now showing definite signs of reaching a plateau.

1) Modern varieties--The story of the rapid spread of modern varieties of wheat and rice is now well known (Dalrymple 1986a, 1986b and Table 1). Less spectacular but significant gains have also been made in maize, sorghum, and millet. However, in the favorable environments where modern varieties have had their greatest impact, almost all the area is now sown to modern wheat and rice varieties (Figure 2. page 4). Hence, modern varieties have largely been exploited as a source of growth in these environments.

Since the mid-1960s, no additional *major* breakthroughs raising yield potential in the cereals have been made and none are likely to occur in the 1990s, at least at the farm level. Yield potential in new wheat varieties has risen at a steady rate of 0.7-1% per year since the release of the first semidwarf materials in the 1960s (CIMMYT 1989). In rice, no increase in yield potential has been achieved since the 1960s, although important gains have been made in earliness and disease and insect resistance (Pingali 1988).

Table 1. Percent area planted to modern varieties of wheat and rice, Asia and Near East, mid-1980s

Region	Rice (1982-83)	Wheat (1985)
West Asia/North Africa		
Egypt	-	58
Morocco	-	50
Tunisia	-	36
South Asia		
Bangladesh	25	100
India	54	85
Nepal	36	87
Pakistan	75 ^a	85
Sri Lanka	87	-
Southeast Asia		
Burma	49	-
Indonesia	82	-
Malaysia	54	-
Philippines	85	-
Thailand	13	-

Source: Dalrymple (1986a, 1986b), CIMMYT (1989).

a 1988 estimate.

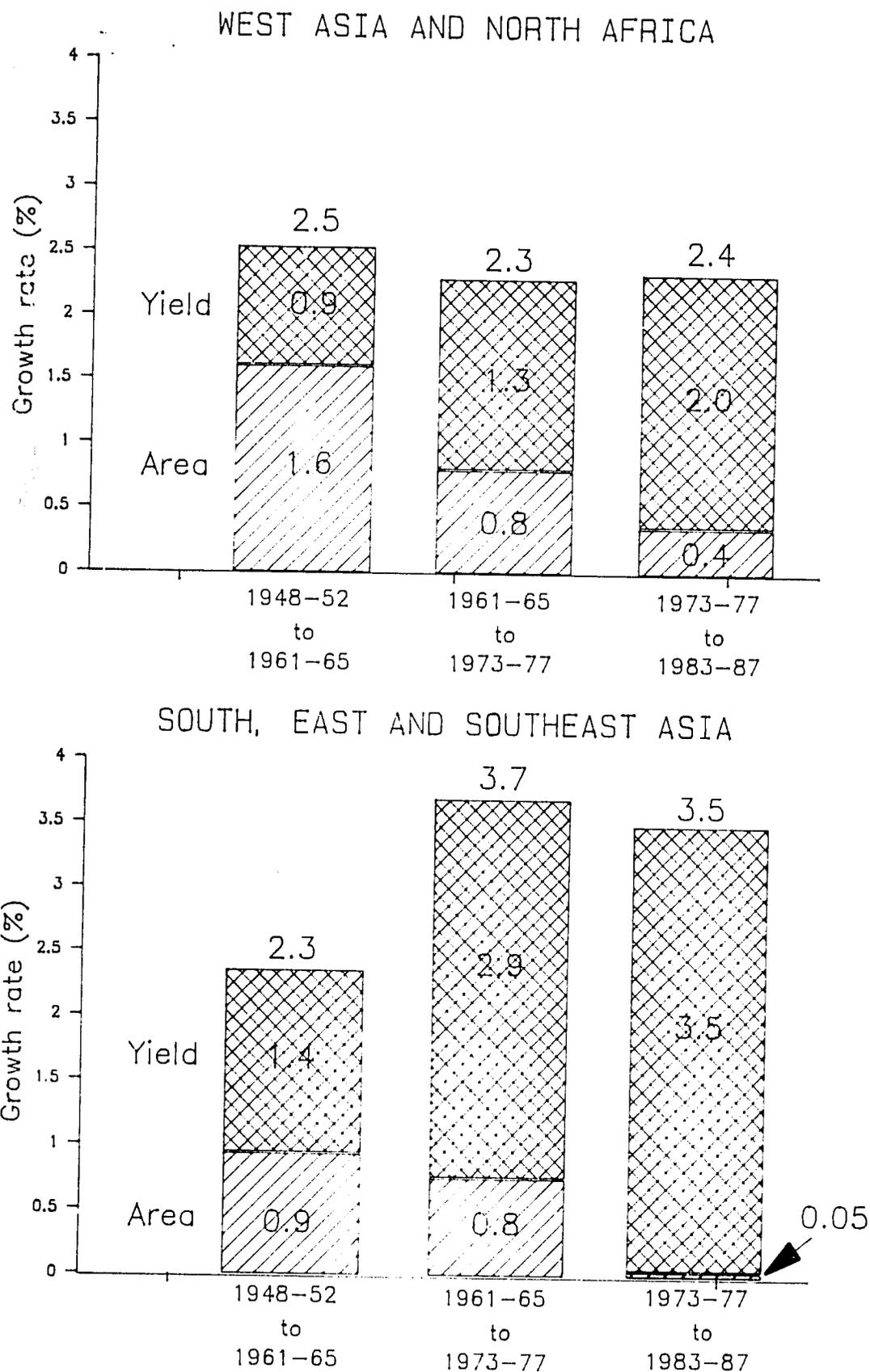


Figure 1. Annual growth rate of area and yield of cereals in Asia and the Near East, 1948-1987.

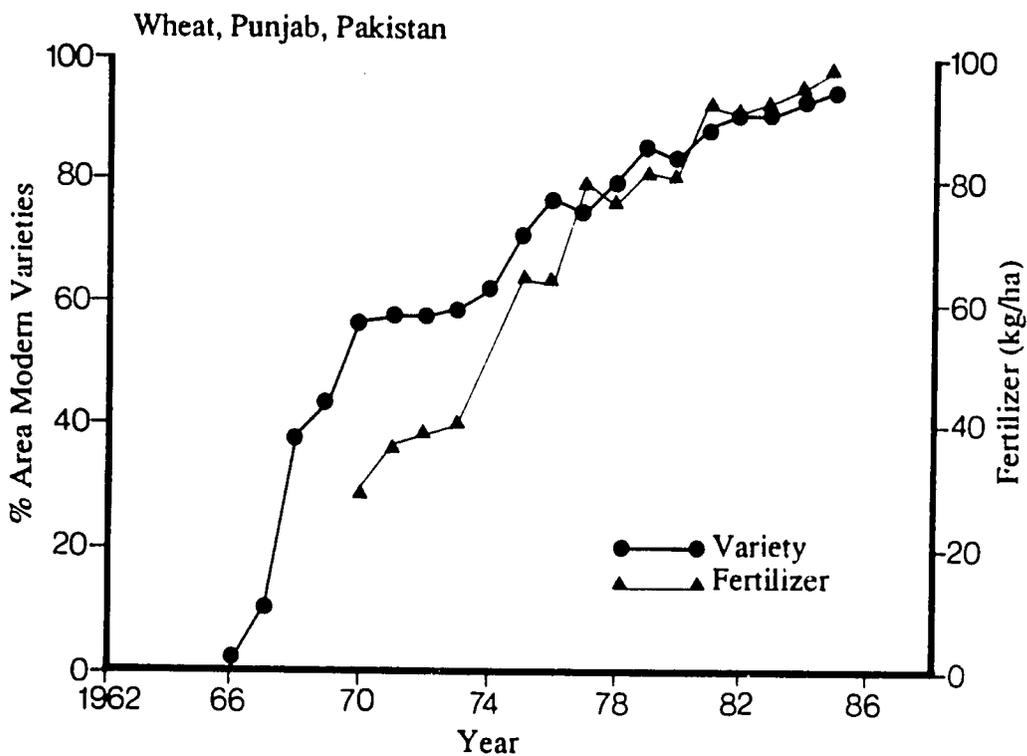
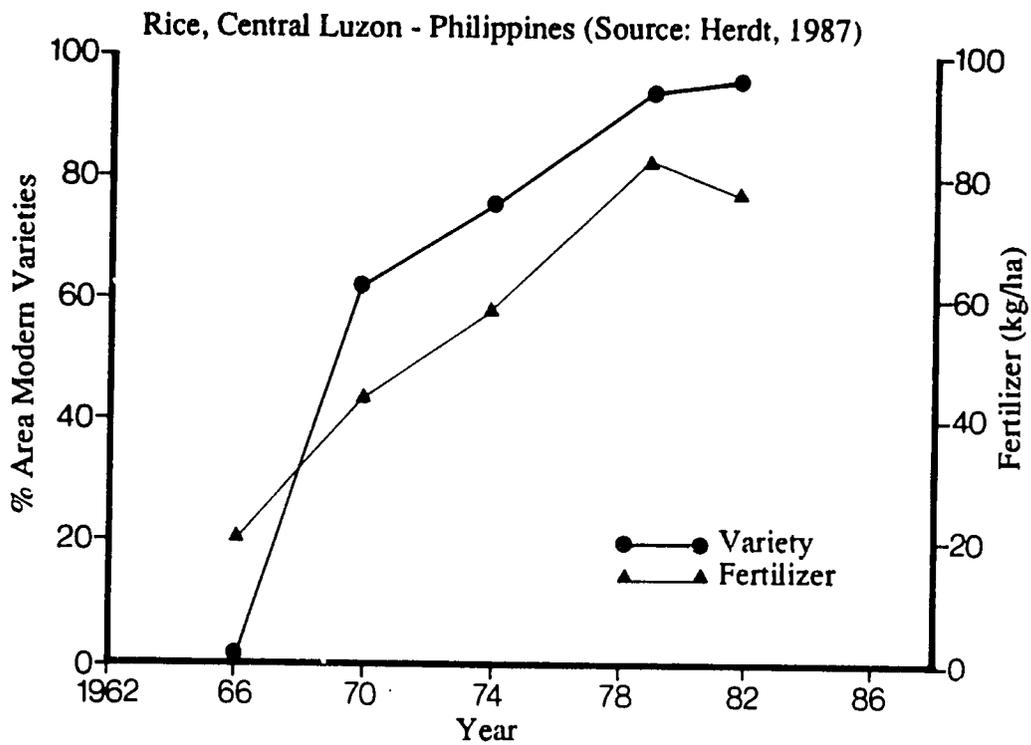


Figure 2. Changes in area under modern varieties and fertilizer applied to wheat in Pakistan's Punjab and rice in Central Luzon, Philippines.

- 2) **Irrigation water**--Increased supplies of irrigation water made a major contribution to raising yields in the 1960s and 1970s in much of Asia. For example, over the past 20 years the percentage of wheat area under irrigation rose from 50% to 72% in India and from 66% to 83% in Pakistan. Where land was converted from rainfed area to irrigated area wheat yields increased by about 1 t/ha. However, in all regions in recent years, expansion in irrigated area has slowed drastically as the easier and less expensive irrigation sites have been developed (Levine et al. 1988).
- 3) **Fertilizer**--Fertilizer use per hectare of cultivated land has expanded rapidly in the past two decades at over 10% per year to reach 78 kg/ha in Asia¹ and 48 kg/ha in WANA. In both wheat and rice production, fertilizer levels have reached modest to high levels of over 100 kg/ha of nutrients in irrigated areas of Asia (Figure 2), and there are diminishing returns to increased fertilizer doses *at current levels of fertilizer efficiency*. Figure 3 (page 6), which plots wheat yields against fertilizer applied in the Indian and Pakistani Punjab, indicates that grain-nutrient ratios have fallen to less than 7 in India and less than 5 in Pakistan, compared to grain-nutrient ratios of over 10 in the early years of the Green Revolution.

Together, modern varieties, improved supplies of irrigation water, and increased fertilizer doses accounted for over 75% of the total yield increases in rice and wheat in Asia over the past two decades (Herdt and Capule 1983, Scandizzo 1984, and CIMMYT 1989). However, there is clear evidence that the contributions of these factors to yield increases in favorable environments have reached a stage of rapidly diminishing returns. The data on rates of yield increase in the 1980s indicate such a change is already underway in countries that were the early beneficiaries of the Green Revolution (Table 2, page 8). In the past decade, 1978-87, the rate of increase in wheat yields has fallen significantly in India, Pakistan, and Turkey relative to the previous decade. Likewise, the rate of gain in rice yields has slowed in some important rice producers such as Pakistan and Malaysia.

The gap between farmers' yields and those on experiment stations has also tended to narrow in the original Green Revolution areas. In the area surrounding IRRI in the Philippines, the highest yields obtained by farmers now surpass yields recorded on the IRRI experiment station (Figure 4, page 7). A similar trend for wheat is observed in the Indian Punjab, where farmers' yields in Ludhiana District now average over 4 t/ha. Furthermore, much of the remaining yield gap in these areas is not economically recoverable (Herdt 1988). Hence, in the most advanced areas, farmers have successfully adopted most of the newer technologies, and there is little technology waiting "on the shelf" to be transferred to farmers.

¹ Asia, here and elsewhere in this paper, refers to South, Southeast, and East Asia and excludes West Asia, which is categorized as "West Asia/North Africa."

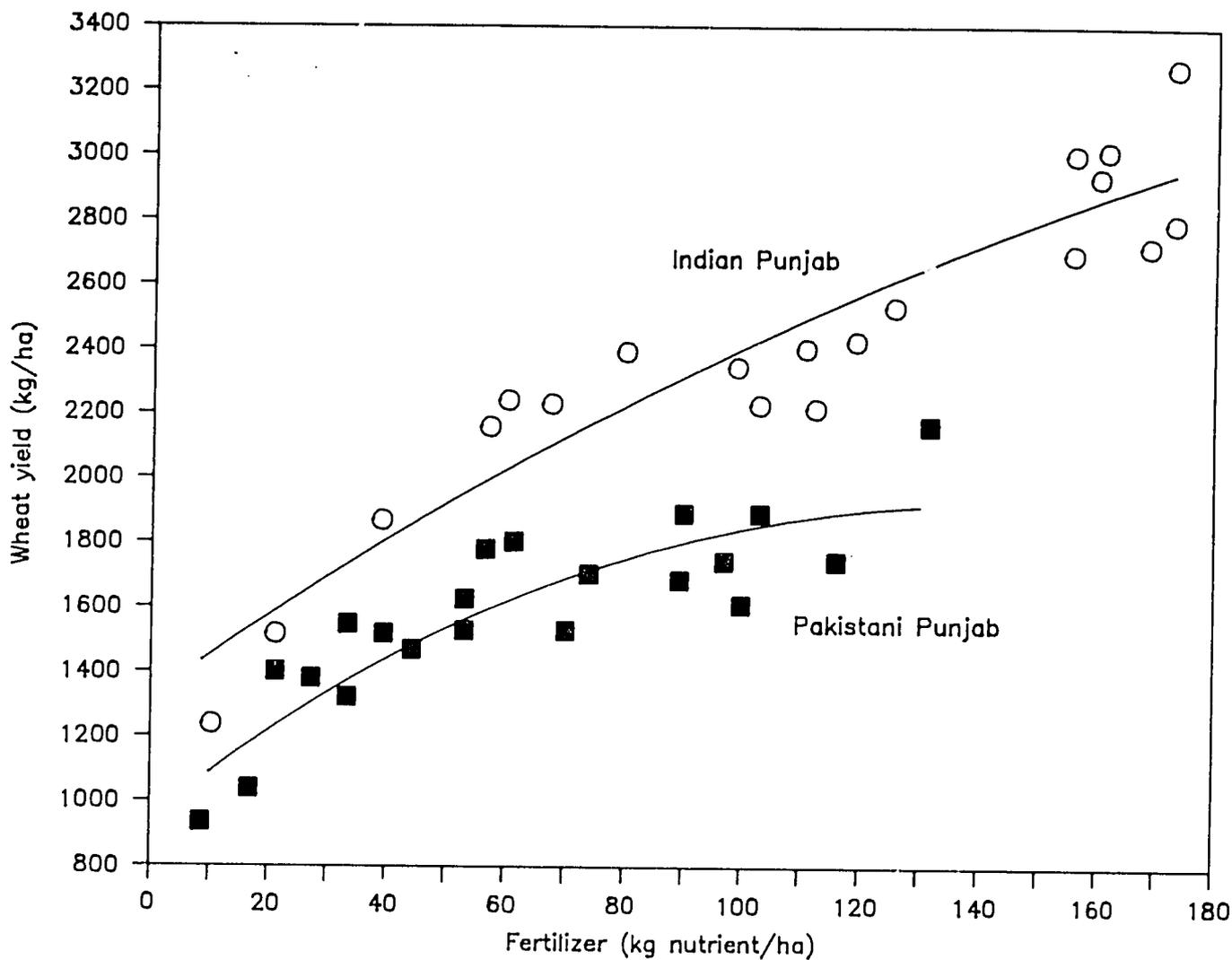


Figure 3. Gross relationship between fertilizer use and wheat yield, Indian and Pakistani Punjab. (each point represents one year from 1960 to 1985).

Source: CIMMYT, 1989.

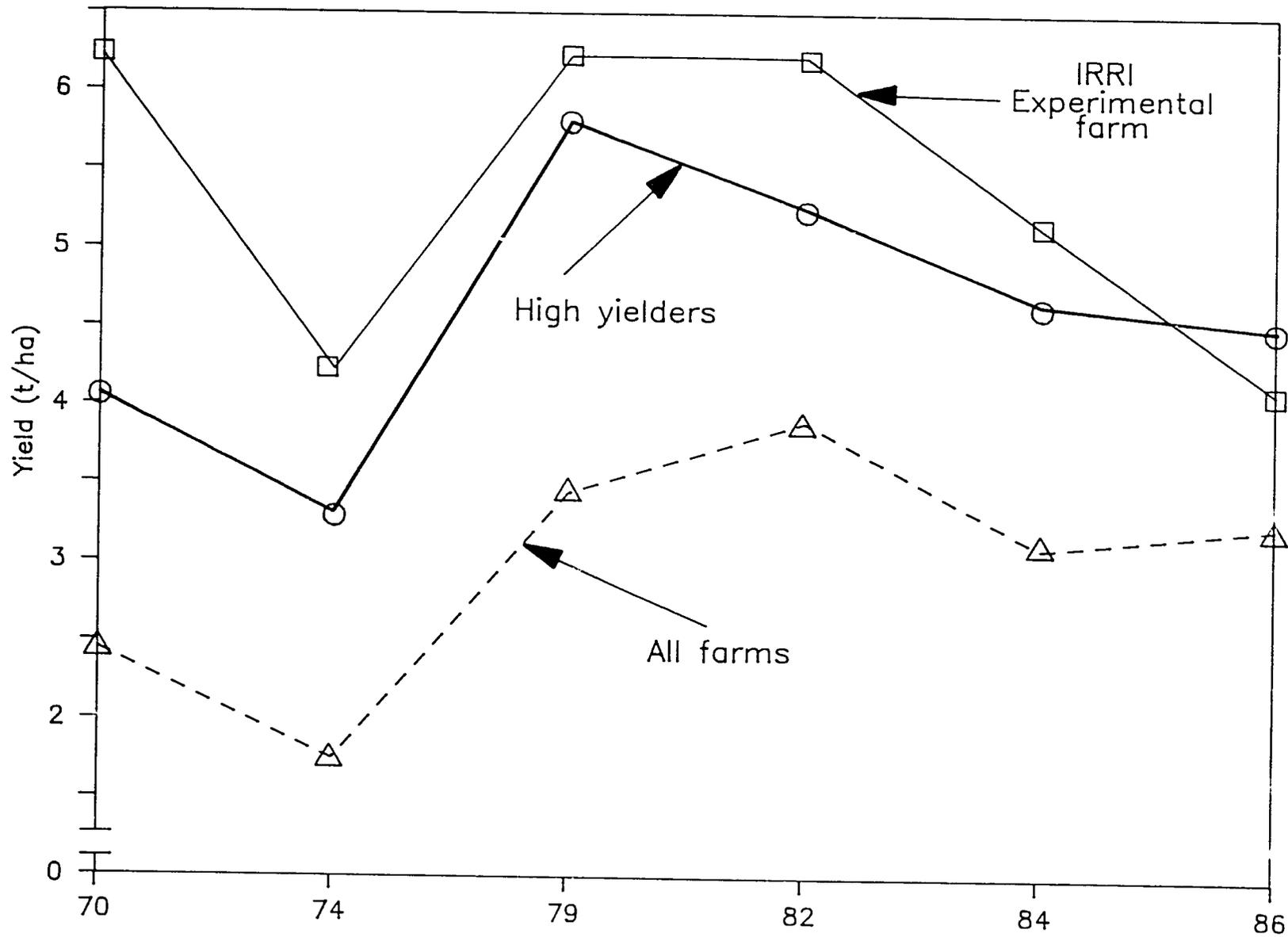


Figure 4. Experimental and farmer's yields, Nueva Ecija, 1970–86.
(Wet season).

Source: Pingali, 1985.

21

Table 2. Rates of change in yields of wheat and rice in major producing countries in three periods

	Annual growth rate (%) ^a		
	1951-66	1967-77	1978-87
Wheat			
India	1.82	4.64(+) ^{***}	3.63(-) ^{***}
Pakistan	0.58	5.01(+) ^{***}	2.16(-) ^{***}
Bangladesh	0.60	6.57(+) ^{***}	6.32
China	1.01	5.76(+) ^{***}	6.25
Turkey	0.16	3.76(+) ^{***}	2.07 (-) [*]
Egypt	2.12	1.88	1.18
Rice			
India	1.61	1.59	1.96
Pakistan	1.81	4.49(+) ^{***}	-.56(-) ^{***}
Bangladesh	1.73	.68	2.40(+) ^{**}
China	1.43	1.63	3.10
Burma	.30	2.10	5.47(+) ^{***}
Malaysia	1.41	2.54(+) [*]	0.22(-) ^{***}
Philippines	.97	3.86(+) ^{***}	3.42
Indonesia	.84	4.32(+) ^{***}	3.62
Thailand	2.86	-.16(-) ^{***}	1.52(+) ^{***}

Source: Calculated from FAO data files.

a (+)(-) indicate a significant positive or negative change in the growth of yields relative to the previous period, and *, **, *** denote significance of this change at the 10%, 5%, and 1% level as tested in a spline function fitted to the period 1951-87 with dummy variables for the periods 1967-77 and 1978-87.

However, there are still large areas in favorable environments, such as Pakistan's irrigated Punjab, where yields remain low (2 t/ha) relative to potential yields, even though all farmers have adopted the improved wheat varieties and modest to high levels of fertilizer. There is substantial potential to increase yields in these areas through a number of relatively small incremental management changes specific to each area, such as better plant stand establishment, minimum and zero tillage, improved weed control, balanced fertilizer doses, and improved timing of irrigation water application. These factors could profitably increase wheat yields at the farm level by up to 50% in Pakistan's Punjab (Byerlee et al. 1986).

Finally, there are worrying indications that yields or productivity are falling in some of the best production areas. Flinn and De Datta (1984) have documented a decline in yields obtained on IRRI experiment stations (Figure 4, page 7). Similar yield decreases have been observed in farmers' fields in some rice-wheat areas of South Asia (Hobbs 1988). In Pakistan, wheat yields rose steadily from 1972 to 1986 by 375 kg/ha but the increase was small relative to the increase in inputs supplied (especially fertilizer, which rose from

22

40 kg/ha nutrients to 114 kg/ha), indicating a possible decline in productivity. The reasons for this decline are not yet well understood but may relate to soil micronutrient problems, soil structure, soil health, poor stand establishment, and worsening weed problems. Clearly, sustaining cereal yields and productivity in these relatively favorable areas will be a challenge in the 1990s.

Technological Change in Less Favorable Areas

Modern varieties and fertilizer use have expanded steadily into less favorable areas, especially in the past decade. For example, 50% of the sorghum and millet area in India is estimated to be sown to modern varieties, much of it in marginal areas (Pray 1988). Semidwarf wheat varieties have spread to most of the rainfed areas receiving over 500 mm annual rainfall and are diffusing slowly in dry areas receiving less than 500 mm annual rainfall (Table 3). However, the yield impact of semidwarf varieties in marginal areas is much smaller, in part because of lower yield potential, and in part because use of purchased inputs is less profitable and more risky. CIMMYT estimates that in irrigated areas of South Asia semidwarf wheat varieties grown with modest levels of fertilizer provided a 40-50% jump in yields. In dry rainfed areas, the equivalent gain in yields of the semidwarfs is estimated to be less than 10%. In wheat, plant breeders have achieved yield gains of about 1% per year in developing new varieties for favorable areas; in dry areas, the rate of gain averages 0.5% or less. Expressing yield gains in kilograms per hectare per year makes the difference between favorable and marginal areas appear even more dramatic because base yields in favorable areas are higher. Similarly, Barker and Duff (1986) estimated expected yield gains to rice research in favorable rainfed areas to be twice those in less favorable rainfed areas.

Table 3. Adoption of semidwarf wheats by moisture regime, developing and developed countries and the world, 1980s

	Irrigated	Rainfed (mm/yr)			All areas
		>500	300-500	<300	
Developing	91	60	45	21	62
Developed	96	37	50	na ^a	40
World	92	42	47	21	49

a na = not applicable.

Source: CIMMYT files.

Challenges of the 1990s

Increasing Food Deficits in the 1990s?

Almost all recent projections indicate a growing gap between supply and demand for food products in the 1990s in Asia and the Near East, given current trends. The FAO projects an increase in demand for all food of 3.1% per annum for the region, and 2.5% for cereals (Table 4). Food and feed demand will be increasingly driven by rapidly rising incomes in the region, projected to average 1.5% annually in WANA and 3% in Asia. With higher levels of economic growth, demand will increase even faster, especially for income elastic products such as livestock products and their derived demands for feed grains (FAO 1987). The FAO projections for supply indicate a widening gap between supply and demand for cereals, leading to an increase in cereal imports from 9 MT to 19 MT in Asia and from 35 MT to 60 MT for WANA, where the largest increase in demand will be in feed grains. Other recent projections by Somel (1987), IWC (1988), and Khaldi (1985) similarly indicate that by 2000, given current trends, the WANA region will experience a huge deficit in cereals and other foods.

Table 4. Projected growth rate of population, per capita income, and food demand, Asia and Near East, 1985-2000

	Growth rate (%/yr)		
	Population	Income	Food demand
West Asia/North Africa	2.5	1.5	3.1
Other Asia (except China)	2.1	3.0	3.1

Source: FAO (1987).

Detailed projections for individual food grains in Asia, based on input use and productivity, suggest that the FAO projections are too optimistic. Barker and Herdt (1985), using projected changes in modern varieties, fertilizer use, and water supplies, estimate that Asia will experience a rice deficit of 35 MT in the year 2000, if real rice prices are to be maintained at current levels. CIMMYT (1989), using a similar approach, also estimates that wheat production will increase at 2% annually versus an increase in demand of close to 3% from 1985 to 2000. Both studies note that these trends can be reversed if investment in irrigation is stepped up and if more effort is made to improve the efficiency with which fertilizer and water are used.

These projections do not suggest that famine will return to Asia. Rather they indicate that, if the food feed demands of the growing populations and economies of Asia are to be

satisfied in the 1990s, either substantial efforts have to be made and research and extension strategies must change, or food and feed grain imports will increase sharply.

Technical Challenges in the 1990s

Plant breeding and biotechnology--Plant breeding has made a major contribution to increased food production over the past two decades. There are still substantial opportunities to achieve breakthroughs for specific problem environments and needs. Two recent examples of such opportunities are the spectacular success of Basmati-385 rice (a high-quality, short, and early maturing rice variety developed for Pakistan's Punjab) and the equally impressive performance in Brazil of wheat varieties tolerant to acid soils. Other opportunities to make an impact on food production include developing wheat varieties for late planting in intensive cropping systems and breeding rice varieties for nonirrigated environments. However, the rates of yield gains in these stressed environments will be generally much slower. For example, Barker and Duff (1986) project that 68% of the increases in rice production in Asia from 1985 to 2000 will come from irrigated areas, even though irrigated area is projected to increase only from 33% in 1980 to 40% of total rice area in 2000. Similarly, CIMMYT has estimated that irrigated and high rainfall areas currently account for about two-thirds of total wheat area in the Third World but could account for 90% of increased production in the next decade if we assume that the rate of progress in favorable environments continues to be double that of less favorable areas.

A growing share of plant breeding research is now devoted to enhancing yield stability, especially to maintaining disease and pest resistance in the face of evolving biotypes. Substantial research resources are required simply to maintain current yield levels in favorable environments. IRRI, CIMMYT (in wheat), and ICRISAT (in millet) and most national research programs devote large shares of their plant breeding resources to this type of maintenance research. Research managers and policy makers must recognize that this investment is needed to maintain yield levels, even though it will reduce progress in raising yield potential.

Despite the excitement about the potential contributions of biotechnology to agriculture, the impact on Asian agriculture in the 1990s at the farm level will be small. Some commercial applications may be available at the farm level, especially in rice (Anderson and Herdt 1988), they will largely consist of the incorporation of new sources of disease or pest resistance based on single or few gene traits to improve yield stability, rather than changes that increase yield potential. Nonetheless, it will be important for major countries in Asia to establish biotechnology research capacity for major crops to provide the technology for the even more challenging period beyond 2000.

Crop management--Crop and resource management will need to play a much larger role in the 1990s in increasing productivity by exploiting the yield potential of available technology and in sustaining productivity gains while preserving the resource base. In

addition, the trend toward reduced input subsidies and more open economies will require greater production efficiency. In favorable environments, the emphasis will be on increasing the efficiency of water and fertilizer use, on minimum tillage and integrated pest control, and on sustaining cropping intensification over the long term.

Crop management will also increase in complexity because cropping intensity will be greater and more emphasis will be given to input efficiency and sustainability (Pingali 1988, Byerlee 1987). Gains will be more incremental and less profitable than the gains from the Green Revolution technologies of the recent past. Hence, crop management will be more knowledge-intensive (a good example is integrated pest control), and require more institutional support from extension, input suppliers, irrigation systems, etc. (see below). In marginal areas the key to increasing productivity will also often be through crop management (in the form of improved tillage techniques, weed control, and rotations to conserve and efficiently exploit moisture) rather than through improved varieties (CIMMYT 1989).

Crop management research will need to be strengthened at the two extremes of applied and strategic research. Adaptive research is needed to tailor available technology to local conditions in relatively small and homogeneous areas. Few countries have developed the capacity to effectively undertake this type of location-specific and problem-oriented research. Second, strategic crop management research is needed for some major cropping systems to address widespread problems, such as the apparent decline in yield and productivity in some systems, and to develop the knowledge and technology base for arresting their decline. The rice-wheat rotation, which covers over 8 million ha in South Asia, is one important cropping system for which more strategic research organized across countries in the region may provide high payoffs (Hobbs 1988).

Non-food grain crops--Three trends characterize many cropping systems in Asia--intensification, diversification, and specialization. Increases in cropped area now come largely from greater cropping intensity rather than an expansion in cultivated area, although even increases in cropping intensity have tended to level off in some areas (Vyas 1987). Diversification is driven by increased demand from a higher income population for oilseeds, vegetables and fruits, and feed grains. In some cases, these crops may displace basic food grains, but, given the necessity of maintaining food grain production, much of the area needed for "diversification crops" will come from fitting these crops into existing cropping systems to increase overall cropping intensity (Tetlay, Byerlee and Ahmad 1989). Finally, with improved infrastructure and markets, there is a trend toward regional specialization that leads to the dominance of one or two major cropping patterns within a region and diversification across regions.

These trends in intensification, diversification, and specialization further increase management complexity and the importance of the sustainability issues discussed above. They also mean that varietal breeding of diversification crops, such as oilseeds and feed

grains, will have to emphasize appropriate characteristics to allow those crops to fit into existing cropping systems. To meet South Asia's rapidly growing demand for feed grain, for example, winter/spring maize grown on available fallow land in irrigated areas has great potential. However, considerable research is required to develop and transfer to farmers early maturing varieties with cold tolerance and an appropriate photoperiod response.

Institutional Issues for the 1990s

Many institutional issues will have a bearing on whether the technical challenges of the 1990s are met successfully. Here I touch on three: 1) national agricultural research programs, 2) private sector research and technology transfer, and 3) international agricultural research centers.

National agricultural research programs--The success of the Green Revolution stimulated a rapid increase in agricultural research expenditures. In the 1970s in Asia, research expenditures rose by 10% per year in real terms. In the 1980s, this growth rate has slowed considerably and in a number of important countries such as the Philippines and Indonesia research expenditures appear to have fallen.

Most large countries in Asia now have well-established research programs for plant breeding in basic food crops. (There are, however, still many weak NARSs, especially in the WANA region.) But even the stronger programs in the region experience cycles of maturity and decline and in most cases lack well-rounded and robust research programs (Ruttan 1986). They are often unable to respond to changes in the environment, such as increasing cropping intensity or the outbreak of new diseases and pests. Crop and resource management research is often still weak and fragmented among disciplinary groups. Above all, many NARSs lack a functional mechanism for diagnosing high priority problems and setting the research agenda accordingly. Social science research capacity, which can help in diagnosing problems and evaluating technology, is still in its infancy in most NARSs. To address the technological challenges of the 1990s will require continued investment in NARSs, both to sustain established programs as well as to broaden and improve the relevance of the research agenda.

Research management will play an important role in engendering appropriate incentive systems for promoting problem-solving research. Most NARSs still lack an effective mechanism by which the clients of the research system, the farmers, can effectively influence the selection of research priorities. Producer and commodity organizations, perhaps with a role in financing research, may be one way to more effectively link research and farmers (Pray 1988, Ruttan 1986). Another recurring management issue is the low share of operating funds in the total research budget, which immobilizes researchers and restricts access to farmers and their fields. Investment in human resource development will also be a continuing need of many NARSs in the region through the 1990s.

Agricultural research systems in the 1990s will require greater support from extension, input supply, irrigation management, and rural education to transfer and efficiently use available technology. Farmers' information and skills are much more important for the managerially complex, science-based agriculture now characteristic in much of Asia (Jain 1985). The T & V extension system has reformed many of the extension systems of the region but in many cases still emphasizes a "recipe" approach to crop production, rather than the development of the broad understanding that farmers need to adapt and use the new technology efficiently. The level of rural education continues to be low in many areas of South Asia and WANA and appears to be a growing constraint on improving productivity. The role of extension and education is likely to be particularly important in helping farmers to utilize the results of crop and resource management research with its greater complexity, emphasis on input efficiency, and relatively small incremental changes.

Private sector research and technology transfer--The private sector already plays an increasing role in agricultural research in certain crops, especially in coarse grains and oilseeds. In some cases, such as maize in the Philippines and probably also in Turkey, private sector research expenditures now exceed those of the public sector. Private sector research is also important for chemical and machinery technologies, although most of this research still involves testing and adapting technologies developed for the industrialized countries.

Private sector plant breeding research will continue to expand for crops such as maize, sorghum, and sunflowers, for which hybrid seed industries are potentially profitable. In some cases legal and seed import regulations still restrict the full participation of the private sector. Plant varietal rights, which have hastened the privatization of much plant breeding research in developed countries, will, however, not be a practical and enforceable alternative for the 1990s in Asia.

Private sector research is likely to emphasize areas with the largest market potential. This emphasis implies that research will initially focus on more favorable areas and on commercial farmers and may widen the differences between small farmers in marginal areas and their counterparts in favoured areas. Also, research on chemical technologies in the private sector will not necessarily promote input efficiency and sustainability by using such approaches as integrated pest management. Hence, it will not be possible in the foreseeable future for the public research systems to leave these areas (i.e., development of hybrid seed, agrochemicals, etc.) completely to the private sector. NARSs will need to develop a strong complementary role to private sector research in these areas to ensure that social welfare objectives, such as equity and environmental issues, are adequately addressed.

Although the role of the private sector in research is limited, there is clearly an increasing role for the private sector in technology transfer. In many cases, input supplies are still in the public sector, especially seed production and distribution, and lack vigorous market promotion. The private sector can also play a larger role in supplying the information needs of farmers, especially in providing information for using purchased inputs effectively (Byerlee 1987).

International agricultural research centers (IARCs)--The role of the IARCs has evolved considerably over the past decade. The IARCs play a vital role in germplasm and information exchange among NARSs, including strong NARSs in Asia such as India and China. That role must be maintained into the 1990s. The IARCs are moving a larger share of resources from routine plant breeding research to strategic research, especially research related to stress tolerance and durable resistance to pests and diseases, and exploring new ways to increase yield potential. The international centers will also play a lead role in strategic research on crop and resource management that addresses major problems common to several countries. The IRRI/CIMMYT collaboration on rice-wheat rotations is an example of this type of strategic research, in this case aimed at sustainability. Networking among NARSs and IARCs is a feature of these new strategic research initiatives.

An important part of the strategic research agenda of the IARCs for the 1990s will be investment in the new techniques of the so-called biotechnology. Given that much of this research will be conducted by the private sector for agriculture in industrialized countries, IARCs will at first have a potentially important role in adapting and applying the new techniques to problems of Third World agriculture to increase the efficiency of conventional plant breeding programs. As discussed above, much of this work will emphasize pest and disease resistance to enhance yield stability rather than to increase yield potential.

Despite this general move "upstream", for many smaller and weaker NARSs in the region, or for specific environments in strong NARSs, IARCs will retain a comparative advantage in providing relatively finished germplasm and other technological inputs. A challenge for the IARCs in the 1990s will be to evolve in ways that support the strong NARSs and permit the different needs of weaker NARSs to be met.

A major strength of IARCs in taking on these roles has been the international centers' relative isolation from political considerations and their sustained and assured budgetary support from donors. It will be important to preserve these critical roles into the 1990s.

Reaching the Poor

Development thought is notably "faddish", moving from an emphasis on community development to the "high-payoff input" model of technological change to farming systems research. The 1980s has been a period of worldwide emphasis on privatization, free markets, and policy reform. In the process of promoting market-oriented approaches to development, we may have forgotten that the ultimate purpose of development is to reduce poverty, both relatively and absolutely. Rapid technological change in food grains that reduces food prices to the poor is an important instrument for achieving progress on this front. It is estimated that in Asia and the Near East nearly 500 million people live below the poverty line and suffer malnutrition--350 million of them in South Asia alone (Mellor 1988). The 1990s should be a period in which our efforts are rededicated to alleviating poverty.

For agricultural researchers an important debate in the "war on poverty" in the 1990s will be the relative emphasis to be placed on favorable versus less favorable environments. Mellor (1988) estimates that the absolute numbers of rural poor in Asia are divided roughly equally between favorable and less favorable environments. An increasing proportion of the poor are also located in urban areas. These statistics, plus the evidence presented earlier on expected lower payoffs to research investments in less favorable areas, suggest that caution is needed in shifting research attention from favorable to less favorable areas. Also there is evidence that technological progress in favorable areas will often benefit less favorable areas through 'technological spillovers,' labour migration, and lower food prices to the poor, including small farmers in less favorable areas who are usually net food purchasers. Clearly more research is need to understand these complex relationships, but for the moment technological change in basic food grains in high potential areas seems to be one of the most effective means to improve the incomes of the poor.

Moreover, these conclusions suggest that although sustainability research is often associated with marginal and fragile environments, the emphasis in the 1990s should be on sustainability in favorable areas, where crop intensification and specialization appear to have important implications for sustaining productivity.

Conclusion

The rapid technological advances of the past two decades, especially in wheat and rice, should be seen as an extraordinary period of growth in world food production, especially in Asia. However, in the future we can expect much slower growth from the main sources of yield increases in recent years--spread of modern varieties, increased fertilizer use, and improved supplies of irrigation water. Yield potential in cereal crops is increasing only slowly. In the 1990s ways must be found through improved crop and resource

management to exploit this yield potential at the farm level, promote input efficiency, and sustain the resource base. Added to this challenge will be the need to increase the production of income elastic food products, especially feed grains, in the rapidly growing economies of the region, and the special challenge of increasing productivity and maintaining the resource base in less favorable areas. Rapid technological progress in food grain production is possible in the 1990s, but it will clearly require a new research strategy, will be the sum of many small incremental changes, and will be more difficult to organize and manage.

References

- Anderson, J.R., and R.W. Herdt. "The Impact of New Technology on Foodgrain Productivity to the Next Century", Paper presented at the Twentieth International Conference of the International Association of Agricultural Economists, Buenos Aires, Argentina, 1988.
- Barker, R., and B. Duff. "Constraints to Higher Rice Yields in Seven Rice Growing Environments in South and Southeast Asia", Paper prepared for the Annual Meeting of the Rockefeller Program of the Genetic Engineering of Rice, IRRI, Philippines, 1986.
- Barker, R., and Herdt, R.W., with Rose, B. *The Rice Economy of Asia Resources for the Future*, Washington, D.C., 1985
- Byerlee, D. *Maintaining the Momentum in Post-Green Revolution Agriculture: A Micro-level Perspective from Asia*, MSU International Development Paper No. 10, Dept. of Agricultural Economics, Michigan State University, East Lansing, Michigan, 1987.
- Byerlee, D., P. Hobbs, B.R. Khan, A. Majid, R. Akhtar, and N. Hashmi. *Increasing Wheat Productivity in the Context of Pakistan Irrigated Cropping Systems: A View from the Farmer's Field*, PARC Research Report 86/6, Islamabad: Pakistan Agricultural Research Council.
- CIMMYT. *1987-88 World Wheat Facts and Trends: The Wheat Revolution--Past, Present, and Future*, Mexico, D.F.: CIMMYT (Forthcoming, 1989).
- Dalrymple, D.G. *Development and Spread of High Yielding Rice Varieties in Developing Countries*, Bureau for Science and Technology, USAID, Washington, D.C., 1986a.
- Dalrymple, D.G. *Development and Spread of High Yielding Wheat Varieties in Developing Countries*, Bureau for Science and Technology, USAID, Washington, D.C., 1986b.
- Flinn, J.C., and S.K. De Datta. "Trends in Irrigated-Rice Yields under Intensive Cropping at Philippine Research Stations," *Field Crops Research* 9(1):1-15, 1984.
- Food and Agricultural Organization. *Agriculture: Toward 2000*, Rome, 1987.
- Herdt, R.W. "A Retrospective View of Technology and Other Changes in Philippine Rice Farming, 1965-1982." *Economic Development and Cultural Change* 35:329-50, 1987.

- Herdt, R.W. "Increasing Crop Yields in Developing Countries: Sense and Nonsense," Paper presented to the Annual Meeting of the American Agricultural Economics Association, July 30-Aug 3, Tennessee, 1988.
- Herdt, R.W. and C. Capule. *Adoption, Spread and Production Impact of Modern Rice Varieties in Asia*. Los Banos, Philippines: IRRI, 1983.
- Hobbs, P.R. "Yield Sustainability in Rice-Wheat Rotations," Draft paper, Khatmandu, CIMMYT, 1988.
- International Wheat Council. *Long-Term Outlook for Grain Imports by Developing Countries*, London, IWC, 1987.
- Jain, H.K. "India's Changing Agriculture: Its Management, Genetic Vulnerability and Diversification", *Proceedings Indian Academy of Science (Plant Science)*, 94:465-474, 1985.
- Khaldi, N. *Evolving Food Gaps in the Middle East/North Africa: Prospects and Policy Implications*, Research Report No. 47, International Food Policy Research Institute, Washington, D.C., 1984.
- Levine, G., et al. "Irrigation in Asia and the Near East in the 1990s: Problems and Prospects." Paper prepared for HIID/USAID Symposium on Agriculture in the 1990s, Washington, D.C.,
- Mellor, J. "Agricultural Development Opportunities for the 1990s and the Role of Research", Paper presented at International Centers Week of the Consultative Group on International Agricultural Research, Washington, D.C., 1988.
- Pingali, P.L. "Intensification and Diversification of Asian Rice Farming Systems", Paper presented at the International Rice Research Conference, IRRI, Los Baños, Philippines, 1988.
- Pray, C. "Agricultural Research and Technology in the 1990s in Asia and Near East: Trends and Possible Strategies for AID." Paper prepared for HIID/USAID Symposium on Agriculture in the 1990s, Washington, D.C., 1988.
- Ruttan, V. "Toward a Global Agricultural Research System: A Personal View," *Research Policy* 15:307-327, 1986.
- Scandizzo, P.L. *Agricultural Growth and Factor Productivity in Developing Countries*, Economics and Social Development Paper 42, Rome: Food and Agricultural Organization, 1984.
- Somel, K. "Food and Agriculture in West Asia and North Africa: Projections to 2000" In ICARDA. *Annual Report: Farm Resource Management Program*, Aleppo, Syria, 1987.
- Tetlay, K.D., D. Byerlee and Z. Ahmad. 1989. "The Role of Tractors, Tubewells and Plant Breeding in Increasing Cropping Intensity in Pakistan's Punjab." *Agricultural Economics* (forthcoming, 1989).
- Vyas, U.S. "Asian Agriculture: Achievements and Challenges", *Asian Development Review* 1:27-44, 1987.

Addendum
Food for Thought:
Technological Challenges in Asian Agriculture
in the 1990s

Derek Byerlee

The following comments supplement the paper "Food for Thought," that was written before receiving the USAID document "A Rural Economic Growth Strategy for Asia and the Near East in the 1990s." The comments discuss the recommendations of the strategy document and propose specific interventions for the 1990s.

In general, I agree with the major thrusts of the strategy document with respect to technological issues. The document correctly places a high priority on technological change, specifically on ensuring the maintenance of basic food supplies. It also recognizes the complexity of the challenges to sustaining rapid productivity increases in the 1990s, especially the fact that much of the gains will come from crop and resource management and will require somewhat different strategies to the recent past.

The strategy document partitions countries of Asia and the Near East between low-income agricultural economies, low-income transitional economies, and middle-income industrializing countries. Although there are good reasons for making this distinction, it is not very useful in discussing technological change. Some relatively low income countries of the region, such as India, have strong national research systems, whereas several relatively high income countries of the region, especially in the Near East, still have quite weak systems. Moreover, the technological challenges tend to be divided more by broad agroclimatic zone than by income level - the largely irrigated post-Green Revolution areas of South, Southeast, and East Asia, and the largely dryland areas of the Near East. My more specific comments below focus on the Asian countries.

Research management and priority setting - This issue is correctly identified as important for national agricultural research systems, but it is not clear how USAID can help resolve the problem. Better capacity within national systems to identify priority problems and constraints will surely help but stronger measures may be needed, especially greater participation by the clients of the research system (i.e., farmers) in research decision making. For example, some type of producer or commodity association with a role in financing research could place greater pressure on research managers to address important problems.

Site-specific adaptive research, extension, and rural education - More efficient utilization of available technology at the farm level will require more technical information and better educated, more skilled farmers. What role can USAID play in this area? Should USAID consider offering more support to basic rural education and literacy, and to private sector participation in technology transfer, to complement the public sector adaptive research and extension systems?

Feed grains and oilseeds - Assuming moderate to fast economic growth in the 1990s, the demand for feed grains and oilseeds will increase rapidly. A number of countries in the region already have substantial deficits in these products which will increase in the future. Given that national systems will be under increasing pressure to give high priority to feed grains and oilseeds. Can USAID ignore these crops, even if they compete with domestic US interests? The private sector can play a major role in research for maize, sorghum, and some oilseed crops, but as yet little is known about factors influencing private sector research investments in the region and their impacts.

Sustainability - The document rightly emphasizes the critical role of sustainability in high potential areas. However, the nature of the sustainability problem in higher potential areas is still not well understood. USAID should consider supporting more research on sustainability to better identify problems and evaluate solutions, in some cases through IARC collaboration and regional networks (see below). The nature of most sustainability problems will require research support over a relatively long period.

International and regional collaboration - The strategy document emphasizes international collaboration with IARCs and US institutions, and regional networks. Certainly the more mature national systems of the region need to participate more in the global research system as full partners. The careful choice of themes is critical for the success of regional networks. Problems that are common across a region, such as genetic resistance to major diseases in staple foods, or sustainability in major crop rotations (e.g. rice/wheat) or agroclimatic zones, are good candidates for such networks. However, there is a question whether USAID, which allocates most aid on a bilateral basis, will be in a position to support such networks.

Biotechnology - The document is understandably vague about support for biotechnology research in the region. Clearly each country will have to make important decisions in relation to its needs and resources about the extent and type of its investment in biotechnology research. Each country will also have to consider the complex international environment of biotechnology research, which involves the private sector, IARCs, and developed country research institutes. Despite this complexity, USAID may have a role in helping to rationalize investment of scarce research resources in biotechnology research.

Working Draft

ANE's HUMAN AND INSTITUTIONAL DEVELOPMENT IN THE 1990s:
STRATEGIC CONSIDERATIONS FOR AID

Resource Paper

Marcus Ingle, Director
International Development Management Center (IDMC)
Colleges of Agriculture and Life Sciences
University of Maryland

February 1989

Prepared for the ANE 1989 ARDO Conference in Morocco on
"Responding to the Challenge: ANE's Agriculture and Rural
Development Strategy for the 1990s" in collaboration with
ANE/TR/ARD staff through a Cooperative Agreement with the
Development Program Management Center of OICD/USDA.

TABLE OF CONTENTS

- I. INTRODUCTION
- II. THE CHANGING ANE AGRICULTURAL CONTEXT: WHY ARE HUMAN AND INSTITUTIONAL CONCERNS CENTRAL?
 - A. ANE Regional Trends and Agricultural Development Opportunities
 - B. The Crosscutting Dimension: Human and Institutional Development
- III. HUMAN AND INSTITUTIONAL DEVELOPMENT IN ANE: WHERE ARE AID'S STRENGTHS?
- IV. PROPOSED ANE HUMAN AND INSTITUTIONAL STRATEGY: WHAT SHOULD AID DO?
 - A. Strategy Considerations and Objectives
 - B. Strategy for Low Income Agricultural Economies
 - C. Strategy for Low Income Transitional Economies
 - D. Strategy for Middle-Income Industrializing Economies
- V. IMPLEMENTING THE STRATEGY: HOW SHOULD AID PROCEED?
- VI. APPENDIX
 - A. Table I
 - B. Table II
 - C. Table III
- VII. SELECTED REFERENCES

SECTION I

INTRODUCTION

In his remarks to the recent AID/ANE Agriculture Symposium, Jim Lowenthal characterized the 1990s as "...the decade of sustaining technical and institutional excellence in support of economic development." The theme of sustaining institutional excellence was initially and rather unexpectedly embraced as a key challenge in many ANE countries during the 1987 ANE ARDO Conference in Bangkok. Participants of the 1988 Agricultural Symposium also identified human capital formation and institutional capacity enhancement as themes that would characterize the 1990s in noting,

"Although the relative need will vary among countries, in general AID would seem to have a comparative advantage in developing and supporting programs which enhance resource productivity. This notion would suggest an AID program focused on:

1. Promoting human capital formation in areas relating to resource management and development in the agricultural sector;
2. Enhancing the capacity--in the United States and in the ANE region--for understanding the management of the macroeconomic and food and agricultural policy;
3. Playing a greater role in donor coordination of country programs and in assisting other donors in the design of development programs."

Thus, as AID enters the 1990s, one strategic focal area is clear -- strengthening and maintaining the reservoir of human capital and the institutions that mobilize agricultural and rural sector resources for productive developmental purposes.

While this strategic focus is clear, and is an integral part of the Draft ANE Agricultural and Rural Development Strategy in the 1990s paper, several issues remain about the nature of the human and institutional development needs in the different groupings of ANE economies, and the specific characteristics of a politically acceptable and administratively feasible response for AID. The major issues include:

- * Why are human and institutional concerns central to ANE agriculture and rural sector growth during the 1990s?
- * Where are AID's agricultural-related human and institutional development strengths?

- * What should AID's strategic response be to ANE's human and institutional development needs, both overall, and within each grouping of ANE economies?
- * How should AID proceed with the implementation of the human and institutional development dimension of the Strategy?

This Resource Paper, prepared as a supplement to the ANE Agricultural Strategy document for discussion at the 1989 ANE ARDO Conference in Morocco, is an initial attempt to address these issues. The paper will be revised based on Conference deliberations.

75

SECTION II

THE CHANGING ANE AGRICULTURAL CONTEXT: WHY ARE HUMAN AND INSTITUTIONAL CONCERNS CENTRAL?

The ANE Strategy document accords a central role to the 'human and institutional development' theme. This section explains the rationale for this decision. It places the human and institutional development theme in the broader ANE development context, demonstrates the growth-related investment opportunities for this theme in relation to the conventional agriculture themes, and highlights the crosscutting and instrumental nature of human and institutional development concerns within the agricultural adjustment process.

A. REGIONAL AGRICULTURAL DEVELOPMENT TRENDS AND OPPORTUNITIES

The ANE Agricultural Strategy document reviews the major structural adjustments that have occurred in several groupings of regional economies along with the key trends that can be expected to shape the region's agricultural future into the 1990s.

To summarize, over the last two decades there have been varying but significant adjustments in three different groupings of ANE countries where AID has major interests. There is a small but significant group of countries that, for a variety of reasons, has stagnated to a point where growth in cereal production has failed to keep pace with population growth. These countries are referred to as the 'low income agricultural economies' and include Bangladesh, Nepal and Burma. There is a second group of countries, the largest in number, that has pursued steady adjustment with limited success in income increases and employment generation which has set the stage for continued adjustment and growth in the future. The countries in this second grouping are referred to as the 'low income transitional economies' and include the South Pacific, Philippines, Indonesia, India Pakistan and Sri Lanka in Asia and Yemen, Egypt and Morocco in the Near East. Finally, a few countries have already made the transition to middle income status by solving their grain self-sufficiency problems. They are well along in establishing an industrialization policy and have basic administration, legal and monitoring structures in place for sustained resource mobilization and environmental protection. This third grouping, referred to as 'middle-income industrializing economies', includes Thailand, Tunisia, Jordan and Oman. The structural composition of these economies has changed significantly, albeit in different ways for each of the country groupings. Most of these countries benefit from surpluses in agricultural output, increasing employment in agricultural production and the beginnings of non-agricultural sector expansion. Other adjustments are evident in technological advancement, diet,

sources of employment, equity, natural resource use, and institutional complexity.

As the region enters the 1990s, the Strategy document outlines a number of emergent trends, changes, and development issues for each of the three groupings of economies in terms of six common themes: policy and trade analysis, technical change, natural resources, infrastructure, private sector agro-processing, and human and institutional development. Based on this assessment, a major overriding issue emerges:

'How can each group of ANE economies best respond to global changes and continue to influence and encourage sustained agriculture development, while enhancing equity and conservation of the natural resource base?'

In response to this question, the document premises the need for "demand-led" agricultural development and structural adjustment strategy. The objective of this demand-led approach is to expand the employment and income of population living in rural areas. To accomplish this, private and public resources need to be committed to sustaining and increasing the rural employment base already established through the expansion of high yielding cereal technologies on productive agricultural lands, as well as identifying and supporting public and private investments to develop and promote new, environmentally sound, agriculture-related growth. The Strategy document then proceeds to identify a number of specific opportunities for growth-related adjustments in each of the common theme areas for the three groups of economies as summarized in Table 1.

The specific context of the human and institutional development opportunities has changed markedly in the last two decades and promises to alter more quickly during the 1990s. ANE economies have witnessed a substantial broadening of the human capital base and a substantial increase in the number and complexity of governmental, private, and NGO agricultural development institutions. Many countries are demonstrating a mature response to critical social issues such as income equity and the productive roles of women and youth in the generation of income, technical innovation, and natural resource preservation.

In the future, several additional trends are likely as outlined in the 1987 ARDO Conference. First, the inability of existing central governments to provide basic goods and services to both urban and rural populations will further drive the development of more decentralized but integrated institutional structures. By the end of the century, countries' institutional settings will be characterized by a much increased complexity in institutional forms of overlapping memberships and of resource exchange pattern. Increasingly, the pace of technology transfer -- in organizations, between organizations, and globally -- will be

determined by advances in information technology, not by agronomic research on production technologies. Second, women and youth will be making more significant contributions to political, economic, and social spheres of national and local-level activity in both public and private sector organizations. Gender role sensitivity will be integrated into the policy and procedures of many more agricultural and rural sector institutions. Finally, AID's relationships with countries in the region will be transformed, both in composition and in the level of resource flows.

These trends will have a differential impact on the human and institutional development opportunities for agricultural growth in each of the three groups of economies as presented below.

1. Opportunities in the Low Income Agricultural Economies

Program investments in these economies tend to follow traditional agricultural investment patterns, concentrating on increasing the per capita availability of basic food grains. Common themes here are coordinated investments in agricultural research, technology diffusion, input supply, rural public services, policy analysis and human capital, combined with increasing awareness of natural resource implications of production-oriented investments. Underlying the above is the basic need for trained personnel and strengthened institutions at all levels, and particularly in the research and technology adaptation, analysis, and management fields. There is an urgent need to enhance and sustain the effective performance of key policy, research, extension, input supply, output processing, and local level institutions involved in the major cereal production process. This will include focused interventions that consider the appropriate mix of governmental and private entities, the key role of women and youth in productive activities, and the issue of self-financing to at least partially offset increasing maintenance costs associated with research, infrastructure related services, and governmental personnel systems. A large part of any development strategy in these economies will include substantial support for professional education and training, initially outside the country, as domestic institutions are being improved.

2. Opportunities in the Low Income Transition Economies

The low income transitional economies require a strengthened human and institutional base to successfully make the necessary policy and program adjustments discussed above. The major needs include (a) more efficient interorganizational structures for analysis, research, and management of the adjustment process, (b) a strengthened institutional infrastructure of laws and rules at the central and local/urban levels, and (c) upgraded technical and managerial personnel in transitional areas such as agro-processing, export promotion, and crop diversification.

To support the demand-led strategy, enhanced and sustained institutions, many of them crosscutting one or more organizations, will be required to support policy analysis and implementation management, research on trade adjustments, improved utilization of infrastructure, new information systems to support decision making, and better management of the natural resource base. Private and NGO institutions will be called upon to perform a number of expanded roles involving input supply and output marketing, export financing, employment of rural youth, and education. Adjustments in agricultural activities will necessitate special consideration of gender roles, minority concerns, and distributional issues. Continued attention will need to be given to specialized education outside the country with a majority of technical and managerial training being provided in country.

3. Opportunities in the Middle-income Industrializing Economies

The middle-income industrializing countries have made substantial progress in developing the basic human and institutional infrastructure in support of a modern agricultural sector. Most of these countries, however, lack the sophisticated internal structures and external global linkages which will allow them to accelerate and sustain a rapid development process. As the agro-industry base expands and technology development becomes more capital intensive, new and more adaptive institutional structures and processes are needed for formulating and implementing increasingly complex policies, for staying abreast of rapidly changing technologies in the biological and information sciences, and for responding to international trade opportunities. For such countries to continue to develop, high quality domestic institutions and networks that tie individuals and institutions together in a system of shared ideas and energize the links between domestic institutions and individuals and various centers of scientific and analytical excellence throughout the world are essential. Strengthening domestic networks and linking them to existing international networks should encourage and sustain the plurality of ideas and institutions that a modern state needs to deal with a dynamically changing internal and external environment. In selective, high-payoff areas such as environmental protection or biotechnology, these countries also require continuing programmatic support for new institutional development initiatives. At this stage of development, these countries have an opportunity to deal with gender, minority, and equity issues in a more timely and systemic manner. Finally, there is a need in these countries (for political, technical, and financial reasons) to form institutional educational relationships with nearby lower income economies for the purpose of technical cooperation and education.

B. A CROSSCUTTING DIMENSION: HUMAN AND INSTITUTIONAL DEVELOPMENT

Of the common agricultural development themes discussed in the Strategy document and Table 1, the human and institutional development theme stands apart from the others in that it crosscuts each of the others and is integral to their accomplishment. The human and institutional development dimension, therefore, is central to the agricultural economies of the ANE countries in that this dimension is a necessary but not sufficient component of the other common themes. Stated simply, each group of economies will need to depend upon improved human capital and institutional agility to guide and facilitate their agricultural adjustment process.

This need was clearly understood by the participants of the 1987 ARDO Conference in Bangkok as they noted,

"Human capital and institutional agility will determine the nature and pace of economic development in the ANE region: trade and modern telecommunications will continue significantly to integrate the world; excellence and entrepreneurship in the management and application of science and technology is a central strategic issue for all LDCs; and agriculture and rural development will be infinitely more complex as land and water frontiers are reached and income growth leads to a complex set of new consumer demands"

J. Mellor also noted the important instrumental role of human capital and institutions in a demand-led agricultural strategy in his recent remarks on 'Agricultural Development Opportunities for the 1990s -- The Role of Research' as follows:

"A different view arises if growth is seen largely as the product of technological development that raises factor productivity, which in turn is the product of growth of human capital and the institutions that mobilize that human capital for productive purposes."

Finally, the participants of the ANE Agriculture Symposium in 1988 noted the following as one of the central themes for the 1990s:

"A need for human capital formation to support sustained development, including a broad range of activities from economic policy management to research resource allocation to private sector involvement in the economic development process."

SECTION III

HUMAN AND INSTITUTIONAL DEVELOPMENT IN ANE: WHERE ARE AID'S STRENGTHS?

AID has been involved in the development of agriculture-related human capital and institutions for several decades. This section briefly reviews the history of AID's experience with human and institutional development and summarizes the areas of comparative advantage. This information will help inform the considerations for AID's human and institutional development strategy.

A major segment of AID's development and security assistance portfolio in agriculture and rural development has consistently been directed at human capital formation and institutional strengthening activities. Support has come in a variety of forms including: long term participant training, technical assistance, institution building contracts, performance improvement interventions, in-country action-training workshops, institutional sustainability assessments, etc. Through continuous efforts such as these, AID has developed a substantial capacity in the following areas:

1. Educating agricultural scientists and administrators.
2. Developing institutes of higher agricultural education.
3. Strengthening agricultural research and extension organizations.
4. Mobilizing the U.S. Land Grant University and private sector in support of a wide variety of agriculture-related human and institutional development activities.
5. Operating and maintaining rural infrastructure.
6. Building the analytical capability of policy entities.
7. Employing a variety of assistance modalities including projects, programs, sector loans, host country contracts, IQCs, PASAs, etc.

The experience of AID in this area has been recently reviewed by D. Rondinelli in his book, Development Administration and U.S. Foreign Aid Policy, 1987, available in AID libraries. Although not without shortcomings, his assessment argues that AID has assembled an impressive number of strengths in the human and institutional development area. For the future, AID's comparative advantage would appear to lie: (1) in its impressive track record of human capital development in technical and managerial subjects; (2) in its individual and institutional needs assessment capability, including new methods of

institutional sustainability; and (3) in the expertise it brings to programming that combines high degrees of working in the bureaucratic structure combined with considerable procedural flexibility.

SECTION IV

PROPOSED HUMAN AND INSTITUTIONAL DEVELOPMENT STRATEGY: WHAT SHOULD AID DO?

Earlier we demonstrated the central developmental role of agile institutions, supported by high quality human resources, in the agricultural development of each ANE grouping of economies. In addition, AID's substantial human and institutional development experience, and areas of comparative advantage, were briefly reviewed. This section draws on the earlier discussion and the draft ANE Agricultural Strategy document to propose a human and institutional development strategy for ANE.

A. STRATEGY CONSIDERATIONS AND OBJECTIVES

The ANE Strategy document articulates six critical themes for ANE agricultural development assistance investment in the 1990s. A recurrent and integral dimension in each of these thematic areas is the central role of human and institutional development. (See Table 2.) For each group of ANE economies, there exists a demonstrable need for responsive, flexible institutions supported by appropriate laws and rules and guided by an educated and committed cadre of public and private sector officials. Therefore, ANE's overall objective for the human and institutional dimension of its agricultural strategy should be to 'enhance and sustain the agility of human capital and development institutions.'

The key issue for AID is not whether a strong ANE agricultural program involvement is needed and justified in this thematic area. Rather, the issue is how to appropriately select and diligently pursue specific human and institutional development activities in view of various country groupings, AID's strengths and expected resources, and the long-term horizons needed for returns on investment.

Several considerations can assist in selecting and implementing appropriate activities in support of the human and institutional development strategic objective. First, the ultimate criteria for success of human and institutional development efforts should be the extent to which they leave behind capacity for the continued performance (e.g., the institutional sustainability) of key analysis, research, and management functions, and not as ends in themselves. AID's agricultural and rural development experience with agricultural research, higher education, and rural development institutions of the last several decades strongly supports this position.

A second consideration is that the appropriate human and institutional development response should depend on and be suited to the type of economy involved and the nature of the specific problem. Therefore, as a first approximation for the most appropriate type of response, it makes sense to look at the different categories of economies outlined in this strategy. For illustration, institutional development activities are more likely to take place within single organizations for low-income agricultural economies as compared to interorganizational settings in low income transitional economies.

The third consideration is that there are several distinct human development and institutional development approaches, and that a considerable knowledge base on the relative effectiveness and costs of these approaches has been assembled over the last 10 years. This knowledge base, if systematically applied, can greatly increase the beneficial impacts derived from human and institutional development investments. ARDOs need either to learn these approaches, or work with an expanding cadre of human and institutional development professionals, in planning and implementing program activities in this area. One example where this is being done is in ANE's institutional sustainability initiative. This effort is bringing together ARDOs and institutional development professionals with an emphasis on higher agricultural education institutions.

The programmatic focus of AID's human and institutional development strategy will vary between the three groups of ANE economies. A description of the particular form that the strategy is likely to take, along with shifts in emphasis from the past, is presented in the remainder of this section.

B. STRATEGY FOR LOW INCOME AGRICULTURAL ECONOMIES

For these countries, ANE's human and institutional development strategy for the 1990s will undergo several shifts. These include:

1. Moving from the strengthening of the reservoir of human capital to an emphasis on the strengthening of organizational capital.
2. Moving from capacity building to an emphasis on enhancing and sustaining the performance of agricultural institutions, and
3. Moving from the pursuit of many different human and institutional development objectives, mostly through the public sector, to the pursuit of a selected set of objectives in both public and private sector organizations.

The primary human and institutional development focal areas and associated approaches for these economies include:

1. Enhancing and sustaining the effectiveness of a range of agricultural institutions involved in cereal production with emphasis on their research, analysis and management functions. The approach to be used here will incorporate lessons of institutional development and sustainability into ongoing and new organization-based projects related to ANE's strategic themes including a focus on elaborations of appropriate laws, rules and structures to facilitate the agricultural adjustment process.
2. Developing the critical mass of technical and management skills in key cereal production areas. In this area AID's approach will be to continue to support U.S. and in-country education and training for scientists and administrators/managers.
3. Upgrading basic skills for the rural labor force, being sensitive to gender role issues, in low productivity areas to prepare for off-farm employment. In this area, AID should encourage countries to invest in basic and vocational education.

A list of probable governmental, private and NGO, and international institutions involved in the implementation this strategy along with key roles of each is summarized in Table 3.

C. STRATEGY FOR LOW INCOME TRANSITIONAL ECONOMIES

The human and institutional development strategy for the transitional economies will also evidence several major shifts in the 1990s. These include:

1. Moving from the strengthening of the reservoir of human capital to an emphasis on the strengthening of interorganizational capital,
2. Moving from capacity building of agricultural institutions to an emphasis on enhancing and sustaining the efficient performance of interorganization program structures and processes, and

3. Moving from the use of 'project' modes accompanied by micro-management at the AID field level to the expanded use of 'program' modes accompanied by macro management at the AID subregional level.

The primary focal areas and associated approaches for the human and institutional development strategy in the transitional economies include:

1. Enhancing and sustaining the efficiency of interorganizational structures responsible for policy analysis, research and management of the adjustment process. The approach to be used by AID in doing this will incorporate recent lessons of interorganizational development and sustainability into new country programs within the ANE strategic theme areas.
2. Enhancing agricultural and rural sector institutional infrastructure including: (a) central functions of personnel, information and financial management and (b) local/urban functions of service delivery, maintenance, cost recovery, interest articulation, etc. To accomplish this AID will support country program investments in 'institutional infrastructure' at the central, regional and local levels to include information systems, financial management systems, infrastructure planning and maintenance, etc.
3. Upgrading specialized education in new technical and management fields via a continuation of U.S. and in-country education and training programs. This may include the strengthening of governmental and private educational institutions.

The human and institutional development strategy for the transitional economies involves a broader array of institutions than the strategy for the agricultural economies. To handle this increased complexity, AID will need to play a more facilitative role and work in a program mode where major ownership for planning, implementation, and results resides with the country. The major institutions and their roles are summarized in Table 3.

D. STRATEGY FOR MIDDLE-INCOME INDUSTRIALIZING ECONOMIES

ANE's proposed human and institutional development strategy for the 1990s represents a major break from the current approach. Specifically, the contrasts can be viewed as follows:

1. Moving from a pursuit of the LDC 'graduate approach' where all AID assistance is gradually phased out to the pursuit of a long range 'mutual benefits' approach where AID remains actively involved in a mature set of relationships albeit with a much different and reduced staff composition.
2. Moving from the strengthening of the reservoir of human capital to an emphasis on the strengthening of key scientific and executive leadership capital in cooperation with major U.S. universities, corporations and other international institutions.

The major human and institutional development focal areas and AID approaches encompassed by this shift in strategy include:

1. Provide long-term support for selective, mutually beneficial, transnational networks for technical and managerial exchange. To do this AID should employ innovative arrangements permitting the evolution of a mature relationship such as a foundation or a private holding company.
2. Provide selective support for investments in high-priority institutional development initiatives related to specific agricultural program areas such as environmental protection, biotechnology, information systems, or trade liberalization. AID should be prepared to provide countries with long-term program assistance for these purposes.
3. Develop technical assistance and training linkages with other low-income agricultural and transitional economies to support their development and support the U.S.'s long term economic interests. In select cases, AID would provide program funding to strengthen a middle income country's performance and capacity to provide technical cooperation and training services for other countries on a cost recovery basis.

Implementing the human and institutional development strategy in the middle-income economies will require a different, more collaborative posture on the part of ARDOs. It will also involve a new set of diffuse networking roles with a range of highly competent individuals and organizations. The primary institutions and roles are summarized in Table 3.

SECTION V

IMPLEMENTING THE STRATEGY: HOW SHOULD AID PROCEED?

Implementing the human and institutional development strategy described above will require a modest reorientation of AID program focus, modes of operation, staffing patterns, and financing. In this section, we limit the discussion to implied changes in program focus (e.g., objectives and institutional placement of AID's human and institutional development initiatives) and to appropriate AID implementation modes. Two sets of implementation modes are presented -- those for human development initiatives and those for institutional development initiatives. The issues of AID's staffing patterns and financing in support of human and institutional development activities are reserved for discussion at the ARDO Conference.

The analysis in this paper, coupled with lessons of AID's human and institutional development experience, suggest several general guidelines for ARDOs to follow in implementing the human and institutional development dimension of the ANE Agricultural and Rural Development Strategy:

Guideline 1: Human and institutional development initiatives can be handled as discrete activities such as an 'agricultural education project' or they can be incorporated as integral parts of assistance efforts in the other five agricultural thematic areas: agricultural policy and planning; trade and market development; agricultural production and processing technology; natural resources management; and, infrastructure planning and management. In the agricultural production theme area, for example, a human development component can be built in as a complement to the project's technology generation and transfer activities.

Appropriate objectives for these human and institutional development initiatives by theme area and economic grouping are presented in Table 2. Suggestions on appropriate institutional focus and roles for each initiative are outlined in Table 3.

Guideline 2: For "human development initiatives", e.g., those AID-supported activities where individuals are the primary focus, the following implementation modes are suggested as most appropriate:

Low Income Agricultural Countries

- In targeted high priority agricultural institutions, support in-country and U.S. training and education for individuals in technical and managerial skill areas. Use conventional participant training mechanisms.
- In secondary, vocational and higher agricultural education institutions, support basic and agricultural skill development for rural workers and the general populace. Use conventional technical assistance modes in support of non-formal education and literacy development.

Low Income Transitional Countries

- For targeted organizations and interorganizational program areas, support on-site action-training and on-the-job training programs to upgrade critical technical and managerial skills. Use conventional project and non-project technical assistance mechanisms.
- In critical skill areas of future agricultural development importance (i.e., agribusiness, biotechnology, information management), support education at the M.A. and Ph.D. levels in the U.S. for technical and manager staff. Use conventional participant training mechanisms.

Middle Income Industrializing Countries

- For key organizations involved in cross-national networks, support special scientific and leadership exchange relationships. Develop new, co-managed mechanisms for international travel, tele-conferencing and specialty area skill enhancement.
- In newly emergent, high priority development institutions (such as R&D/S&T institutes/foundations) support on-site and U.S. specialized training and education for individual staff. Use conventional project and non-project participant training mechanisms.

(AID-relevant guidance on the substantive content of human development initiatives is best summarized in, Management Training Strategies for Developing Countries, by J. Kerrigan and J. Luke,

1987, available in AID libraries. This book sets out the four basic approaches to human development -- formal education and training, on-the-job training, action training, and non-formal training -- and provides guidance on the appropriate selection and use of each based on lessons of experience from AID and other donor agency experience.)

Guideline 3: For "institutional development initiatives", e.g., those AID-supported activities where organizations or interorganizational structures are the primary focus, the following implementation modes are suggested as most appropriate:

Low Income Agricultural Countries

- In targeted public sector institutions, enhance and sustain effectiveness through long term institutional strengthening efforts. Use conventional technical assistance mechanisms augmented by specialty services for institutional sustainability and other emergent concerns.

-In selected higher agricultural educational institutions, develop in country capacity for research and training in high priority production areas. Use collaborative technical assistance modes with experienced U.S. institutions.

Low Income Transitional Countries

- In high priority program areas (encompassing both public and private sector organizations), enhance and sustain efficiency through tailored, on-site 'program management improvement' efforts, typically including an applied research component. Use S&T and ANE Bureau buy-in arrangements to access emergent program management and institutional sustainability expertise.

-Where public institutional infrastructure in support of private sector expansion is weak, support innovative public-private sector strengthening efforts. Use special buy-in arrangements with S&T and ANE Bureau centrally-financed projects.

Middle Income Industrializing Countries

- For targeted scientific and leadership networks, support innovative technical cooperation arrangements with mature U.S. universities and enterprises. Develop new, low AID-resource intensive long term mechanisms for sustained country-U.S. cooperation like the establishment of a development foundation.

- In areas where the country has substantial agricultural and rural development expertise of relevance to neighboring countries, support the development of in-country technical cooperation capacity. Use specialized co-managed technical cooperation mechanisms building on the successful experience of other more advanced countries.

(AID-relevant guidance on the substantive content of institutional development initiatives is best summarized in Managing Organizational Change, by J. Hage and K. Finsterbusch, 1987, available in AID libraries. This book describes the three major strategies of institutional development -- the learning process approach, the performance-sustainability improvement approach, and the rural development capacity-building approach -- based on lessons of AID and other donor agency experience. It also reviews the range of institutional development tactics available for improving efficiency, effectiveness, and sustainability.)

Additional implementation guidance on human and institutional development approaches, mechanisms, and resource requirements can be found in the 'Selected References' section at the end of this paper.

TABLE I: ANALYSIS OF ANE AGRICULTURE AND RURAL SECTOR CHARACTERISTICS AND STRATEGIC GROWTH OPPORTUNITIES BY FUNCTIONAL COUNTRY GROUPINGS

GROUPINGS OF AID RELATED ANE COUNTRIES BY FUNCTIONAL CHARACTERISTICS	STRATEGIC OPPORTUNITIES IN ANE COUNTRIES FOR FUTURE GROWTH-RELATED STRUCTURAL ADJUSTMENTS					
	Income and Employment (Policy, Trade, Input supply)	Technical Change	Natural Resources	Infrastructure (Irrigation, public services, etc.)	Private Sector Agro-Processing	Human and Institutional Capital
I. LOW INCOME AGRICULTURAL ECONOMIES	<ol style="list-style-type: none"> 1. Focus on increasing per capita availability of basic food grains through coordinated production investments 2. Input supply must be reliable mix of government and private supply demands 3. Efficient use of subsidies to encourage input demand 4. Create capacity for policy analysis and price stabilization 	<ol style="list-style-type: none"> 1. Invest in agricultural research and technology diffusion in basic grains <ol style="list-style-type: none"> a. more effective use of available scarce resources b. develop institutional mechanisms for defining agendas, allocating resources, and adapting to changes c. strengthen linkages to outside 	<ol style="list-style-type: none"> 1. Increase in awareness of natural resource implications <ol style="list-style-type: none"> a. establish programs for environmental monitoring b. make decision makers aware of true benefits and costs of production strategies 	<ol style="list-style-type: none"> 1. Irrigation and transportation services are critical; government must have a role in major systems; users involved in minor schemes 2. Transportation requires policy for private involvement and tax mechanisms for adequate financing 3. Basis of growth is expansion of infrastructure 	<ol style="list-style-type: none"> 1. Strengthen input supply organizations in private sector with potential for self-financing 	<ol style="list-style-type: none"> 1. Invest in range of performance improvements for: <ol style="list-style-type: none"> a. policy formulation and implementation b. technology development and transfer c. natural resource assessment d. infrastructure management e. government support for private sector 2. Train manpower in research, analysis and management—Outside Education/Inside Training
II. LOW INCOME TRANSITIONAL ECONOMIES	<ol style="list-style-type: none"> 1. Source of growth in income/employment is dependent on growth outside traditional agricultural sector in service and industry 2. Policy apparatus to move economically preferred approaches through political system 3. Trade liberalization through open market regime for demand driven agricultural system involves policy changes 4. Open domestic markets; link international 	<ol style="list-style-type: none"> 1. High investment in maintenance research of cereals 2. Improvements will come from improved "crop management" 3. Strong integrated M.I.S. in research establishments to manage allocation between cereal and secondary crops in irrigated and dry land areas 	<ol style="list-style-type: none"> 1. Outmigration for employment will allow less intensive agriculture that is less environmentally stressful 2. Careful management of natural resource base required for sustained growth in agricultural employment and income 3. Strengthen legislature, planning, and administration capacity in natural resources management 4. Links to population in fragile areas 	<ol style="list-style-type: none"> 1. Basis of growth is improvement of management efficiency of existing resources 2. Infrastructure in support of agro-processing investments 3. Improve import/export administration, import licensing mechanisms and port procedures 4. Public financing of trading companies 5. Develop basic commercial laws and capital markets 	<ol style="list-style-type: none"> 1. As locus of employment shifts from agriculture, importance of food processing and marketing increases 2. Need shift in reliance on government to private sector 3. Shifts in demand for processed foods provide basis for agro-processing and set technical and managerial base for exports 4. Stable industrial policies (tax, equity) 	<ol style="list-style-type: none"> 1. Human and institutional capacity required to make necessary policy and program changes <ol style="list-style-type: none"> a. Improve national capacity to identify outdated policies b. sustained growth in multiple organizations, preferably outside government c. strong M.I.S. capacity d. capacity building for structural adjustment of trade to underwrite risks e. resource management capacity
III. MIDDLE INCOME INDUSTRIALIZING ECONOMIES	<ol style="list-style-type: none"> 1. Policy to support selective initiatives (program support); encourage and sustain plurality of ideas and institutions; modern state needs to deal with dynamic context 2. Collaborative enhanced trade with world 	<ol style="list-style-type: none"> 1. Energize links between domestic institutions and centers of scientific and analytical excellence 2. Further development of strong scientific and educational base in emergent technology areas 3. Develop series of independent research and development institutions 	<ol style="list-style-type: none"> 1. Have installed the basic administrative, legal, and monitoring structures to implement environmental protection legislation 	<ol style="list-style-type: none"> 1. Public efforts to assist technical and managerial development of less developed neighbors, and third-country training in domestic universities 	<ol style="list-style-type: none"> 1. Balanced investment between public and private sector in biotechnology; 2. Self-financing market operation for trading companies 	<ol style="list-style-type: none"> 1. Support for selective national initiatives and institutions 2. Continue to develop high quality domestic institutions and networks (Phase out of direct donor involvement and use more collaborative mechanisms)

(Source: Summarized by IDMC/UM from Draft "ANE AGRICULTURE DEVELOPMENT STRATEGY FOR 1990's," dated January 6, 1989, pp. 1:19)

Table II: Summary of suggested ANE human and institutional dimensions by country grouping and AID/ANE Agricultural Strategy Themes

GROUPINGS OF ANE COUNTRIES	KEY HUMAN AND INSTITUTIONAL DEVELOPMENT DIMENSIONS IN SUPPORT OF ANE STRATEGIC THEMES					
	1. Agricultural Policy and Planning	2. Trade and Market Development	3. Agricultural Production and Processing Technology	4. Natural Resources Management	5. Infrastructure Planning and Management	6. Human and Institutional Development
<p>I. LOW INCOME AGRICULTURAL ECONOMIES</p> <p>"... projects would continue focusing on improving basic cereal production so that per capita availability increases."</p>	<p>A. Strengthen capacity in government agricultural institutions for efficient and effective policy formulation, implementation, monitoring and evaluation</p> <p>B. Develop analytical capability for subsidy use to encourage input demand and price stabilization</p>	<p>A. Strengthen mix of public and private input supply and marketing institutions for high priority cereal crops to improve performance and sustainability</p> <p>B. Improve capacity of government to analyze internal trade flows and formulate/implement trade policy</p>	<p>A. Develop critical mass of technical expertise for specific, high-priority crops (e.g., cereal production)</p> <p>B. Develop vertically integrated research linkages with farmers, international centers and extension, the marketer of research solutions</p> <p>C. Make management improvements in MAPS</p>	<p>A. Develop capacity for assessment and monitoring of natural resources</p> <p>B. Improve environmental cost and benefit accounting systems in government</p> <p>C. Education to promote awareness of environmental issues for government policy makers and public</p> <p>D. Build capacity for environmental soundness of specific interventions</p>	<p>A. Strengthen the performance and capacity of central and local organizations with responsibility for irrigation and transportation related to major cereal crops by technical cooperation and training</p> <p>B. Develop capacity of analysis of institutional sustainability and maintenance policies</p>	<p>A. Strengthen capacity in institutions involved in cereal production including:</p> <p>(a) Improved Analysis for effectiveness and sustainability including gender issues, information requirement linkages</p> <p>(b) Improved research and technology transfer</p> <p>(c) Improved management of adjustment, e.g. laws, rules</p> <p>B. Strengthen critical mass of technical and managerial personnel in cereal production organizations, both public and private</p>
<p>II. LOW INCOME TRANSITIONAL ECONOMIES</p> <p>"... programmatic emphasis could shift to activities that facilitate the development of complex markets ... to ... transfer resources in and out of the agriculture sector."</p>	<p>A. Further strengthen agricultural policy organizations in public and private sector to monitor and analyze demand-led growth patterns, approaches and move through the political system</p> <p>B. Strengthen governmental laws, structures and information systems shifting to commercial agriculture</p>	<p>A. Strengthen policy appropriately to handle trade liberalization in a demand-driven agriculture system through technical cooperation</p> <p>B. Develop capacity for structural adjustment of trade policy and administration apparatus</p>	<p>A. Build capacity for analysis of domestic demand for agro-processing including new linkages and organizational models</p> <p>B. Develop capacity for research on agro-processing</p> <p>C. Develop research for capability on how extension can be made more efficient and effective</p>	<p>A. Build solid analysis (including monitoring and impact assessment) capability for environmental costs and benefits of specific projects</p> <p>B. Develop new models of organization to implement watershed-wide initiatives</p> <p>C. Build capacity to assess indirect natural resource effects of agro-industry and infrastructure investments</p>	<p>A. Build analysis capability (including use of information sciences for data collection and analysis) for monitoring infrastructure service</p> <p>B. Strengthen planning capability for new infrastructure investments in support of agro-processing and marketing</p>	<p>A. Strengthen capacity in inter-organizational structures responsible for analysis, research and management of the demand-led adjustment process</p> <p>B. Upgrade institutional infrastructure for adjustments including laws, rules and structures crosscutting agricultural activities at national and local levels. Emphasize issues of information and urbanization</p> <p>C. Strengthen technical and management skills</p>
<p>III. MIDDLE INCOME INDUSTRIALIZING ECONOMIES</p> <p>"... programmatic emphasis could move to the maintenance of country institutions capable of carrying out the analysis required to make necessary adjustments"</p>	<p>A. Strengthen capacity for selective initiatives and institutions which will encourage and sustain an agile policy apparatus to facilitate an agriculturally based industrialization process</p> <p>B. Support long-term collaborative linkages with U.S. centers of policy excellence</p>	<p>A. Strengthen capacity for analysis of external markets and trade opportunities</p> <p>B. Support collaborative networks for trade emergent high technology areas where country has comparative advantage</p>	<p>A. Develop institutions for biotechnology exchange and collaborative research</p> <p>B. Support scientific networks for high potential production and agro-processing technologies</p> <p>C. Upgrade information management capability in support of new high technologies</p>	<p>A. Develop and strengthen environmental protection institutions</p> <p>B. Develop collaborative mechanisms for work on common methodological and technical problems</p> <p>C. Further strengthen agronomic and policy research and analysis</p>	<p>A. Support the continuation of collaborative networks between public and private officials in country and U.S. institutions around issues of:</p> <p>(1) infrastructure policy (2) information systems (3) system maintenance (4) laws and standards</p>	<p>A. Support mutually beneficial networking for human and institutional development building on joint comparative advantage and established relationships</p> <p>B. Strengthen capacity in selective high priority institutional investments</p>

(Source: Developed by IDMC/UM b

1 ANE DRAFT AGRICULTURAL STRATEGY FOR 1990's, dated Jan

1989)

26

TABLE II: SUMMARY OF KEY INSTITUTIONS AND ROLES ASSOCIATED WITH IMPLEMENTATION OF THE HUMAN AND INSTITUTIONAL DEVELOPMENT DIMENSIONS OF AN AGRICULTURE AND RURAL STRATEGY FOR 1990S

GROUPINGS OF ANE COUNTRIES	HUMAN AND INSTITUTIONAL DEVELOPMENT OBJECTIVES OF ANE/AFD STRATEGY FOR 1990S	COUNTRY-GOVERNMENTAL		COUNTRY-PRIVATE AND NGO		INTERNATIONAL-OTHER	
		Institutions	Implementation Roles	Institutions	Implementation Roles	Institutions	Implementation Roles
I. LOW INCOME AGRICULTURAL ECONOMIES	A. ENHANCE AND SUSTAIN PERFORMANCE OF PRODUCTION INSTITUTIONS	<ol style="list-style-type: none"> 1. Agt. Mkt. Policy Unit 2. Agt. Research Centers 3. Extension services 4. Input distributors 5. Output markets 6. Infrastructure agencies 	<ul style="list-style-type: none"> - Analyze and formulation - Adoptive and assistance research - Technology adaptation - Supply inputs - Market products - Irrigation and Transportation service - Provide basic administrative services 	<ol style="list-style-type: none"> 1. Input distributors 2. Output markets 3. NGOs at central and local levels 	<ul style="list-style-type: none"> - Supply inputs - Market products - Disaster relief - Implement projects - Build local capacity 	<ol style="list-style-type: none"> 1. AID field mission 2. AID/Washington 3. U.S. universities/teachers 4. International agt. research centers (ARC) 	<ul style="list-style-type: none"> - Policy dialogue - Project assistance - Policy and project support - Provide TA/training
	B. DEVELOP 'CRITICAL MASS' OF TECHNICAL AND MANAGERIAL SKILLS FOR CENTRAL PRODUCTION	<ol style="list-style-type: none"> 1. Higher educational institutions 	<ul style="list-style-type: none"> - Basic Agt. Education - Specialized courses/ knowledge/ Technology 			<ol style="list-style-type: none"> 1. AID field mission 2. U.S. Educational institutions 	<ul style="list-style-type: none"> - Basic Research - Assist efforts with adaptive research - Participant Placement - Specialized agricultural education
	C. UPGRADE BASIC SKILLS OF RURAL LABOR FORCE FOR OUT MIGRATION	<ol style="list-style-type: none"> 1. Secondary and vocational schools 	<ul style="list-style-type: none"> - Vocational training for off farm employment 			<ol style="list-style-type: none"> 1. AID field 	<ul style="list-style-type: none"> - Project Assistance
II. LOW INCOME TRANSITIONAL ECONOMIES	A. ENHANCE AND SUSTAIN EFFICIENCY OF INTERORGANIZATIONAL STRUCTURES FOR ANALYSIS, RESEARCH, AND MANAGEMENT OF ADJUSTMENT PROCESS	<ol style="list-style-type: none"> 1. Agt. Industry and service Mkt. Policy Units 2. Research Centers 3. Extension services 4. Infrastructure agencies at central and local 5. Natural resource agencies 	<ul style="list-style-type: none"> - Interorganizational analysis and formulation - Monitoring - Research on trade adjustments - Research on agro-processing effects - Efficient service, service outreach - Watershed analysis and implementation 	<ol style="list-style-type: none"> 1. Agro-processing manufacture 2. Input distributors 3. Output markets 4. NGOs at central, urban and rural areas 5. Bank 6. Service industries 	<ul style="list-style-type: none"> - Process and market - Employ rural labor - Supply inputs - Disaster relief - Develop capacity in urban and rural organizations - Export financing - Service provision 	<ol style="list-style-type: none"> 1. AID field 2. AID/Washington 3. U.S. Universities/teachers 4. IFDCs 	<ul style="list-style-type: none"> - Program dialogue - Program assistance - Policy and program support - Provide TA/training for program and projects - Specialized TA/training (policy and management)
	B. ENHANCE AND INSTITUTIONAL INFRASTRUCTURE AT CENTRAL AND LOCAL LEVELS IN SUPPORT OF TRANSITION	<ol style="list-style-type: none"> 1. Agt. Ministries 2. Central support ministries 3. Regional and local government 4. Legislatures 	<ul style="list-style-type: none"> - Adjust laws, rules - Provide efficient service (personal, legal, financial) - Provide services - Articulate interests - Recover costliness - Policy formulation 	<ol style="list-style-type: none"> 1. Private schools 		<ol style="list-style-type: none"> 1. AID Field 2. AID/Washington 3. U.S. Universities/teachers 	<ul style="list-style-type: none"> - Program cooperation - Support - Provide TA/training for programs and projects
	C. UPGRADE TECHNICAL AND MANAGEMENT SKILLS IN NEW AREAS	<ol style="list-style-type: none"> 1. Higher Educational institutions 	<ul style="list-style-type: none"> - Specialized in-country education (technical) 	<ol style="list-style-type: none"> 1. Private schools 	<ul style="list-style-type: none"> - Business education 	<ol style="list-style-type: none"> 1. AID field 2. U.S. educational institutions 	<ul style="list-style-type: none"> - Participant placement - Specialized agricultural education
III. MIDDLE INCOME INDUSTRIALIZING ECONOMIES	A. DEVELOP MUTUALLY BENEFICIAL NETWORKS FOR TECHNICAL AND MANAGERIAL EXCHANGE IN SELECTED HIGH GROWTH AREAS	<ol style="list-style-type: none"> 1. Development foundations 2. Special program networks for Agt. Research Information Science, etc. 	<ul style="list-style-type: none"> - Networking with U.S. institutions - Global technology exchange 	<ol style="list-style-type: none"> 1. Specialized Program Networks (AGRI, RAO, Information, Trade, Natural Resource management, etc.) 	<ul style="list-style-type: none"> - Information exchange - Trade and investment - Environmental protection 	<ol style="list-style-type: none"> 1. AID field 2. AID/Washington 3. U.S. Universities/teachers 4. IFDCs 	<ul style="list-style-type: none"> - Policy dialogue - Program cooperation - Policy and program support - long-term cooperative ventures
	B. CONTINUE SELECTIVE INVESTMENTS IN HIGH PAYOFF INSTITUTIONAL DEVELOPMENT INITIATIVES	<ol style="list-style-type: none"> 1. Agt. ministries 2. Environmental Protection agencies 3. Social agencies 	<ul style="list-style-type: none"> - Policy adjustments via monitoring and assessment - Special research - Resource program management - Fair treatment of gender and services 	<ol style="list-style-type: none"> 1. R&D institutes 	<ul style="list-style-type: none"> - Specialized high tech. activities - Private funded research 	<ol style="list-style-type: none"> 1. AID field 2. AID/Washington 3. U.S. Universities/teachers 4. IFDCs 	<ul style="list-style-type: none"> - Networking - Program assistance - Program support
	C. DEVELOP T. A/ TRAINING LINKAGES WITH OTHER LDCs FOR AGRICULTURAL DEVELOPMENT	<ol style="list-style-type: none"> 1. Agt. ministries, h. service training centers 	<ul style="list-style-type: none"> - Manage linkages with other LDCs 	<ol style="list-style-type: none"> 1. Consulting firms 2. Local NGOs 	<ul style="list-style-type: none"> - In country services - Cross-country networks 	<ol style="list-style-type: none"> 1. AID field 2. AID/Washington 	<ul style="list-style-type: none"> - Program implementation - Cooperate in implementation - Program assistance - Program support - Implementation support

SELECTED REFERENCES

- Acker, D. (1988). Food and agriculture goals and directions for the 1990s (Draft). Washington, DC: Agency for International Development.
- Agency for International Development (ANE). (1987, February). Agriculture under stress: The future of agricultural and rural development in Asia and Near East (Proceedings of the Agricultural and Rural Development Officers' Conference). Bangkok, Thailand: Author.
- Agency for International Development. (1989, January). An agricultural development strategy for Asia and the Near East in the 1990s (Working Draft). Washington, DC: Author.
- Bawden, R., & Busch, L. (1988). Agricultural universities for the twenty-first century. A paper prepared for the Agency for International Development, Washington, DC.
- Brinkerhoff, D. (1986). The evolution of current perspectives on institutional development: An organizational focus. In D. Brinkerhoff, & J. Garcia-Zamor (Eds.), Politics, projects, and people: Institutional development in Haiti (pp.11-59). New York: Praeger Publishers.
- Brinkerhoff, D. (1988). Technical assistance and training in development management in the 1990s: Trends, implications, and recommendations. College Park, MD: University of Maryland, International Development Management Center.
- Brinkerhoff, D., & Ingle, M. (1987). Integrating blueprint and process: A structured flexibility approach to development management. College Park, MD: University of Maryland, International Development Management Center.
- Development Alternatives, Inc. (1984). Sustaining rural development: A guide for project planners, managers, and evaluators. Washington, DC: Author.
- Goldsmith, A. (1988). Institutional sustainability and rural development: Issues for Asia and the Near East in the 1990s. College Park, MD: University of Maryland, International Development Management Center.
- Hage, J., & Finsterbusch, K. (1987). Organizational change as a development strategy: Models and tactics for improving Third World organizations. Boulder, CO: Lynne Rienner Publishers.

- Halpern, C., Ingle, M., & Brinkerhoff, D. (1988). Enhancing the sustainability of AID projects: Supplemental guidance for mission managers. College Park, MD: University of Maryland, International Development Management Center.
- Harvard Institute for International Development, & the Agency for International Development (ANE/TR/ARD). (1988). Agriculture in the 1990s: Strategic Choices for Asia/Near East Countries, (Symposium proceedings). Rosslyn, VA: Author.
- Honadle, G., & VanSant, J. (1985). Implementing for sustainability: Lessons from integrated rural development. West Hartford, CT: Kumarian Press.
- Ingle, M. (1988, December). Delivery of technical assistance and training for improved managerial performance: Linking donor and country organizations. Paper presented at the Workshop on Public Sector Reform, Management Training, and Assessment of Training Needs in the Institutions of Developing Countries, sponsored by the Agency for International Development (S&T/RD), the National Association of Schools of Public Affairs and Administration, and the American University, Washington, DC.
- Ingle, M. (1988). Sustaining the benefits of the Thailand Northeast Rainfed Agriculture Development (NERAD) Project. College Park, MD: University of Maryland, International Development Management Center.
- Ingle, M., & Cruikshanks, R. (1988). Development management in the year 2000: Trends, challenges and implications for the profession and professionals. College Park, MD: University of Maryland, International Development Management Center.
- Jones, A., & Clyma, W. (1986). An approach to management improvement for irrigated agriculture: The management training and planning for Command Water Management, Pakistan. Water Management Review, 1(2), 13-16.
- Kerrigan, J., & Luke, J. (1987). Management training strategies for developing countries. Boulder, CO: Lynne Rienner Publishers.
- Kornher, K., Lowenthal, J., Jordan, J., Hannah, J., Ingle, M., Kettering, M., & Rizzo, E. (1981). Managing development strategy paper: AID's response to the implementation needs of the 1980s (Working Paper). Washington, DC: Agency for International Development (RD/DA).

- Mellor, J. (1988, November). Agricultural development opportunities for the 1990s: The role of research. Address presented at the International Centers Week of the Consultative Group on International Agricultural Research, Washington, DC.
- Middleton, J., Rondinelli, D., & Vespoor, A. (1987). Designing management for uncertainty and innovation in education projects. (Report No. EDT75). Washington, DC: The World Bank.
- Moore, R. (1988, December). Management requirements of policy reform: A strategic mapping of implementation bottlenecks. Paper presented at the Workshop on Public Sector Reform, Management Training, and Assessment of Training Needs in the Institutions of Developing Countries, sponsored by the Agency for International Development (S&T/RD), the National Association of Schools of Public Affairs and Administration, and the American University, Washington, DC.
- Plucknett, D., & Smith, N. (1984). Networking in international agricultural research. Science, 225, pp. 989-993.
- Plucknett, D., & Smith, N. (1986). Sustaining Agricultural Yields: As productivity rises, maintenance research is needed to uphold the gains. Bioscience, 36(1), pp. 40-45.
- Rondinelli, D. (1987). Development administration and U.S. foreign aid policy. Boulder, CO: Lynne Rienner Publishers.
- Silverman, J., Kettering, M., & Schmidt, T. (1986). Action-planning workshops for development management: Guidelines. Washington, DC: The World Bank.
- White, L. (1987). Creating opportunities for change: Approaches to managing development programs. Boulder, CO: Lynne Rienner Publishers.

**A Rural Economic Growth Strategy for Asia and the Near East
the 1990's**

The Impact on A.I.D.'s Agricultural Development Officers

Prepared for:

**The Agriculture and Rural Development Division of the Office
of Technical Resources, Asia and the Near East Bureau,
Agency for International Development**

Phase II Report

Prepared by Richard C. Meyer

(U.S.D.A., P.O. #40-319R-8-00736)

February 10, 1989

TABLE OF CONTENTS

	Page
Foreward.....	i
Executive Summary.....	ii
I Overall Impact of Strategy on A.I.D. Staff.....	1
II Confirmation of ANE Projected Trends.....	3
III Human Resources and Skills Available to Respond to New Directions.....	4
A. Impact of Continuing Emphasis on Food Production.....	5
B. Response to Structural Adjustments of Transitional and Middle Income Countries.....	6
1. Recruitment.....	7
2. Staff Training.....	10
3. Cross Training.....	16
4. New Training in Program Design and Management...	17
IV External Expertise.....	17
Chart: Summary of Foreign Service Core Training Courses.....	13
Appendix: List of Major Reference Documents.....	19

FOREWARD

This is the second of a two phase effort requested by ANE/TR/ARD in conjunction with the development of "A Rural Economic Growth Strategy for Asia and the Near East in the 1990's". The purposes of the overall effort are:

(1) to present a profile of the A.I.D. staff in the Agriculture and Rural Development Fields (with accompanying information on Food for Peace Officers and Environmentalists). This information was presented in a September, 1988 report entitled "Agricultural Personnel Analysis".

(2) to assess the impact on A.I.D. staff of the newly emerging program directions described in the new Rural Strategy for Asia and the Near East. This report is the assessment of that impact.

EXECUTIVE SUMMARY

The development interventions outlined in the Strategy are very diverse and constitute a significant change from traditional agricultural research and small farm production programs. Given the broad range of those interventions, even the impressive credentials of the existing agricultural and rural development cadre will not be sufficient to deal with the diversity of the subjects to be addressed.

In implementing this Strategy, ANE must make the best possible use of the technical resources at hand starting with the expertise available in-house in the other Regional Bureaus, the Bureaus for Science and Technology and Private Enterprise, and the Trade and Development Program. Other governmental agencies such as the Departments of Agriculture and Commerce, the Overseas Private Investment Corporation and the Office of the U.S. Trade Representative offer strong possibilities as collaborators. Linkages with the university and private and voluntary communities are well established, but must be utilized to the fullest. Linkages with the private sector, particularly the agribusiness community, are practically non-existent and must be established and cultivated quickly.

Operating Budget constraints will hold agricultural personnel levels at a straight line replacement of losses. This means that both the number of employees and the skill mix available are essentially static. A.I.D. staff capacity to engage in the new directions must be enhanced wherever possible but realistically, the current orientation of the staff is toward agricultural production, and neither recruiting nor training can be counted on to make a significant difference in the existing skill mix.

Even with the best use of Agency and other governmental talent, much of the technical expertise required by the projections of the Strategy will have to be acquired from outside the Agency. A.I.D. is no longer a full service organization with all the needed skills and expertise available internally. But in this age of specialization it is not uncommon in the private or public sectors to engage intermediaries and purchase expertise on a temporary basis. Agency staff must actively engage these intermediaries and not be defensive. The trend to intermediaries has been underway for some time and the requirements of the Strategy and static personnel levels will accelerate the movement which appears irreversible.

The outstanding A.I.D. Technical manager of the future will be one with strong analytical skills who is a master of the art of networking with a broad range of individuals and institutions and accurately analyzes the problem or opportunity at hand, identifies the type of expertise needed, knows where and how to engage the expertise, and sees that it is well used to further A.I.D.'s goals.

A.I.D. staff training is not and will not be a vehicle for large numbers of employees to acquire new technical skills, but it can and should be used to update development concepts, keep current on technical innovations and acquire sound management techniques. In a limited number of cases long term training can help to acquire new skills. Employees should regularly take advantage of the core training courses offered by the Agency. The two greatest constraints to staff development must be overcome, i.e., the inability to release employees from their job responsibilities, and Mission operating budget limitations which will not accommodate travel and per diem.

The combination of limited hiring authority and newly emerging development concepts calls for a cross training program to assist staff in overseeing the design and implementation of a program which cuts across a number of disciplines. Cross training is already underway in the Private Sector, Food for Peace and Natural Resource areas.

The Agency will always need a core of specialists to provide technical leadership to the program. Operating bureaus must assist with the modest hiring of specialists to insure that skills needed are factored into Agency recruitment plans. The Agency must explore options for viable career tracks for technical specialists and resolve the long standing issue of promotions and rewards for them.

A number of key elements to be considered by Agriculture and Rural Development Officers as they consider career development are:

- seek periodic Washington assignments to understand the headquarter's operation and become known in the system.
- make best possible use of Washington assignments as training tours.
- engage in continuing education to keep professionally current.

- negotiate training plans and time away from the job.
- develop analytical skills.
- seek opportunities for cross training and on-the-job experience beyond traditional areas of expertise (backstop).
- participate in supervisory and management training courses.
- network! network! network!

I. OVERALL IMPACT OF STRATEGY ON A.I.D. STAFF

The Rural Sector Strategy for Asia and the Near East in the 1990's has two major themes, i.e., (1) that the A.I.D. development assistance of the past several decades which focused on improving small farm agricultural production has resulted in substantial success, but there is more to be accomplished: and (2) that a number of countries in the region have achieved a level of agricultural growth which has contributed to significant changes in their economies and calls for a variety of new assistance approaches for moving from agriculture based economies to those based on industrial and service sectors.

Although significant progress has been made in stimulating growth in small farm agricultural production in the region, major problems remain in the so called low income agricultural economies where growth in cereal production has failed to keep pace with population growth, and per capita caloric consumption is significantly below recommended levels. As the strategy points out, deficiencies in cereal productivity represents one of the major constraints to further development; one of the key elements of the Strategy is the continuing effort to maintain and improve the productivity of basic cereals production to respond to the food needs of the low income agricultural countries and provide a major source of new income and employment in transitional and middle income countries.

Those countries in the region which have achieved agricultural surpluses and are experiencing significant adjustments to their agricultural, industrial and service sectors, pose the other major challenge for A.I.D. and its staff. The Agency must be able to foster and respond to the opportunities presented by these adjustments.

A continuing heavy emphasis on cereal production plays to Agency and staff strengths. The Agency's experience in this area is considerable. Linkages with the University community and international research centers are well established, and the reservoir of knowledge and skill among Agency employees would indicate that the continuing investment in cereal production is well within the Agency's capabilities.

On the other hand, the types of interventions outlined in the Strategy for the transitional and middle income economies are very diverse and constitute a significant change from the past. Some of the major thrusts outlined in the Strategy, such as increased emphasis on the private sector, agribusiness, agro-processing, and natural resource management, have only recently become part of the A.I.D. portfolio and are not traditional areas of strong technical strengths of A.I.D. staff.

61

The draft strategy calls for fostering environments conducive to increased private sector investment including stable and up to date banking and investment procedures, and effective tax systems for infrastructure investments and private investment incentives. It goes on to say that governments will need the capacity to understand and react to domestic and international markets, to identify and analyze political and economic options, and to develop market systems for input supply, processing and distribution of agricultural products and capital markets to provide investment capital. Even production oriented programs in low Income Agricultural Economies will see increasing emphasis on policy environments that encourage effective operation, maintenance and expansion of support services and infrastructure and the creation and strengthening of agencies for data collection and analysis.

The Strategy goes on to highlight the importance of agribusiness and agro-processing as crucial ingredients in the transformation of agricultural economies to industrial and service economies. There are a whole range of important interventions in this area: stable industrial policies to encourage investment, favorable tax structures, expansion of capital markets, trade liberalization (including favorable exchange rate policies), supportive banking policies, efficient transportation systems, and the capacity to analyze market demands and future trends. This is not an exhaustive list but one can immediately see the diverse requirements needed to play an active and effective role.

A third major area of concentration highlighted in the draft Strategy is the promotion of sustainable agricultural growth through sound environmental analysis and appropriate development interventions. The Strategy stresses the importance of the capacity to analyze and identify the environmental costs and benefits of policies and projects and the development and adoption of sound long term environmental policies. It goes on to emphasize watershed planning and protection and improved design and management of irrigation systems as key natural resource issues in assuring long-term sustainability.

The Strategy also points out that these new development approaches will require a strengthening of the human capital available to carry out these new directions. This part of the discussion is couched in terms of enlarging the governments' analytical, planning and monitoring capacity and an expansion of private sector entrepreneurial and management skills. The report specifically highlights strengthening governments' manpower planning capabilities and the development of training programs which address the needs of an expanding private sector in such areas as: commercial law, business management, domestic and international marketing, investment analysis, financial management, transportation management and computer science.

Some of the interventions projected for developing countries are relatively new to A.I.D. as well. The range of the knowledge and experience needed to address the wide range of elements outlined above is very broad. These future projections call for a talent bank of technical expertise which is far greater than that now available in the A.I.D. direct hire human resource pool.

In addition to technical areas, the Agency has a fundamental problem in that it lacks depth in analytical capacity to formulate approaches that respond to the structural adjustments described in the Strategy. Agency leadership is concerned and an active recruitment campaign for experienced economists has been underway (unsuccessfully) for some time. The Agency is considering a program to rotate economists from the university community into A.I.D. on a temporary basis to help with the problem. This constraint will provide a limiting factor unless resolved. A.I.D. employees in general and Agriculture and Rural Development Officers in particular can help themselves and the Agency in this area by upgrading their analytical skills and their understanding of the macro economic factors in the development process and the dynamics of the structural adjustments occurring in the region. For many, the FSI Economics Course would be an excellent way to enhance individual skills and the Agency's overall analytical capacity.

II CONFIRMATION OF THE ANE PROJECTED TRENDS

There are a number of scholarly activities under way in parallel to the development of the ANE Strategy, all of which tend to confirm the directions projected in the ANE analysis.

An Agency overview paper, prepared in draft for the Administrator's consideration, entitled "Food and Agriculture, Goals, Directions, and Operations for the 1990's" points out that developing countries are making progress in increasing income, expanding food availability and consumption and maintaining the natural resource base and that A.I.D. will have the greatest impact by engaging and supporting these areas of advancement. The report stresses the following areas for A.I.D. investments: agribusiness, food processing, international trade, sustainable agriculture, private sector interventions and technology initiatives. These are all consistent with the ANE strategy statement. The report also makes the point that the Agency "sorely needs persons educated and experienced in input agribusiness, aquaculture, horticulture, animal agriculture, food processing, and international agricultural trade".

The final report of the Hamilton Task Force on Foreign Assistance hits hard on concentrating AID programs in areas of U.S. comparative advantage and cites as examples: education, training, research, public and private management, technical assistance, agricultural development, food aid, and private enterprise. One of the main objectives of a proposed International Economic Cooperation Act is "Environmental Sustainability" and the report calls for U.S. assistance in the development and implementation of improved policies, technologies, and management systems necessary for more efficient and sustainable systems of agriculture and resource management. The report also stresses the importance of trade and investment relationships between the U.S. and developing countries. Clearly, all of these priorities are also reflected in the ANE Strategy as areas of emphasis for future programming.

Information reported in a recent review of the Agency's portfolio of Agriculture, Rural Development and Nutrition projects demonstrates that certain of the trends discussed in the ANE strategy are already underway; i.e., among the purpose categories used in breaking down the dollar funded ANE projects active during 1984-89 or projected for FY 1990, planning/policy analysis supplanted sector support for the last two years. In 1989 the ANE shift was so great that planning and policy analysis supplanted sector support in the entire Agency portfolio (ANE accounts for half the total ARDN portfolio).

III. HUMAN RESOURCES AND SKILLS AVAILABLE TO RESPOND TO NEW DIRECTIONS

The direct hire agricultural work force available to respond to the current program and the new initiatives projected in the ANE Strategy is relatively stable in terms of numbers and has a skill mix which will not change much in the future. The Phase I Personnel Analysis for ANE/TR/ARD stressed that the current Agricultural and Rural Development staff have impressive academic credentials and appear well qualified to manage current portfolios. Agricultural development personnel are, generally speaking, relatively young in terms of age and A.I.D. experience. But there seems to be a consensus that there is a cadre of officers available to fill senior Agricultural Development Officer positions worldwide, and that there is an excellent group of junior to mid-level officers emerging for the future. There is something of a personnel gap in the upper mid-level ranks which the agency has been trying to fill with mid-level hiring and the use of the Joint Career Corps (JCC).

Problems with this structure are several: mid-level hires, JCC personnel and junior officers all need to mature in the A.I.D. way of doing business, which calls for an important role to be played by senior mentors. Those mentors are currently in place but if large numbers of them retired in the near future it would create a problem in the growing process of officers moving up in the hierarchy. The other problem is that the very good group of junior officers are being considered in terms of traditional A.I.D. approaches which do not call for the same skills envisioned in the ANE Strategy.

The Phase I analysis found that in total numbers the agricultural core has shrunk somewhat during the 1980's (from a high of 230 in 1983 to 211 in 1988) but it has consistently kept its relative standing in a shrinking Foreign Service. Attrition has been relatively stable in the past and is projected to remain so in the future. Before the imposition of the current hiring freeze the Agency had authorized modest hiring authority for BS-10 for FY 1988 and 1989 which was calculated to match attrition but not to increase staff. Presuming that the Agency will again permit modest recruiting for agriculturalists, with an attrition rate which is not fluctuating greatly and with some career crossover from other backstops and the GS ranks, the total number of employees on board in BS-10 will run in a relatively straight line. But the results of that straight line are: the direct hire agricultural work force is frozen in terms of numbers, and because the intake of new employees has slowed perceptibly, the Agency's skill mix is fixed and will not change much except as affected by training. Of course in terms of workload, a straight line projection of personnel strengths means less staff are carrying a heavier burden.

A. IMPACT OF CONTINUING EMPHASIS ON FOOD PRODUCTION

The current agricultural work force, stable in numbers and skill mix, has the capacity to address the continuing emphasis on food production. As was pointed out in the Phase I Report, of the more than 200 officers in BS-10, 82% have advanced degrees (25% Doctorates) and the areas of specialization appear to support a program to increase the yields of basic food crops. Those areas of specialization for BS-10 Foreign Service officers are Agricultural Economics, Agronomy and Soil Science, General Agriculture, and Economics. These academic concentrations seem consistent with a production emphasis. There is one caveat here, i.e. the question of whether staff have kept current in their specializations, as only about 12% of the BS-10 academic degrees were awarded in the 1980's.

However, even the production oriented programs in Low Income Agricultural economies may be stretching the capacity of the current workforce to address certain aspects of the strategy. The increasing emphasis on policy environments which encourage private sector involvement, the creation and strengthening of agencies for data collection, policy analysis and formulation, environmental assessments of interventions, and the focus on laws, rules, and structures which facilitate the agricultural adjustment process do not play as well to the strengths of A.I.D. staff or experience. It seems likely that the Agency will have to look to other sources of expertise to assist in the process. (Further discussion on using external sources of expertise is continued in the next section).

B. RESPONSE TO STRUCTURAL ADJUSTMENTS OF TRANSITIONAL AND MIDDLE INCOME COUNTRIES

Given the broad range of interventions outlined in the ANE Strategy relative to the structural adjustments taking place in the transitional and middle income countries of the region, even the impressive credentials of the existing agricultural and rural development cadre will not be sufficient. Even if put in the context of all the staff expertise available in field missions, the skills package falls short of the new requirements. The mechanisms for building expertise in the A.I.D. workforce would normally be through recruiting and training, but there are constraints on both which will complicate using these avenues.

It seems clear that given the possible scope of the new directions, the first order of the day for both the Agency and the ANE Bureau is an assessment of areas of comparative advantage and a narrowing of the A.I.D. program focus. A.I.D. and its staff are stretched too thin.

In the process of assessing the Agency's capacity to respond to these new initiatives, Foreign Service National employees should be utilized to the maximum extent possible. It is in the Agency's interests to create a central inventory of FSN skills, experience and training needs, and factor this information into the overall assessment of Agency staff capability. It is likely that there is among these employees, who have served the Agency long and well, a body of expertise which can contribute significantly to the changes in A.I.D. directions.

The historical orientation of the A.I.D. program toward agricultural research and food production has resulted in a workforce with academic background and skills corresponding to that orientation. But the ANE Strategy brings a new set of

12

dimensions to the development process with challenges that are generally outside of the skill-experience mix of the current staff. For example, there are very few employees with academic credentials in Natural Resources Management or holding MBA's, both important relative to the new directions. Much of the technical expertise dictated by a focus on such things as agribusiness, food processing, trade and finance, natural resource management, policy analysis and rural-urban linkages, will have to be acquired.

As was pointed out by a former Senior Agricultural Development Officer in an article carried in the TR/ARD October 22nd newsletter, Agricultural and Rural Development Officers (ARDO) need to know and be able to rapidly access leaders and professionals in the agricultural sciences, agribusiness, and government agencies concerned with agriculture and resource management. The article went on to say that the most valuable contribution of the ARDO's will result from putting U.S. and host country professionals together to work on areas of mutual interest.

It will become increasingly important for ANE staff to develop communications channels with a broad range of institutions and individuals and become masterful in the art of networking. Some of the needed expertise is available in-house in the other Regional Bureaus, the Bureaus of Science and Technology and Private Enterprise and the Trade and Development Program and should be utilized to its maximum potential. Other governmental organizations which are strong possibilities for assistance with the new directions are the Departments of Agriculture and Commerce, the Overseas Private Investment Corporation and the Office of the U.S. Trade Representative. A.I.D.'s links to the private and voluntary and university communities are well established but may need strengthening in the new program directions. Ties with the U.S. private sector are weak and will require considerable attention. Much of the established technology in agribusiness, agro-processing and marketing is found in the private sector. The Agency must find ways to tap into this system.

1. RECRUITMENT

The ANE Bureau will not be able to rely heavily on recruitment to provide the new skills called for in the Strategy. Continuing operating budget constraints translate into hiring constraints. Given these constraints, it is unlikely that the Agency will ever recruit more than a modest number of new employees. The most that one can hope for is a straight line replacement of employees as they leave the Agency. At this time, the Agency continues in an open-ended hiring freeze; no new employees are currently being recruited in agriculturally related areas.

The situation is further complicated by the fact that when the Agency is in a hiring posture, recruitment appears focused on candidates who have the skills to manage a variety of portfolios rather than technical specialists. Obviously this in itself will not help with the challenges posed by the ANE strategy.

Trends which tend to confirm the movement toward multi-skilled officers rather than technical specialists include the fact that the Agency is not recruiting Food for Peace Officers, but rather has embarked on a program of cross training a number of backstops (including BS-10) to program food as an integrated development resource. And despite the heavy emphasis on sustainable development and environmental issues, the Agency is not recruiting new employees whose skills lie exclusively in Natural Resource Management. Instead the Technical Review Panels (a critical element in the hiring process) are looking for officers who have demonstrated natural resource interests and skills on top of strong credentials in agriculture. In fact, all screening for Agricultural, Rural Development, and Natural Resource Managers has been consolidated in one Technical Review Panel. And the selection criteria used by the panel appear to be oriented toward broad based experience and training with a stress on management and communications. Again, the indicators point away from trying to meet the Agency's specialized and changing technical needs from its direct hire cadre.

This trend toward multi-skilled technical generalists could further be reinforced by a review currently underway in the Personnel Office, i.e., the possible consolidation of a number of backstops moving toward a significant reduction in the number of discrete career cones and toward a more homogeneous Foreign Service. Such a consolidation will have a positive effect in assisting staff to broaden skills by facilitating excursion tours between disciplines (or backstops) which is an excellent training vehicle but presently complicated and not often used.

There is a possible career benefit to the Agency's agricultural staff in the movement toward technical generalist managers. As the Phase I report pointed out, the precepts for promotion into the Senior Foreign Service make it clear that the senior positions for technical specialists are limited and that there is a premium placed on a demonstrated broad capacity for managing programs which cut across functional lines. From point of view of upward mobility in promotions it will be in employees best interests to actively seek out the opportunities for broader responsibilities which are inherent in the program projections of the ANE strategy and hone their management skills through experience and training opportunities whenever possible.

However, the trends discussed above which tend to move A.I.D. staff toward roles more generalist in nature could erode the internal technical capacity of the Agency to the point where credibility and competence might be seriously jeopardized. The Agency will always need a small core staff of technical specialists to lead the conceptualization of the A.I.D. program, identify appropriate external sources of expertise, monitor program implementation, evaluate results and provide continuity for future efforts. But even if the Agency agreed to recruit a modest number of technical specialists in line with the projection of the ANE strategy, there is currently no mechanism in place to translate the directions of the strategy into skill packages for targeted recruiting.

A recent assessment of the Agency's recruitment system confirmed the point made in the Phase I report; i.e.; that the Agency has an ad hoc recruiting system based on attrition, operating budget constraints, and general criteria, not program directions or needs. The result is a system which replaces losses with employees of similar skills, which is not what is needed given the changing nature of the A.I.D. program.

However, the Administrator recently approved the organization of a workforce planning unit in the Bureau for Personnel and Financial Management (the Organizational Management and Workforce Analysis Staff, OMWA) which will be charged with addressing this deficiency. The ANE Bureau will need to work closely with the new PFM unit (when it becomes operational) to overcome the replacement system and translate needs emerging from the Strategy into recruiting targets to ensure a reasonable pool of expertise in the form of a permanent staff of direct hire employees (in modest numbers no doubt). With the long term hiring constraints the Agency is facing, hiring the right mix of skills will be of crucial importance.

If truly interested in maintaining a core of highly qualified technical experts the agency will have to finally resolve the question of limited career advancement possibilities for technical specialists in the Senior Foreign Service. The language of the Foreign Service Act makes promotion into the Senior Foreign Service difficult for specialists and for the few that are promoted into SFS ranks further movement is practically impossible.

Technical specialists and Sector Councils have complained bitterly for years that the system is inequitable and results in the loss of valuable employees. The debate has gone on for at least a decade but remains unresolved. But the integrity of the program demands a certain in-house technical capacity which in turn demands a reasonable career track for a modest number of highly qualified specialists. The possibility of a dual

track career system in the Foreign Service, (which has been discussed at various times) is difficult to envision given the language of the Foreign Service Act. One possible alternative to the FS dual track idea is the creation of a pool of GS super grades to accommodate a small number of senior scientists. The incumbents of these positions would be expected to serve abroad periodically on GS excursion tours. Such an approach would provide the incentives for retaining the services of senior experts and at the same time give them and the Agency the benefit of foreign service experience. This approach has merit and has been the subject of periodic but inconclusive discussions in the Agency. Another option for investigation is the possibility of premium pay for senior scientists as is currently paid to medical doctors. Perhaps the dialogue can be intensified on these, and other options until the issue is brought to resolution. Providing a core staff of experts to provide a framework for the emerging development approaches is critical to program integrity.

Another option for creating a sizeable cadre of technical specialists is to build on the Agency's experience with the Technical Advisors for Child Survival. There are discussions taking place in the Agency of the merits of trying to create a group of program funded technical experts who would function as limited appointment Foreign Service officers and complement A.I.D.'s direct hire staff. This type of arrangement, which has worked well in the Child Survival and AIDS programs, provides needed scientific and technical skills but does not enlarge the permanent Foreign Service rolls and provides some relief to the operational budget. Such a program would require consultations with Congress and OMB, and legislation authorizing use of program funds if the Agency decided to seriously pursue the concept.

2. STAFF TRAINING

The Agency's current in-service training does not include sufficient opportunities for intensive in-depth training to acquire new technical skills. Training, as currently organized in the Agency, will provide only minimal relief to the need for new skills among the current staff. A recently completed assessment of the Agency's training program for employees found that the Agency does not have a systematic approach to employee career development and needs a better mechanism for defining training needs in terms of broader program and operational strategies.

Some of the most important training opportunities that are offered by the Agency, e.g., the Development Studies Program, are not well attended by employees (especially field employees) because of operating budget constraints and inability of officers to obtain releases from their job responsibilities for the time required. For example, of the 28 field staff scheduled to attend the ANE/ARDO Conference in Rabat, February, 1989, only 2 (7%) have completed a full DSP and 3 (10%) have completed part A of the former two part course. Only 3 officers (10%) have benefited from long term training and 9 (32%) officers have had exposure to technical update training in the State of the Art Courses in Agriculture and Natural Resource Management. These numbers will have to improve significantly if the Agency is going to seriously affect the skill base of its staff.

On the other hand, some important training opportunities, such as long term training, (one of the few in-depth opportunities) are not well focused by the Agency on emerging issues.

With all of the above, unless the Agency is willing to devote considerable additional resources to the training budget, design training which corresponds to emerging issues, and pay more attention to career development, the opportunities for in-depth training will be very limited and have minimum impact on the skill mix of the existing workforce.

Although training will not provide a vehicle for large numbers of employees to acquire new, in-depth technical skills, it can and should be used to update knowledge on development concepts and theory, keep current on technical innovations, and acquire sound management techniques. The process of development change is accelerating rapidly and staff need to be current. In a limited number of cases long term academic training can even help to acquire new skills.

It is clear that training is first and foremost the responsibility of the employee and his/her supervisor. Given that there is no overriding career development program in A.I.D., it is in employees' best interests to develop, with their supervisors, their own career track and associated training opportunities. Employees should negotiate for time and budget resources to periodically attend training courses. The point that time must be provided to maintain and enhance professional skills has been made frequently over the years by the Agriculture Sector Council. In a 1986 memorandum, the Council argued that Agriculture and Rural Development Officers should be afforded a week to ten days periodically to visit universities and focus on an area of special interest with the faculty.

91

The burden of maintaining professional excellence should not, however, fall exclusively on employees. Staff development is a major responsibility of supervisors and should be a high priority for all officers in positions of leadership. Training should be a key element in work plans and supervisors should be evaluated on their commitment to training. The Agency should clearly recognize, with tangible awards, supervisors who are seriously involved in staff development.

Although the Agency does not have a career development emphasis, there is a useful outline of core training courses for Foreign Service Officers which was designed to identify certain common training needs at different points in the FS professional career ladder and suggests the type of training available to meet those needs (See chart page 13). The outline is a handy guide and the suggested courses should be taken seriously. The following paragraphs in this section are a discussion of some of the more important training opportunities for Agricultural Development Officers.

The Development Studies Program (DSP) is the Agency's premier training effort to help employees better understand current trends in development theory and practice and A.I.D.'s changing policies and programs. The recent assessment of staff training concluded that DSP improves staff performance by (1) taking employees out of daily routines to examine what they are doing in development and why, (2) updating staff on current concepts and operational trends in economic development, and (3) providing a forum for helping staff better understand current agency priorities. But the assessment also found the course badly undersubscribed by U.S. Direct Hire employees, (only 48 from the entire Foreign Service have participated over the past two years). The constraints are operating budget to cover travel and per diem and time away from the job.

The Office of Personnel Management is considering the creation of a central budget to cover travel and per diem for the DSP. There is a precedent in the Senior Management Course which has a centrally controlled budget. A central budget would eliminate one of the two greatest constraints to employee participation in DSP and other courses. Indeed, the training assessment recommended central budgets for all high priority training courses. As for time away from the job, managers and supervisors must find creative ways of providing back-up support to free employees for important training opportunities. There are some offices and divisions that consistently send employees to training. The others must follow their lead.

CORE TRAINING FOR A.I.D. FOREIGN SERVICE

<u>TARGET GROUP</u>	<u>TRAINING PROGRAM</u>
All new-hires	<u>New Entry Program</u> . Provides basic knowledge of A.I.D. policies, programs and operations, and the basic Project Design process.
Foreign Service	<u>Language Training</u> (8-30+ weeks) (as required for assignment, tenuring, promotion, etc. See Handbook 28)
All staff going to new posts	<u>Area Studies</u> : A.I.D.'s self-study modules and/or PSI Area Courses (2 weeks, for regional officers). (Note: PSI Language courses include some area studies.)
All new Project Staff	<u>Basic Proj. Design</u> (1 week) Overview primarily for new employees of the processes of design, implementation and evaluation. <u>A.I.D. Contracting for Non-Procurement Personnel</u> (4 days) covers various categories of contracts, and grants, related rules and procedures and services available in the Office of Procurement.
Project Staff with 2-5 years of service	<u>Project Implementation Course</u> (2 weeks) The PI Course is given 6 times a year in the regions and Washington. Stress is on USG/A.I.D. rules and processes, and implementation issues.
Technical staffs in priority A.I.D. functional areas/sectors	<u>Technical & Sectoral Updating Courses</u> Course in each key A.I.D. sector that combines (a) an update on "state of the art" technology of relevance to A.I.D. with (b) review of A.I.D. field experience and current policies. Priority is given to such training in Agriculture, Rural Development, Health, Population & Nutrition, and Private Sector Role in Development. Special issue topics in such areas as Agriculture Policy, Small Farm Marketing, and Education are presented based on need and demand. Periodic participation by technical staff every 3 to 5 years recommended.
Staff with 5 or more years service (Priority to PS-2/GS-14)	<u>Development Studies</u> (7 weeks). Single integrated course replaces two 4-week segments. Covers evolution of U.S. economic and foreign policy related to the developing world; survey of development policies, practices, goals and values within the developing world; examination of components, issues and emphasis of foreign assistance programs; the relationship between foreign assistance and the goals, methods and capabilities within developing countries.
Supervisors & program mgrs. with 5 or more years service.	<u>Management Skills Course</u> (1 week) Given 6 times a year in the regions and Washington. Covers group leadership skills, communications, problem solving, etc. <u>Supervisor's Role in Personnel Management</u> (1 week) provided in A.I.D./W for PS and GS/GM supervisors.
Selected FS-1's, SFS, and equivalent GS staff.	<u>Senior Management Course</u> (2 weeks) Given 4 times a year. Will focus on Mission/Office leadership knowledge & skills. Supplementary special topic training sessions will be scheduled prior to departure of Directors, Deputies, A.I.D. Reps.
Staff with 15+ years of service	Retirement Seminar (3 days or equivalent full/half days).

There are not many opportunities for technical update training in the agency but the State of the Art Course (SOTA) in Natural Resources and Sustainable Development is one such opportunity. The course for 1989 will be held in Washington in June, with a focus on the sustainable use of natural resources. The Bureau and the ANE Missions should carefully assess where this course will have the greatest impact and select nominees accordingly. Agriculturalists, Environmentalists and Rural Development Officers are prime candidates, but Program Officers, Project Officers and Economists as shapers of strategies and projects should receive equal consideration. Unfortunately this course is only offered once a year. Only 3% of the Agency's training budget is devoted to State of the Art courses which cover major program areas. More needs to be done. The Training Division should explore the possibilities of regional follow-up workshops. At current levels of 30 participants a year, it takes too long to arrive at a significant, policy influencing, core of practitioners. The Agency needs to rethink training budget allocations and reorder priorities. The long run payoff in this endeavor warrants greater expenditures for greater impact.

One of the few ways that agency staff can acquire new skills is through long term training. The number of annual slots is modest but long term training does lend itself to training in the new emerging development trends in the ANE strategy. There are historical precedents for concentrating the Agency's academic training in new areas of emphasis, e.g. population, nutrition and institution building. Both the agency and staff will have to focus more precisely on areas for study and target those which are high priority. For example, given the emphasis of the ANE strategy on agribusiness, trade, food processing, and natural resource management, the Bureau and Agency could program some (maybe most) of the slots for the next few years in these areas.

The Agency should consider a variation on long term training in the technical areas by developing, with universities and the private sector, semester or quarter length courses focused on areas of interest to A.I.D. This approach would cut down on costs and time away from jobs and should make training available to larger numbers of employees.

As mentioned earlier in this report, Agency employees must strengthen their ability to understand and articulate the macro economic intricacies of the development process, especially as they relate to the structural adjustments taking place in the ANE Region. The FSI Course in Economics is highly regarded and should be high on the list of training priorities for all staff involved in program conceptualization.

There are a number of other ways for employees to supplement the training programs discussed above, which are usually tied to Washington assignments. From a practical point of view Foreign Service Officers should try to maximize training opportunities while stationed in the U.S.. Training should be considered an integral part of a Washington assignment. This is the best time to schedule DSP and the in-house short courses which are not presented in the field. The Agency's After Hours Study Program is an excellent way to build professional skills and technical knowledge and significant funds are devoted to this program. There are numerous academic opportunities at institutions in the D.C. area and the Agency is very liberal about approving after hours enrollment in semester or quarter length courses. After hours training requires certain self discipline and commitment of time but employees should make every effort to take advantage of these opportunities while in the U.S.

As was suggested in the Phase I report, rotations through the Bureau for Science and Technology, details to international organizations and greater use of the Reverse Joint Career Corps all offer opportunities for updating or acquiring skills but employees will not often seek these opportunities until the Agency makes it clear that time spent in these endeavors, is career enhancing and will be considered positively in the Agency's reward system. The Agency must create a more positive atmosphere concerning these arrangements to overcome the perceived risks of being somewhat out of the main stream of A.I.D. business.

Certainly the training potential of the Reverse Joint Career Corps needs to be activated. In addition to the time away from the job, there is apparently a serious constraint imposed on the program by the seeming inability to the University Community to support 50% of the costs of each participant. More staff are interested in the program than the very small number of actual participants would indicate. It may be that A.I.D. needs to negotiate further with Universities who have provided a number of participants to the J.C.C. at A.I.D. expense but do not seem to be able to incur the financial outlay to support A.I.D. employees in the Reverse program. The Agency needs more of a two way flow.

A.I.D. staff are increasingly called upon to be managers of large numbers of people and considerable dollar resources. The Agency has provided a hierarchy of supervisory and management courses to help employees become effective managers.

Effective management is in vogue in A.I.D. Approximately 18% of the annual training budget (\$3.6 million) is devoted to a hierarchy of supervisory and management courses which should be started early in a career and build on each other periodically during the course of a career. The courses include:

Introduction to Supervision and Management (oriented to new entry FS), Basic Supervisory Skills (for the new supervisor), the Supervisor's Role in Personnel Management, the Management Skills Course and the Senior Management Course. In addition there are a limited number of opportunities at the Federal Executive Institute, the Executive Seminar Center in Kings Point, and the Office of Personnel Management's Executive Development Seminar, all of which are solid training grounds for executive development.

Training in communications and information processing technologies can help to further move the Agency toward modern approaches to data management, decision making, and reporting systems. Micro-computer classes were initiated in Washington in 1984. At present, several micro-computer courses (one to three days long) are offered regularly to provide basic and advanced training on financial spreadsheets (Lotus 123), database management (DBase), and project management (Time Line). Development of information processing techniques is critical to effective management.

3. CROSS TRAINING

With development concepts emerging which will tax current in-house expertise and limited hiring authority, the importance of a major effort in cross training of staff becomes very important to coping with new strategic concerns. Some cross training is underway and it has two effects, it will help employees acquire knowledge outside their traditional areas of concern (or backstop), and it will continue the movement toward multi-skilled technical generalists.

Cross Training will assist in the creation of a staff of multi-skilled officers capable of overseeing the design and implementation of a program which cuts across a number of scientific and technical disciplines. The intent is to give staff a better appreciation of interrelated emphasis areas and sufficient knowledge and managerial tools to administer a more diverse portfolio. There are several courses already offered which contribute to cross training. They are: a two week course called Training on the Role of the Private Sector in Development which includes: A.I.D. private sector policies, programs, and experience, role of private sector in development, financial analysis, banking and credit, management and marketing needs in business, export strategies and the integration of private sector approaches in A.I.D. projects/programs. It is worth noting that many of these topics are highlighted in the ANE Rural Sector Strategy.

The State of the Art Course, Natural Resources and Sustainable Development, is meant to be both a technical update for Natural Resource Officers but also to cross train Program Officers, Project Officers, and Agricultural Development Officers in natural resource and environmental issues, their social and economic impact and how to address them in development terms.

The Bureau for Food for Peace and Voluntary Assistance (FVA) is currently designing a new Training and "Certification" program to help Missions develop the staff expertise needed to manage food aid programs and ensure their integration in overall development strategies. This effort represents the latest in the series of cross training efforts.

4. NEW TRAINING IN PROGRAM DESIGN AND MANAGEMENT

The Training Division of the Office of Personnel Management is considering the design of a new Program Design and Management Course to respond to changes in A.I.D. assistance modes and implementation strategies and the trend toward more use of non-project assistance including food aid and commodity import programs. The basic purpose of the course would be to help participants assess the changing conditions both in A.I.D. and the country in question which affect the design and implementation of Mission portfolios. The stress would be on the creative and integrated use of various types of resources (DA, ESF, food aid) and implementing mechanisms (sector grants, commodity import programs, budget support/cash transfers, etc.) Preliminary results of PM/TD survey suggest the need for a new course, which is not surprising given the emerging development questions posed by the ANE strategy and the other studies and reports referred to earlier in this report.

IV EXTERNAL EXPERTISE

The procurement of large amounts of external expertise is an inherent necessity of the skills requirements of the Strategy. The utilization of external institutions, contractors, and consultants perpetuates a trend which has been ongoing for some years and which the Agency has fostered in a variety of ways. At this point the Agency is consciously moving toward a staff of development generalists (in some cases technical generalists) who will be responsible for the management of A.I.D. resources including large numbers of contractors and consultants. Continuing pressure on the Operating Budget which, in turn, will hold personnel levels down, or perhaps even reduce them further, makes this trend irreversible.

85

Agency careerists worry a great deal about outside interventions and loss of control of the program. But the use of intermediaries in the A.I.D. program is a fact and should be recognized as such. A.I.D. is no longer a full service organization with all the needed skills and expertise available internally. But in this day of specialization no organization has that capacity. Both public and private sector institutions have realized that they cannot afford to have all the expertise needed in their permanent workforce. They purchase the skills and expertise of individuals or institutions for limited periods of time as needed. The best intermediaries should be actively sought and engaged and the A.I.D. staff need not be defensive about it. The procurement of outside expertise can have the advantage of insuring the currency of the skills being acquired. The outstanding A.I.D. manager of the future will be the one who is a master of the art of networking and accurately analyzes the problem or opportunity at hand, identifies the type of expertise needed to address the problem, knows where and how to engage the expertise, and sees that it is well used to further A.I.D.'s goals.

When thinking of external expertise one of the first sources which immediately comes to mind is the University community. The long historical ties and close working relationship have created a mutually beneficial partnership. The directions of the Strategy create a new opportunity, and a need, to renew the relationship and explore new areas for collaboration. An active exchange of personnel between A.I.D. and universities would provide A.I.D. with much needed expertise and the universities with operational experience. The mechanism of the Joint Career Corps is in place and could be enlarged to promote a greater exchange of personnel. The J.C.C. has unused potential which could be activated. The good offices of the Board for International Food and Agricultural Development can be used to explore new possibilities for collaboration.

It is interesting to note that a report published in 1981 by the Technical Program Committee for Agriculture cited 1973 as the time when the Agency formalized a policy which required Agricultural Officers to serve as technical generalists/program managers and to supervise an expanding body of non-direct hire specialists. The movement has been underway for some time but will be greatly accelerated by the special requirements of the ANE strategy.

84-

APPENDIX

LIST OF MAJOR REFERENCE DOCUMENTS

1. A.I.D./ANE/TR/ARD, "A Rural Economic Growth Strategy for Asia and the Near East in the 1990's", (draft, January 1989).
2. A.I.D., "Food and Agriculture, Goals, Directions, and Operations for the 1990's", (draft, January 23, 1989).
3. House Committee on Foreign Affairs Report, of the Bipartisan Task Force on Foreign Assistance, February, 1989
4. Chemonics International Consulting Division and A.I.D./W Technical Personnel, "Agriculture, Rural Development and Nutrition Portfolio Review", prepared for the Working Group of the Joint Sector Councils, December 30, 1988.
5. Meyer, Richard C., "Agricultural Personnel Analysis", prepared for ANE/TR/ARD, September 27, 1988.
6. Antholt, Charles H., "ARD Officers: Toward the 21st Century A Personal Viewpoint", Networking ARDO's in Asia and the Near East, Oct. 22, 1988
7. Joe, Gwendolyn H. (A/ES), Kamens, Gerald L. (ANE/MENA), Meyer, Richard C. (Consultant), North, Walter E. (AFR/EA). A.I.D., "Assessment of the Foreign Service and Civil Service Recruitment Systems", A Report for the Deputy Administrator, November 16, 1988.
8. A.I.D., Agriculture Sector Council - Personnel, Reporting Memo Donald Mitchell to Kenneth Prussner, Nov. 20, 1986.
9. Brady, James R. (PFM/PM/TD), Kux, Molly (ANE/PD), Meyer, Richard C. (Consultant), "Assessment of A.I.D. Staff Training Programs", A Report for the Deputy Administrator, January 19, 1989.
10. A.I.D., "Building a Cadre of Career Agriculturalists in A.I.D.", Technical Program Committee for Agriculture, April, 1981.

ANE/TR/ARD:RMEYER:EMS/AKF:02/10/89:#8241D

85

**A Review of the ANE Bureau's PL-480 Title I and III Programs:
A Summary of Key Findings and Issues**

December 1988

**Chris Hermann
ANE/DP/E**

The author is indebted to Mike Crosswell and David Carr of ANE/DP whose comments and corrections significantly improved the discussion of economic issues pertaining to food aid.

EXECUTIVE SUMMARY

The ANE Bureau currently has PL-480 Title I and III programs in Morocco, Tunisia, Egypt, Yemen, Pakistan, Sri Lanka, Bangladesh, Indonesia, and the Philippines. Case studies of the economic and policy environment in which these programs are implemented were prepared by the Bureau; this paper summarizes major findings and issues from those studies.

Recommendations

The major recommendations drawn from the case studies concern the need for better analysis, monitoring and evaluation of these programs:

- 1) More attention needs to be given to the efficiency with which the food and foreign exchange made available by these programs is used. The resources made available by PL 480 Title I and III programs in ANE primarily serve growth and adjustment objectives (as opposed to nutritional objectives). Therefore, be addressing foreign exchange constraints, the justification should assess the need for additional foreign exchange and the recipient government's efforts to undertake structural adjustment. The efficiency of the foreign exchange regime and other economic policies that affect foreign exchange allocation should be carefully analyzed at the planning/justification stage. Policy changes that affect foreign exchange allocation should be analyzed in justifying the program and monitored during program implementation.
- 2) Food pricing policies need to be carefully analyzed to determine whether there are unwarranted disincentives to domestic food production and monitored during implementation.
- 3) Self-help measures should be utilized more fully as a policy dialogue tool. The program's self-help measures need to be specified clearly and quantified if possible, and the expected impacts of the measures should identified and analyzed in the program justification.
- 4) Evaluation of the program should address these same issues, shifting the analysis from ex ante to ex post.
- 5) Monitoring and evaluation of development activities funded with local currency generations should be limited to assuring the correct amount of proceeds are generated (or deposited in a special account) and used according to the program agreement. Evaluating the development impact of local currency funded activities should depend principally on information generated by the projects.

Summary

Contrary to common perceptions, ANE's Title I/III programs largely serve growth and adjustment objectives. Rather than providing additional food, Title I/III programs permit savings in foreign exchange to help ease the recipient country's balance of payments problems. Accordingly, the policies affecting foreign exchange should be of concern. Across the nine ANE countries with Title I/III programs, the policy regimes that determine the efficiency with which these resources are used, vary widely from highly inefficient (e.g., Egypt) to acceptable (e.g., Pakistan). Growth and adjustment objectives are also supported in many program by self-help measures designed to improve efficiency and productivity. In short, ANE's Title I and III programs should be viewed largely as an economic resource transfer that can support the development of the recipient country, if the resources are used efficiently, rather than nutritional or feeding programs.

Disincentive effects in ANE countries are largely due to food price and marketing policies. In the majority of cases, ANE Title I and III programs have not contributed to disincentives to domestic agricultural production. The most notable exception is Egypt where, in the context of current producer and consumer price policies, the Title I program helps enable the GOE to maintain economically unsound food policies.

The case studies indicate that producer and consumer pricing policies and food and agricultural input marketing systems need to be monitored: a) to assure that they provide appropriate incentives to production and consumption as changes in these systems occur, b) to assess changes, or the lack thereof, in respect to self-help measures, and c) to identify additional policy reforms and self-help measures the programs should support.

Where well-entrenched policy distortions create unwarranted disincentives to agricultural production, and where overriding U.S. foreign policy or market development objectives drive food aid decisions, Title I/III may contribute to enabling the recipient country to continue such policies, producing the perverse effect of weakening A.I.D.'s ability to use food aid to promote development. Egypt is the most notable example.

The resources provided by food aid have contributed to supporting larger adjustment programs at the macroeconomic and sectoral levels. Even though the IMF or World Bank are usually the major lenders for such programs, food aid resources have provided additional incentive to the recipient country to enter into and carry out these reform programs, and additional resources to ease the adjustment.

In several countries, the self-help measures included in Title I/III agreements have produced important agriculture policy changes and promoted private sector development. In short, in several ANE countries (e.g., Pakistan, Bangladesh and Philippines) food aid has been an effective means for supporting policy reform, particularly where a series of programs have provided continued support for a set of reforms. In light of this experience, it appears that the utility of food aid as a policy dialogue "instrument" has been under-estimated in some ANE programs. More recently, the policy orientation or use of self-help measures has increased (e.g., Tunisia and Morocco).

U.S. market development objectives have undermined the use of food aid for policy dialogue by overriding A.I.D.'s ability to withhold resources (Philippines) or by limiting the measures to those that do not threaten U.S. market interests (Pakistan). These conflicts need to be anticipated and resolved at the outset so as not to disrupt policy dialogue unnecessarily.

Local currency generations from food aid have often augmented host country budgets for projects and other development activities during periods of fiscal austerity, further contributing to economic growth. In addition to counterpart funding of development projects, local currency generations have also been used for existing budget line items, capital development and even disaster relief. This funding has helped to alleviate potential hardships during a period of structural adjustment in these countries. Such programming has also provided most ANE missions with a mechanism for directing sales proceeds to activities likely to produce development benefits.

Several of the studies noted the increase in management demands resulting from greater programming of local currency. Specifying the use of local currency in program agreements assures that what A.I.D. considers priority development projects receive funding. However, increased programming imposes greater monitoring requirements for A.I.D. and the recipient country to assure compliance. At issue is whether the gain from greater programming offsets the increased management demands and staff time increases, as well as the problem of who "owns" the local currency. Very detailed programming may even run contrary to A.I.D.'s policy objectives.

The case studies also raised several additional issues. Determining whether the self-help measures of Title I/III programs produced actions that were additional to what the recipient country would have enacted irrespective of the food aid is inherently problematic. This paper argues that given the nature of the policy reform process and A.I.D.'s role in it, the additionality question should be addressed in respect

to whether food aid contributed effectively to the overall process. Ambiguity in the statement of self-help measures was noted for several programs. Given that food aid largely represents an economic resource transfer in ANE programs, specificity in self-measures should be encouraged to improve program monitoring and evaluation.

Finally, monitoring and evaluation focusing on the development impact of food aid resources has been a standard part of past programs. Given that ANE's Title I/III programs are largely economic resource transfers usually linked to policy reform, standards for analysis, monitoring and evaluation of development effectiveness that apply to other such modes of assistance should also apply to these programs. Efforts to improve analysis, monitoring and evaluation should focus on the areas specified above, especially on the contribution of the self-help measures to the policy reform process.

1. Introduction: The Increasing Importance of Food Aid

The ANE Bureau currently supports PL-480 Title I and Title III programs in nine countries - Philippines, Indonesia, Bangladesh, Sri Lanka, Pakistan, Egypt, Yemen, Tunisia and Morocco. Though provided in the form of food commodities, the monetary equivalent of this aid in local currency and foreign exchange is considerable. In FY 88, food aid worth more than \$850 million constituted approximately one-third of the Bureau's total assistance budget (excluding assistance to Israel). Title I/III totaled some \$467 million. Clearly, food aid is an important part of the Bureau's economic development programs.

Food aid can serve a range of purposes, from the least self-interested (humanitarian disaster relief) to the most self-interested (development of markets for U.S. agricultural producers). As a form of economic development assistance, the effectiveness of food aid is dependent to a significant degree on the economic context in which the aid is provided. Of particular importance are the economic policy environment that affects the efficiency of markets through which food aid moves; the incentives to local producers and consumers of food commodities; the economic policies that affect the efficient allocation of foreign exchange made available by food aid imports; the impact of local currency generations used for development activities; and, perhaps most important, the impact of the program's self-help measures.

Food aid provides a means for improving this same policy environment, at the macroeconomic level (e.g., in conjunction with host country structural adjustment efforts) and at a sectoral level (e.g., self-help measures directed at reform of agricultural prices, input pricing and other aspects of market operations). The linkage of food aid to policy reform is both direct, through the program's self-help measures and indirect, through making available additional resources (food, foreign exchange and local currency) that can support policy reforms not specified in self-help measures. As a means of influencing policy changes, the self-help mechanism facilitates policy dialogue by increasing A.I.D.'s access to host country policy makers while food aid supplies the resources to support the process.

To understand more clearly the economics and economic impacts of ANE's Title I and III programs during the past ten years, a case study of each program was prepared by Bureau staff. Data on food aid levels, commodity mix, local agricultural production, trade, and government budgets were reviewed. The studies discussed the basic objectives of the programs and their relationship to the commodities provided, the efficiency of foreign exchange use, incentives to production, distribution

systems, consumption patterns, market operations and pricing, policy dialogue, self-help measures and the use of local currency. (Annex A contains the scope of work followed by these studies.)

This paper summarizes key findings from the case studies, focusing on common factors affecting the programs and issues raised by the case studies concerning the effectiveness of food aid as a mode of economic development assistance and a means of supporting policy reform.

2. Program Objectives

The issue of what objectives these programs primarily serve (i.e., economic versus nutrition) depends on what food aid contributes to the recipient country's economy. If the commodities contribute to meeting the country's basic food requirements (i.e., without the food aid, supply levels would have been correspondingly lower) then the food aid resources serve nutritional objectives by increasing the amount of food available to the population. If the recipient country would have obtained the same level of commodities through other channels, e.g., from other donors or through commercial purchases, irrespective of the PL-480 program, then the food aid resources save foreign exchange. That is, the food aid permits the recipient country to use the foreign exchange that would have gone to food purchases for other purposes. The foreign exchange the food aid makes available ameliorates the country's balance of payments difficulties.

Based on past patterns of consumption and levels of food imports, the studies indicate that Title I/III resources largely augment availability of foreign exchange and not food. The importance of the foreign exchange made available by the food aid varied according to the size of the program in respect to the overall foreign exchange requirements and the severity of the recipient country's balance of payment problem. This ranged from relatively minor (e.g., Tunisia) to substantial (e.g., Bangladesh). However, each recipient country confronted a growing balance of payment problems beginning in the late 1970's or early 1980's. The severity of the balance of payment problem also varied among the nine PL-480 countries, but in each case, the foreign exchange made available by food aid was definitely needed for much of the period covered by the PL-480 agreements.

The nutrition versus foreign exchange question is important to how food aid programs should be designed and managed. The most common view of Title I and III programs are that they constitute additional food that serves nutritional objectives. In reality, the principal effects of ANE's programs are to

increase the availability of foreign exchange to help ease balance of payments problems and to support policy reform via self-help measures. Additional objectives include increasing agricultural production; improving the efficiency of agricultural markets; expanding the role of the private sector in importing, processing and distribution; and supporting price policy changes for producers and consumers. Local currency generations also contribute to the general development budget of the country, providing funding for various A.I.D. and other donor projects in agriculture, infrastructure, and human resource development. Nutritional objectives are of minor or negligible importance in ANE's programs.

However, determining that food aid met economic more than nutritional objectives (i.e., whether it added to food supplies or to foreign exchange supplies) was not easy in some cases because one must speculate about food supplies in absence of the PL 480 program. Further, in some countries, it may not be an "either-or" proposition. In an "easy" case, such as Sri Lanka, food imports (including wheat which was the main PL-480 commodity) increased over the course of program, and the amount of food provided through the program was small in comparison to the overall volume of food imported. This, along with other indications that the government was committed to meeting the growing demand for wheat, suggests that the PL 480 food aid largely constituted foreign exchange assistance.

Predicting what would have been the case for countries facing a serious balance of payments problem requiring import reductions and other adjustment measures is not so straightforward. Under these circumstances, the country may have had no alternative other than to reduce imports of food commodities. If those reductions would have lowered the food supply below the level needed to meet the country's basic nutritional requirements, and food aid contributed primarily to meeting that basic nutritional level, then the program served nutritional objectives.

Food aid in excess of meeting those levels may partially serve both nutritional and foreign exchange objectives. In other words, a portion of the food aid may have been additional to other food imports and the remainder, not additional. Alternatively, food aid in excess of basic nutritional levels may have led to wasted resources in the form of excess consumption or food used for animal feed.

A further complication (not addressed in the papers) is that even if food aid contributes to maintaining an adequate food supply, there is no assurance that the food distribution systems function in a way that nutritional requirements are met equitably throughout the country. For example, the food supply for certain disadvantaged groups or geographic regions may have

been inadequate even though the overall food supply, in principle, was sufficient for the country's needs. In short, even when food aid contributes to an adequate aggregate food supply, there is no assurance that this also contributed to meeting nutritional requirements throughout the country. No conclusions can be drawn about ANE Title I and III programs in this regard; more analysis than is contained in the case studies would be needed.

3. Efficiency of Foreign Exchange Use

Given that food aid in many cases essentially contributed to the availability of foreign exchange, it is important to consider how effectively countries utilized this resource. Policies and practices governs the allocation of foreign exchange determines the efficiency with which the resources provided by ANE's Title I/III program were used. Across the nine countries, policies affecting the exchange rate and trade regime varied widely, from the inefficient (e.g., Egypt, Tunisia, the Philippines) to the reasonably sound (e.g., Pakistan, Indonesia). Some showed some improvement over the course of the program (e.g., Bangladesh).

Ineffective use of foreign exchange was caused by policy distortions common to many developing countries - over-valued currencies, quantitative restrictions on imports, trade policies protecting inefficient local industries for import substitution objectives, controls on foreign exchange by the central bank that resulted in inefficient allocation to parastatals as opposed to private sector producers, expansionary fiscal policies that worsened the balance of payments, etc.

Pakistan illustrates the complexity of the problem. Pakistan's exchange rate policy during the 1980's combined with an adequate supply of foreign exchange to the private sector through formal and informal channels contributed to increased productivity of foreign exchange in the Pakistani economy. However, promotion of inefficient import substitution industries and subsidized energy pricing diminished effective use of foreign exchange. Overall, Pakistan maintained rapid growth without unmanageable strains on the balance of payments, indicating reasonably good policies governing the use of foreign exchange and other resources.

Indonesia instituted a number of structural adjustment measures, including a series of devaluations, in response to the fall in the international oil prices. The GOI has recently made further changes both at the macroeconomic and sectoral levels. Foreign exchange provided by food aid, therefore, is used fairly efficiently. Though much remains to be done to

improve the policy environment in Bangladesh and Morocco, foreign exchange use has improved in both countries.

In short, in countries where progress on economic policy reform has been made or is underway, the foreign exchange made available by the Title I/III programs is definitely warranted. The additional foreign exchange serves as an incentive to continue the process and alleviates to some degree the hardships resulting from structural adjustment. In cases where foreign exchange is used inefficiently, going to marginally productive or unproductive purposes, or where the country refuses to undertake needed policy reforms, an economic rationale for making available foreign exchange through a Title I/III program is problematic. At best, it might serve to encourage future policy reforms; at worst, it might act to delay them.

A major conclusion drawn from the studies is that ANE's Title I/III programs largely constitute additional foreign exchange assistance to the recipient country. Therefore, justifications and decisions concerning food aid and analyses of economic impacts should pay greater attention to policies affecting how efficiently foreign exchange is used. This issue receives too little attention at present and, in some cases, is ignored in food aid analyses. Self-help measures to encourage more efficient allocation of foreign exchange should be considered where appropriate.

4. Incentives for Agricultural Production, Distribution and Consumption

A major issue for food aid programs is their potential for creating disincentives to domestic agricultural production. Whether PL 480 commodities create or help to maintain disincentives to domestic food production is determined by the pricing and marketing systems through which the commodities move. This includes the pricing and marketing of other commodities for which PL 480 food may substitute.

Given that ANE Title I/III programs primarily make available additional foreign exchange for the recipient country, the key question is whether prices to producers are at or close to international market prices. (In other words, disincentives from these programs cannot result from increasing overall food supply that would lower farmgate prices, because the food supply would have been approximately the same with or without the Title I/III program.) That is, ANE's Title I/III programs may contribute to production disincentives when food price policies are seriously distorted - i.e., domestic prices are set considerably below international market prices. Even when the PL 480 commodity provided is not produced locally (e.g.,

wheat), it can still create a disincentive to producers of a local commodity for which it substitutes (e.g., rice) due to distorted food pricing policies.

ANE's Title I and III programs are implemented under a variety of agricultural production and marketing systems. With some notable exceptions, disincentives to domestic agricultural production have not resulted from these programs, particularly since they do not provide additional food in ANE countries. Rather, production disincentives in food aid countries are due to agricultural price policies and market controls imposed by the host government. Moreover, the self-help measures in a number of these programs have been directed at changing policies that cause market distortions and production disincentives.

Several of the case studies concluded that little if any price distortions or disincentives to production resulted from substitution of wheat for rice by consumers. For example, producer prices for rice are set relatively high in Indonesia in support of the government's policy of achieving rice self-sufficiency. The government does not subsidize wheat consumption. Hence, it is fair to conclude PL 480 wheat has not created production disincentives to rice producers.

Producer price incentives are also supported in Tunisia, Morocco, Sri Lanka, Pakistan, Yemen and the Philippines. Morocco, for instance, sets procurement prices for wheat at 15% to 40% above international market prices. Consequently, despite the size of the Title I to Morocco, food aid is not creating disincentives to production, and wheat and cereal plantings are increasing. In Yemen, the government sets what are considered to be reasonable profit margins for rice and wheat importers, including transportation costs. The resulting high food prices create a clear incentive for domestic food production. In some countries, price incentives may indeed be too great rather than too small.

Production incentives for edible oils in Pakistan have been supported by the Title I program's self-help measures to increase consumer prices, slowing growth in oil imports and encouraging domestic production. In light of low international edible oil prices, the price of imported oil used for ghee (and ghee prices) were not so low as to discourage domestic production to a significant degree. Domestic production is now protected (perhaps excessively) due to a variable tariff on imported oil.

Incentives provided by support prices are only effective if the government is able to maintain them consistently. Bangladesh has had some difficulty in this respect. In several years, the BDG has not been able to purchase food grains at official

prices. On the other hand, the BDG has tried to provide infrastructure - improved irrigation, drainage, flood control - needed to encourage increased production. (Similar arguments about "indirect" incentives to producers could be made for each of the countries receiving food aid. Looking at more than market prices, the case could be made that successful infrastructure and agriculture development projects supported by the central government also constitute incentives to producers.)

The major problem case is Egypt, where foreign exchange is used inefficiently due to multiple, overvalued exchange rates and consequent rationing of foreign exchange to some users. Highly protectionist trade policies designed to promote specific local industries and excessive reliance on parastatals exacerbate the problem.

The GOE's agricultural and food price policies clearly create unwarranted disincentives for agricultural producers. Contrary to economic development objectives, U.S. food aid helps the GOE to maintain economically unsound policies. Specifically, it is likely that food aid contributes to enabling the GOE to maintain price policies that seriously distort production decisions in the agriculture sector. (On the other hand, it could be argued that this is not intrinsic to food aid - other forms of economic assistance also enable the GOE to sustain unsound policies.) The extent to which such policies achieve the government's welfare objectives is also questionable - untargeted, subsidized food prices benefit consumers across all socio-economic classes, irrespective of their need for such subsidies.

Though disincentive issues generally pertain to prices to producers, distorted consumer prices can also erode the economic justification of Title I/III program. Egypt offers a good example where consumer prices of wheat products are also seriously distorted in Egypt. Food subsidies have encouraged excess consumption of wheat products (i.e, per capita consumption levels above basic nutritional requirements). The GOE's importation of wheat to meet this inflated demand increases overall food imports, worsening Egypt's balance of payments. Additional distortions result from restrictions on meat imports that lead to artificially high prices for red meat. This raises the price for animal fodder, encouraging farmers to grow berseem (clover) instead of wheat. Finally, the GOE further discourages wheat production by setting farmgate prices for wheat well below world market prices. In short, Egypt's Title I program is clearly an example of where the lack of economic justification for food aid is overridden by foreign policy and U.S. market development objectives.

Tunisia and Morocco also maintain food price policies that encourage high consumption levels of wheat products by subsidizing consumer prices. For example, Tunisia's consumer price subsidies on cereals accounted for 60% of the total cost of subsidies provided by the government in 1985. Like Egypt, the Government of Tunisia's importation of wheat to meet this inflated demand increases the overall level of imports, worsening the balance of payments. However, given high producer prices, PL 480 commodities do not contribute to production disincentives. Further, Tunisia has made progress recently to increase bread costs and plans to eliminate such subsidies gradually over a ten year period.

Bangladesh's food distribution and consumer pricing policies have also changed during the course of the food aid program. Subsidies on food have been reduced, though the overall costs of the ration system have increased. The Open Marketing Sales channel of the BDG's Public Food Distribution System was expanded while two other channels have been eliminated. This has contributed to stabilization of food prices and to better targeting of food subsidies (this was a major objective of the program's self-help measures). Further, the role of the private sector in the agriculture marketing system has increased, the most notable example being fertilizer distribution. A number of these changes have been supported directly by the Title III program's self-help measures.

A less successful attempt to change a part of the food marketing system in the Philippines was the elimination of the National Food Authority's monopoly position as a wheat importer and flour wholesaler. Self-help measures of the Title I program were designed to involve the private sector in wheat importing, making the market more competitive. However, domestic private sector millers succeeded in forming a cartel and gaining protection from flour imports. In effect, a private sector monopoly replaced the public sector monopoly. While the resulting high prices for flour encourage domestic price production, they nonetheless constitute a distortion.

Other examples of how producer and consumer prices and the food and agricultural input marketing systems have interacted with the food aid programs could be provided. The obvious conclusion, however, is that prices, marketing systems and related policies need to be monitored closely. This is necessary because they affect efficiency in food markets, including markets of which PL 480 commodities are a part. Moreover, analysis of changes, or the lack of change, in these systems should help to identify the policy reforms and self-help measures food aid programs should support.

5. Policy Dialogue and Self-Help Measures

5.1 Linkage to Macroeconomic Policy Reforms and Major Structural Adjustment Programs

From the case studies, it is evident that ANE missions are attempting to link the provision of food aid more directly to the policy reform agendas of the recipient countries at both the macroeconomic and sectoral levels. The use of food aid as a vehicle for policy dialogue and a mode of assistance supporting reform efforts is well justified. As discussed earlier, these programs largely constitute a resource transfer making available additional foreign exchange and budgetary resources to the recipient country. Merely because the initial form of the resource is food does not mitigate its economic significance nor its capacity to support policy reform. Several ANE missions have clearly adopted this perspective in their programming and management of food aid (e.g., Bangladesh, Pakistan).

Major economic stabilization and structural adjustment programs supported by the IMF or the World Bank ordinarily involve lending levels considerably greater than the resources available to a USAID mission (Egypt and Pakistan being the exceptions in the ANE region). However, ANE missions support the objectives of these major programs by providing external resources and by addressing sectoral policies consistent with these larger programs. Food aid has been a large part of this strategy.

Even though the foreign exchange and local currency that food aid makes available are usually a small percentage of the overall foreign exchange requirements and government budget of the recipient country, they are important secure resources, especially during periods of economic austerity. Augmenting the country's development budget or providing funding for specific ministry line items (as is done in Indonesia via local currency use in the Agriculture and Rural Sector Support Program) helps to ameliorate hardships imposed by policy changes. This linkage underlies several ANE food aid programs, e.g., Indonesia, Tunisia, and Morocco. As part of the mission's policy dialogue, food aid is provided with the understanding that these resources in part demonstrate A.I.D.'s support for the recipient country's structural adjustment efforts.

5.2 Self-Help Measures

A more direct linkage to the process of structural adjustment and policy reform is through the self-help measures of food aid programs. In ANE programs, self-help measures have been directed at changing commodity prices, increasing service fees, expanding the role of private business in the agriculture sector, and diversifying agricultural and industrial production to reduce imports and increase exports. Such reforms contribute to structural adjustment by reducing government expenditures, generating additional revenues, increasing foreign exchange earnings, re-directing available resources to the private sector for more efficient uses, etc.

In several cases, the self-help measures have been highly effective in stimulating important reforms. Significant results of food aid supported reforms have been achieved in the Philippines, Bangladesh and Pakistan.

For example, in the Philippines, the 1985 and 1986 agreements contained self-help measures directed at improving agriculture market systems through decontrol of milled rice prices, elimination of the GOP's monopoly on the importation of wheat, expansion of the private sector distribution of flour, liberalization of private fertilizer importation and marketing, and divestment from the GOP of certain retail activities. Considerable progress was made in decontrol of rice prices and fertilizer marketing and reducing GOP involvement in retail food outlets, and reforms in these areas have produced positive impacts. Given the political situation in which these measures were advanced, the potential usefulness of food aid as a vehicle for supporting policy reform is evident.

Bangladesh's food aid programs have supported self-help measures focused on the Public Food Distribution System. Self-help measures were used, in effect, as conditions for compliance with the Title III's debt forgiveness. Local currency generations from sales through the Open Marketing System and two other channels only counted toward debt forgiveness. As a result, use of the Open Marketing System increased.

Additional measures have been designed to expand the role of the private sector in the food distribution system. For example, the program provided soybean oil and cotton; measures were included to promote private sector processing and marketing of edible oils, and greater production by private handloom operators. In short, these measures have been successful in areas of increasing open market sales, expanding private sector participation, stabilizing food prices at appropriate levels and reforming the food rationing system.

Recently, Yemen's food aid program has also been used effectively to support various studies and related activities needed by the YARG to understand more clearly their policy options. It is noteworthy that A.I.D. was able to reach agreement with the YARG on undertaking such work despite resistance to donor involvement (including the IMF and World Bank) in policy matters. Similarly, the Pakistan Title I program supported studies of the edible oilseeds industry that led to identification and enactment of significant reforms.

The case studies show considerable variation in the extent to which self-help measures are used to promote policy reform. For example, Tunisia's self-help measures have generally consisted of funding targets, in effect constituting a local currency program. More recently, the mission has consolidated previous measures into several priority funding areas. In other programs, such as Egypt's, self-help measures have been too vague and general. This complicates determining whether the GOE has complied with the measures under the terms of the program. However, Egypt's recent agreements have become somewhat more specific about self-help measures, reversing the previous pattern.

In contrast, USAID/Morocco has substantially increased the policy content of the program's self-help measures designed to encourage agricultural production. Prior to 1982, self-help measures were largely directed at the use of local currency generations. In the FY 1984 program, the shift to policy-oriented measures began with a major study of pricing and subsidy policies in the agriculture sector. The study heightened the GOM's awareness of the interactions of producer and consumer prices and very likely facilitated the GOM reaching agreement with the World Bank on a major structural adjustment program in the agriculture sector.

Subsequent self-help measures have been linked to this structural adjustment program. The measures have supported institutional and private sector development objectives in addition to specific policy reforms, such as eliminating or reducing fertilizer and seed subsidies. Progress has been made; however, the same measures are part of the Bank's program. Consequently, the "additionality" of the self-help measures cannot be determined (i.e., the progress made on implementing the reforms might have occurred irrespective of the food aid program).

In conclusion, the case studies indicate the clear potential for using food aid as a policy dialogue tool through the self-help measures. However, the extent to which ANE missions have used self-help measures to support policy reform varies widely. Several missions have made effective use of these

measures to support reforms that have produced important economic improvements, particularly in respect to market efficiency. Where self-help measures have been effective in improving economic efficiency, continued support over several years was critical, illustrated by the PL-480 programs in Pakistan, Bangladesh and the Philippines. Self-help measures in other programs have been somewhat vague or very general; others have consisted simply of targeting local currency generations. Though missions argue that such "low key" approaches support policy reform indirectly, they nonetheless create the appearance of inadequate use of food aid's potential for stimulating self-help measures. In conclusion, some ANE missions seem to have underestimated the value of self-help measures as a vehicle for supporting policy reform.

6. Local Currency Programming

Local currency programming in ANE's Title I/III programs ranges from essentially none to very specific targeting on development projects or budget line items in the recipient country's budget. Egypt represents the minimal case where sales proceeds are not separately tracked, but go to the central budget. The GOE does not report on specific uses. On one occasion, the GOE did report (vaguely) that the funds contributed to food subsidies (especially wheat and flour), other agricultural subsidies, debt servicing and housing projects. Though the sales proceeds are a relatively small part of GOE revenues and expenditures (3% and 2% respectively in FY 86), local currency proceeds are equivalent to 20% of direct subsidies.

Other missions program local currency generations to a much greater extent involving special accounts, specified uses and reporting by the recipient country to A.I.D. on actual use on a semi-annual basis. For example, in Morocco local currency is used for counterpart funding of A.I.D. development projects, other agricultural production and research programs, and other GOM development activities. In Indonesia, local currency generations are included as part of the funding for the Agriculture and Rural Sector Support Program, providing funding for specific GOI budget line items (e.g., agricultural research and extension). In other programs, local currency has been programmed to cover costs entailed with implementing self-help measures.

A third approach used in the Philippines and Pakistan, for example, is simply to attribute local currency proceeds to development activities or general budget categories specified in the program agreement.

In Indonesia and Morocco, local currency proceeds are reported to have increased government expenditures for development activities beyond what would have been spent without a food aid program. By targeting local currency on specific development projects that were then incorporated in the host countries' budget, food aid enabled the missions to influence expenditures for activities that are likely to produce development results.

Assessment of the actual development impact of activities funded with local currency is difficult, if not impossible, due to a lack of monitoring and evaluation above the project input/output level. In other cases, it was not possible to determine whether the local currency raised development expenditures above what they would have been without the program funds.

An important issue raised by the Sri Lanka case study is that food price controls set the local market price for wheat below world market levels. This reduces the amount of local currency generated by food aid. In such cases, supporting price policy changes through food aid self-help measures can improve production incentives as well as increase local currency generations.

The establishment of a special account for local currency generations has generally functioned well, ensuring adequate documentation of funding uses. However, in the case of Bangladesh, a large shortfall of deposits of sales proceeds occurred, estimated to be approximately 45% of projected local currency generations. The mission and the BDG are attempting to expedite the deposit of these funds to make up the shortfall. Nonetheless, this indicates that even with special accounts, diversion of funds for purposes other than those stipulated in program agreements can occur.

In the past few years, ANE missions have increased the extent to which local currency is programmed. In part, this reflects the growing importance of food aid as a Bureau resource and the need to try to maximize the development results of these resources. But whether increased programming actually produces greater development impact remains to be seen in many instances. In the absence of properly conducted evaluations, it is only possible to assert that the potential for positive development results is greater when funding has been directed to projects with higher rates of return than would have been achieved through the host country's own programming of funds.

How much farther local currency programming can or should go was raised as an issue by several of the case studies. As programming increases, the management demands on the USAID mission and the recipient country correspondingly increase. A critical point at which management demands increase

significantly appears to be when local currency programming moves from generic, categorical uses to detailed lists of specific projects of priority to A.I.D.. Instead of "ex post" attribution of local currency expenditures, more detailed accounting of funds becomes necessary to verify compliance. Some cases, such as Bangladesh, concluded that the present programs are already highly staff intensive.

In addition to staff intensity, greater programming may exacerbate the contentious issue of who "owns" the local currency (especially under Title I) and whether such programming will be acceptable to the recipient country, as in Morocco. In effect, detailed programming constitutes a form of conditionality that some countries, such as Sri Lanka, flatly reject. The additional expenditure accounting and reporting requirements may also be unacceptable to the recipient country. Furthermore, to the extent that food aid resources are viewed as a form of support for larger structural adjustment efforts, detailed programming of local currency may be counterproductive to A.I.D.'s policy dialogue, undermining its ability to influence the reform process. It can also interfere with the host country's budget process, preventing policy makers from optimizing the allocation of resources.

7. Additionality: Did Food Aid Resources Produce Additional Reforms?

The additionality of reforms supported by Title I/III self-help measures was questioned by several of the case studies. At issue is whether the self-help measures of the program represent reforms that were additional to what the recipient country would have done on its own or as part of another donor funded program.

Current legislation pertaining to self-help measures [Section 109(d 2)] states "...to the maximum feasible extent, self-help measures identified in the agreement represent an expanded effort undertaken by the purchasing country that would not have been implemented in the absence of the agreement or amendment."

For several of the ANE programs, predicting with any degree of certainty the "counterfactual" case - i.e., what actions would have been taken without food aid resources - is very difficult. The issue is even more speculative when the self-help measures reiterate elements of major structural adjustment programs funded by the IMF or World Bank. Were the actions taken due solely to the Bank's funding? Did the additional support and resources A.I.D. provided through food aid produce additional incentive for action? Or would the host country have taken actions on its own irrespective of any donor?

Implicit in the legislation is that A.I.D. should distinguish its support for policy reform from other donor funded policy initiatives. Further, the reforms enacted with A.I.D.'s assistance should add to or expand what the host country would have done on its own, or at least accelerate the process.

The idea of isolating A.I.D.'s contribution to the policy reform process is more an analytic convenience (i.e., it facilitates assessing A.I.D.'s assistance and impact) than a reflection of how the policy reform process actually works. A.I.D.'s experience to date with donor assisted policy reform programs makes one point very clear. Under the best of circumstances, A.I.D. only exerts limited influence over a part of the reform process. It does not have "leverage" in the sense of causing policy changes that the host country does not want to make or is unwilling to maintain once U.S. assistance ends. Further, where policy reforms are purely the result of donor leverage, they are rarely effectively implemented and maintained. The reality is that A.I.D. is merely one among a number of players in the policy reform process and often a small player at that.

Using self-help measures to extract additional reforms is also problematic as a mission strategy. Any country has a limited capacity for making policy changes; and similarly so for the pace at which reforms can be enacted. As several of the case studies observe, if the country is making reasonable progress (measured against the country's economic situation and goals) in enacting important reform measures, it makes little sense for A.I.D. to push for more or try to accelerate the process. A far more realistic approach to the additionality issue is to view the policy reform process as a collaborative effort among the donors and the host country. A.I.D.'s concern about the additionality of self-help measures should not be whether they are somehow distinct, but rather, that the mission has made a concerted effort to use them constructively as part of the overall process. In other words, whether the mission used the resources provided through food aid effectively to contribute to the policy reform process should be how the additionality question is answered.

8. Improving Program Analysis, Monitoring and Evaluation

The case studies clearly show that significant monitoring and evaluation of the development impact of Title I and III programs has not been a high priority. Given that in the ANE region these programs largely constitute economic resource transfers that in some cases effectively support policy reforms, the same standards for analysis, monitoring and evaluation that apply to other modes of non-project assistance should, in principle, apply to Title I and III programs.

The foreign exchange and/or food made available through Title I/III programs are resources that flow through markets. Their contribution to economic growth and development depends on how efficiently the markets function - particularly on the efficiency of resource allocation - that in turn depends on policies and institutions that affect market performance. It is desirable and feasible to analyze and evaluate the combination of food and foreign exchange that food aid programs make available in the context of market performance.

Similarly, the local currency generated by some food aid programs supports development activities. Where these resources are significant contributions to the host country's budget, the development impact of these activities could be estimated and later evaluated to assure that program resources are contributing to social and economic development. Finally, the most important and enduring impact may come from the policy reforms forwarded by the program's self-help measures and there is ample room for improvement in evaluating these impacts.

Increasing monitoring and evaluation requirements for all aspects of Title I and III programs would obviously intensify the management demands of these programs further. Therefore, any improvements in analysis, monitoring and evaluation should be targeted on just those program elements that are most likely to have a significant or measurable development impact.

The contribution to economic development of the foreign exchange element of the programs will depend on the efficiency of the foreign exchange regime and other macroeconomic policy and institutional factors affecting how productively the additional foreign exchange is used. The efficiency with which the foreign exchange made available by the food aid program is used should be carefully assessed at the planning/justification stage, monitored during program implementation and be reviewed in any program evaluation. In some cases, the mission's on-going monitoring of the foreign exchange regime may be sufficient. But in most missions, additional analysis of the foreign exchange system will probably be necessary.

The development results of local currency generations that provide counterpart project funding or budgetary support for government functions (e.g., extension, agricultural research) will be determined by the productivity of the individual activities for which they are used. Monitoring sales proceeds and their use for activities specified in the program agreement is already a routine management function. In most cases, the number of these activities is simply too large for the food aid program to monitor and evaluate. Most Title I/III programs, therefore, must rely on information generated by the individual projects (e.g., project information systems, evaluations) to assess the effectiveness of these activities.

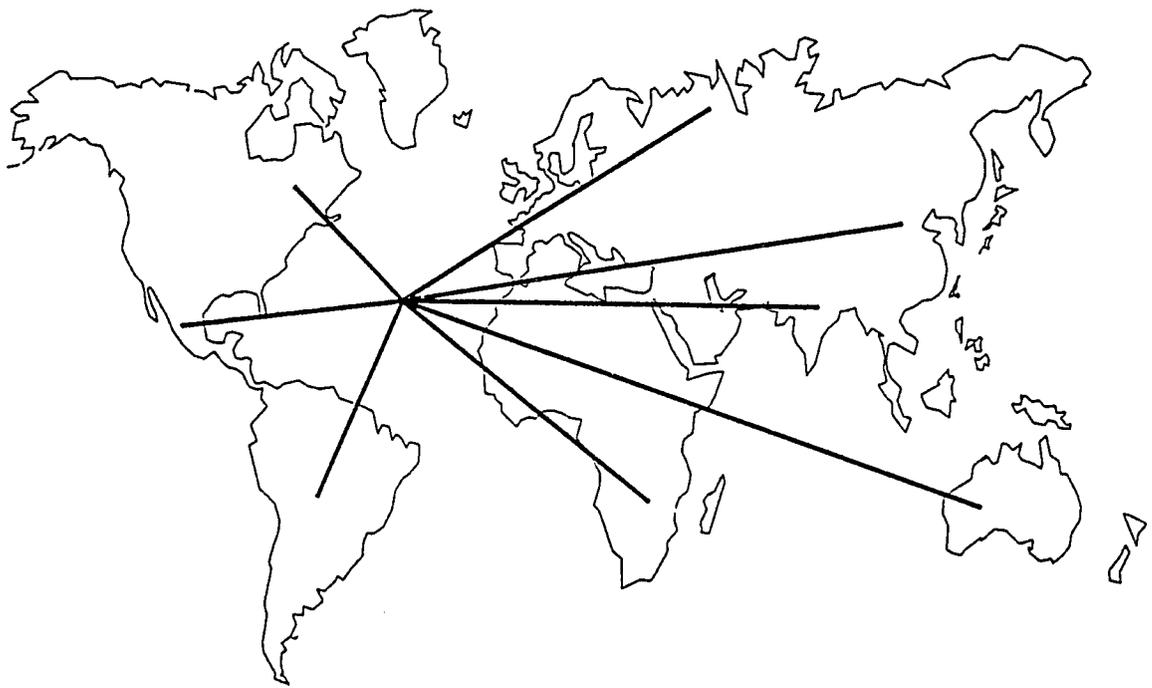
One area where better monitoring and evaluation could improve program management is the implementation and effectiveness of the self-help measures. The purposes for doing so are: a) to provide mission management with periodic assessments of progress in enacting the self-help measures and, to the extent possible, the effects of those measures, b) to document the mission's efforts to support policy reform in the host country and how food aid resources are being used as a part of this overall effort, and c) the effectiveness of program resources to support policy and institutional reforms and other related activities covered by the self-help measures.

In particular, the expected impacts of the reforms should be carefully identified in the program's justification, and then subsequently evaluated at the conclusion of the program. In large programs, such as Egypt, Bangladesh, and Pakistan, a special evaluative study might be needed to address these issues. Other programs could incorporate such information into their existing reporting.

As with other policy reform programs, the implementation of the self-help measures should be monitored on the basis of a series of interim benchmarks. This is feasible only if the self-help measures are clearly stated and, where possible, quantified. Several cases studies noted that the vague, ambiguous language used for self-help measures in some programs complicated determining what constituted compliance and whether the host country satisfied these measures.

Improving the monitoring and evaluation of the self-help measures should be treated as an integral component of the program. As is required for other modes of assistance, an information plan that specifies benchmarks, types of data to be reported by the recipient country, additional data to be collected or obtained from other sources (e.g., IMF or World Bank reports) and evaluation scheduling should be developed and included in the program budget.

Networking ARDOs



C G N E T

Telecommunications: A Resource for Responding to the Challenge

Networking ARDOs with CGNET

Robert Blumberg

What is CGNET?

The CGNET communication network interconnects international development and agricultural research organizations in over 32 countries. Originally developed to serve CGIAR, CGNET now provides many other users with low cost Electronic Mail (E-Mail) and data transfer.

Who uses CGNET?

CGNET clients include International Agricultural Research Centers, research institutes, universities, individual researchers, funding organizations and regional offices of the above. A complete directory of CGNET users is attached. USAID ANE countries with CGNET users include Egypt, India, Indonesia, Nepal, Pakistan, Phillipines, Sri Lanka, and Thailand.

E-Mail and Data File Transfer

Every CGNET user has an electronic mailbox within a mainframe computer which serves as a central post office. A user connects to the central computer via various telecommunications methods and electronically opens this mailbox with a unique ID and password. Messages can be composed and sent to other CGNET users or to a group of users. The message is instantly transferred within the main computer to the recipient's mailbox. The next time the recipient connects to the main computer and checks his or her mailbox, the message will be waiting.

The advantages of E-Mail include:

- * No telephone tag
- * No problems with time zone differentials
- * Provision for a printed record of the communication
- * Opportunity to use off-peak telecommunications rates
- * Ability to send one message to multiple recipients
- * Use by travellers with uncertain schedules
- * Lower cost than other methods

Data files can be transferred within E-Mail messages. These files include documents produced by any word processor including Wang, WordPerfect and Wordstar, Lotus 1-2-3 spreadsheets, and database files or updates.

Equipment Required

The basic equipment required for CGNET access is:

- * A computer (Wang, Apple, IBM compatible, Tandy, etc.)
- * A modem (the device which provides interface between computer and phone line)
- * A telephone with dial out capability
- * A communications software package (Crosstalk, Procomm, PC-Talk, etc.)

Sample CGNET Session

The communications software is used to dial the modem and connect to the central computer. Screens similar to the following would appear (*italics denote user response*).

CONNECT 2400
Dialcom X.25 Network
At "*" type C 0###
* C 057 (Network ID supplied by CGNET)
com 57/90096404000002
Primecom Network 57
Please Sign On
> ID CGI111 (User ID supplied by CGNET)
Password: *XXXXXXXX* (User defined password)
Dialcom Computer Service (57)
On At 09:13 02/22/89 EST
Last on At 11:58 02/21/89

Mail call (1 unread)

WELCOME TO THE CGNET

>

(System Ready Prompt)

Sending E-Mail:

> MAIL

Send, Read or Scan: *SEND*

To: *R.Lenton*

Subject: *Water Management Specialist*

Text:

Is a Sr. Water Management Specialist available to evaluate USAID Morocco's supplementary irrigation project Feb 17 - March 25?

Jim Lowenthal

.SEND

(.SEND tells the computer to transmit the message)

Mail ID: IPM-157-890203-1737645

(unique ID assigned by central computer)

R.LENTON -- Sent

Receiving E-Mail:

Send, Read or Scan: *READ*

(Scan displays the subject of messages)

To: J.LOWENTHAL (CGI111)

From: IIMI (CGU022) Dlvd: 22-Feb-89 02:05 EST (date rcvd by central computer)

MAIL ID: IPM-157-890122-125567

Due to recent turmoil Digana Village IIMI has installed Satpax 2 suitcase satellite station and is again on CGNET.

Disposition: *DELETE*

(message can be deleted, filed, or forwarded)

Real-Time On Line Conversations

E-Mail can be used for real time conversations with both parties remaining on line. This may be very costly, especially if long distance is used. One option is to prearrange for each party to connect to the central computer every 15 minutes and check for mail. This saves on connect charges and gives each participant a few minutes to formulate a response.

Transferring Data Files

- * Use the CGNET menu-driven File Transfer program to transfer or "upload" the desired file to the central computer
- * Compose the E-Mail message as usual, but add:
 `.LOAD BUDGET89.WK1` (loads the transferred spreadsheet file into the message)
 `.SEND`
- * The recipient receives the E-Mail and transfers ("downloads") the file to their local computer.
- * The file can be directly used with the appropriate software (e.g., Lotus, Wang, WordPerfect).

Getting on CGNET

Packet versus Non-Packet Switched Countries

A growing number of countries are establishing packet switching telecommunications networks. In these countries a local telephone call can access the international data services including the one CGNET uses. No international long distance charges are incurred.

In packet switched ANE countries (Egypt, Indonesia, Philippines and Thailand) any PC and a basic modem (\$100 - \$200) can access CGNET. A potential user must apply to the PIT for a Network User ID for billing purposes. If CGNET Services International, which administers CGNET, already has a Network User ID in a packet switched country it may be used. Pakistan, India and Tunisia have expressed an intent to install packet switching networks. A packet switching access point has just come on line in Beijing.

In non-packet switched countries access to International Long Distance Dialing is required. This requires a good quality modem (\$400-\$500) which can cope with noisy phone lines and echoes. The user must get PTT approval to install the modem. Fortunately, the approval process is getting easier as more people apply, especially if approval has already been granted to another user and use of a previously approved modem is requested.

Comparative Costs

The Consultive Group saves an estimated \$2 million (U.S.) per year by using CGNET over other means of telecommunications. Three years ago the original estimate was \$1 million. However, as is often the case when good communications are available, the amount of CGNET traffic has increased dramatically.

Average comparative costs for transmission of a double spaced page of text have been developed for ANE countries. The actual rates vary widely. In a packet switched country there are connect charges and data charges. Connect time ranges from \$6 to \$18 per hour. Data charges are per kilocharacter (1000 text characters) and range from \$0.20 to \$0.60 per kcharacter. In a country without a packet switching network International Long Distance Dialing must be used. A rate of \$3/minute (such as from India to the U.S.) has been used for comparison.

111-

Comparative Costs ANE Country to U.S.	Log on + First Page	Additional Pages
Packet Switched	\$1.00	\$0.75
Non-Packet Switched	\$3.50	\$0.50
Telex	\$6-\$18	\$6-\$18
FAX	\$6-\$18	\$6-\$18

The time required to log in and send or receive a page of text is about one minute (modem speed 1200 bps for packet switched networks, 2400 bps for international long distance). The transmission of an additional page is much faster as there is no connect time overhead for the initial log in sequence. With International Long Distance there is a high cost per minute, but there is no charge per 1000 characters. For this reason, transmission of additional pages can actually be cheaper using long distance since the charge per 1000 characters in a packet switched network may be higher than the cost of the few extra seconds on long distance. If no new mail has been received, a log in and check for mail check can be done in about 30 seconds.

Telex transmits very slowly at 5 characters per second (as compared to 120 or 240 characters per second on CGNET) and regular international long distance rates apply, with an average Telex taking about three minutes to send.

Facsimile costs also vary widely. A FAX machine is basically an error correcting modem. When a reception error is encountered the sending machine does not slow the transmission rate. The receiving machine asks for a repeat of that garbled section. A transmission that may take 20-30 seconds over good quality lines in the U.S. may take up to six minutes to some countries with noisy lines. Nairobi has recently reported six minute FAX transmission times. Transmission time may be greatly reduced at other times. Hence the range of costs shown. Of course, Telex and facsimile are better suited for certain applications (e.g., communicating with a non-CGNET facility or sending a Purchase Order).

The chart shows, however, that even if the estimates are significantly off CGNET communications is much cheaper than Telex or FAX.

Computer Conferencing

There is presently a "computer conference" on CGNET discussing Post-Harvest Agriculture. Interested CGNET users can join the conference for \$10 per month. Discussion is in the form of E-Mail addressed to the conference which then appears in the mailbox of each participant. Everyone can see the remarks of everyone else in the conference at their own convenience.

The Post-Harvest Agriculture Computer Conference is divided into Perishables and Grains groups. Participants discuss new techniques, individual research and current applications. Specific topics include underground storage methods, Integrated Pest Management, food security in LDCs and vertebrate pest damage.

Interested ??

If you want to know more about CGNET and how you can use it as another resource in responding to the challenge, please contact Robert Blumberg during the conference or Jim Lowenthal afterward.

22 February 1989

CGNET Directory as of 14 February 1989

>DIS DIR

A. BATIONO	10074:CGU004	ICRISATSC Soil Scientist(IFDC)
A. DECLALIKAR	157:CGI097	Harvard University
A. DEUTSCH	157:CGI706	CICP/IPPC Oregon State University
A. ESTRADA	157:CGI301	CIAT Head Systems
A. FAJARDO	157:CGI801	CIP Director of Administration
A. FLETCHER	157:CGI601	ISNAR Publications Officer
A. GARCIA	157:CGI229	CIOA Consultant
A. J. CALLOW	10074:CGU014	IBPGR Post-Grad. Train. Course, Birmingham, UK
A. JAGNE	10074:CGU004	ICRISATSC Regional Admin. Officer
A. KUMAR	10074:CGU004	ICRISATSC Millet Breeder
A. LEWITT	5625:CVI010	University of the Virgin Islands
A. MCCALLA	157:CGI223	TAC Chairman UC-Davis
A. MCNAUGHTON	2020:IDR003	IDRC - Fisheries Program, Delhi
A. OBILANA	10074:CGU002	ICRISATZW Sorghum Breeder
A. RAMAMURTHY	157:CGI505	ICRISAT Travel Officer
A. ROELFO	157:CGI203	CIMMYT Univ. of Minnesota
A. SCHULZ	10074:CGU004	ICRISATSC Project Development Officer
A. SCHUTT	157:CGI505	ICRISAT Asst. Engineer, RMP
A. TEKETE	10074:CGU004	ICRISATSC Agronomist (U. of Hohenheim)
A. VON-DER-OSTEN	157:CGI601	ISNAR Director General
A. WEBB	157:CGI058	Soil Conservation Res. Branch, Asst. Director
ACDI	157:CGI150	Agricultural Development Cooperative Intl.
ACE	157:AGC001	Agr Communic Educ
ACIAR	157:CGI034	Australian Center for Int'l Agri. Res.
AFRUS	10081:MMU283	Ag & Food Research Unit of Statistics, Edinburgh
AID. ST. AG	157:CGI901	USAID Science and Tech/Agr, Washington, D.C.
AIDAB	157:CGI219	Australian Int'l. Dev. Asst Bureau
ARD/W	157:CGI111	USAID Asia/Near East Ag/Rural Devel
ASRO	2020:IDR004	IDRC, ASRO, Singapore
ASRO57	157:CGI086	IDRC Regional Office Singapore, Backup Account
AVRDC. TEST	157:CGI227	AVRDC Taiwan
B. BARRY	157:CGI904	IIE Mgr, Systems/DataProc.
B. CARDON	157:AGS4214	WINROCK FARMING SYSTEMS
B. CURTIS	157:CGI023	CIMTURK Director, Winter Wheat Program
B. DAVY	2020:IDR004	IDRC - Fisheries Program, Singapore
B. DUFF	157:CGI401	IRRI
B. EDWARDSON	2020:IDR001	IDRC Post Production Program Officer, Bogota
B. GILLIVER	10074:CGU004	ICRISATSC Statistician
B. HARDAKER	157:CGI037	U. of New England, Dept. of Agri. Econ., Australia
B. HART	141:TCN404	WINROCK FARMING SYSTEMS
B. IRWIN	157:AGS770	Univ. of Illinois, OIA
B. KAPLAN	157:CGI100	CSI Admin. Assistant
B. MARVALDI	10074:CGU004	ICRISATSC Project Dev Officer
B. NDUNGURU	10074:CGU004	ICRISATSC Groundnut Agronomist
B. NTARE	10074:CGU004	ICRISATSC Cowpea Bdr/Agrst(ILCA)
B. ROSE	157:CGI701	IFPRI Head, Information Servic
B. SKOVMAND	157:CGI071	CIMMYT-TURKEY Wheat Breeder
B. SWINDALE	157:CGI503	ICRISAT Hawaii
B. VALENT	157:CGI047	DuPont Central Research
B. WILLIAMS	157:CGI063	ICIPE Biostatistician
P. WILLS	157:CGI505	ICRISAT Research Editor
BALU	157:CGI505	ICRISAT Executive Assistant to DG
C. DELEON	157:CGI205	CIMMYT Bangkok Office
C. DEVENDRA	2020:IDR004	IDRC - Animal Production Systems, Singapore
C. DE WIT	157:CGI231	TAC Wageningen, The Netherlands
C. EDWARDS	157:CGI146	Purdue Pest Management
C. FARRAR	157:CGI005	CG SEC Executive Secretary
C. GEIGER	157:CGI146	Purdue Pest Management
C. GIROUX	10074:CGU004	ICRISATSC Regional Information Officer
C. GONZALEZ	157:CGI201	CIMMYT Head, DataProcessing Ser
C. GOTSCH	175:CGI230	Food Research Institute (Stanford University)
C. HOWES	10079:ARS004	Plant Breeding Inst, Trumpington, Cambridge
C. IRITANI	141:TCN320	FORD FOUNDATION DCP
C. JAMES	157:CGI201	CIMMYT Consultant
C. JOHANSEN	157:CGI505	ICRISAT Pulse Agronomist
C. KRAMER	157:CGI601	ISNAR Administrative Officer
C. MANN	157:CGI205	CIMMYT Bangkok Office

C.MASON	10080:BTG068	British Telecom Gold Intl Sales Mgr
C.MATANYAIRE	10074:CGU002	ICRISATZW Expt. Station Manager
C.MCCLUNG	141:TCN401	WINROCK-BK BANGKOK OFFICE
C.O.QUALSET	157:AGS302	U. of California-Davis
C.ONG	157:CGI505	ICRISAT Cropping Systems Agronomist
C.PATTANAYAK	157:CGI505	ICRISAT Coordinator CCRN
C.PODESTA	157:CGI043	CIP Librarian
C.PRAY-AGS	157:AGS1629	ISNAR-USA Univ. of Minn.
C.RENARD	10074:CGU004	ICRISATSC Head, Resource Mgmt
C.SANDERS	141:UGA001	IICPAB EXEC.COORD/SYSOP
C.SASTRY	2020:IDR004	IDRC - Forestry Program, Singapore
C.SIRI	157:CGI043	CIP Training Specialist
C.SULLIVAN	157:CGI144	INTSORMIL
C.T.HASH	157:CGI505	ICRISATMX Sorghum Breeder
CAB	10084:CAU001	Commonwealth Agriculture Bureau, UK
CARINET	157:CGI094	CARINET Washington, DC
CG.PFINDER	157:CGI145	CG SEC Test X.400 Gateway Account
CGIAR	157:CGI001	CG SEC GENERAL ADDRESS, Washington, D.C.
CGNET	157:CGI100	CSI CGNET Services Intl., Palo Alto
CGNET.HELP	157:CGI228	CGNET Services Network Help Mailbox
CGNET64	164:CGI1000	CGNET Services International System 64 Account
CGNET74	10074:CGU001	CSI Backup Account, UK
CIAT	157:CGI301	CIAT GENERAL ADDRESS - Cali, Colombia
CIAT-IMPORTS	157:CGI704	CIAT Imports Division
CIAT-MIAMI	157:CGI306	CIAT Miami, USA
CIAT64	164:CGI1003	CIAT Backup Account
CIATBAN	157:CGI305	CIAT BANGKOK REGIONAL OFFICE
CIAT_GUATEMALA	157:CGI303	CIAT ICTA/CIAT Office, Guatemala
CICP	157:CGI604	CICP College Park, MD
CIMBAN	157:CGI206	CIMMYT Bangkok, Thailand
CIMKAT	157:CGI089	CIMMYT - Kathmandu, Nepal
CIMKAT57	157:CGI089	CIMMYT Kathmandu (US Account)
CIMKAT74	10074:CGU020	CIMMYT Kathmandu, Nepal
CIMMYT	157:CGI201	CIMMYT GENERAL ADDRESS MEXICO
CIMMYT64	164:CGI1002	CIMMYT Backup Account
CIMMYT74	10074:CGU010	CIMMYT
CIMMYTCAL	157:CGI206	CIMMYT California
CIMMYT_BANGKOK	157:CGI205	CIMMYT BANGKOK REGIONAL OFFICE
CIMPAK	157:CGI023	CIMMYT PAKISTAN OUTREACH
CIMPAK57	157:CGI023	CIMMYT PAKISTAN OUTREACH
CIMPAK74	10074:CGU006	CIMMYT PAKISTAN OUTREACH/ SYSTEM 74
CIMTST	157:CGI024	CIMMYT TEST ACCOUNT
CIMTURK	157:CGI071	CIMMYT Ankara, Turkey
CIMZIM57.TEST	157:CGI016	CIMMYT-ZIMBABWE Test Account (US)
CIMZIM74.TEST	10074:CGU019	CIMMYT-ZIMBABWE Test Account (UK)
CIM_COSTARICA	157:CGI118	MAG, San Jose, Costa Rica
CIM_HONDURAS	157:CGI118	Recursos Naturales, Comayagua, Honduras
CIM_PANAMA	157:CGI124	EDIAP, Panama City, Panama
CIM_SALVADOR	157:CGI122	CENTA, El Salvador
CIP	157:CGI801	CIP GENERAL ADDRESS Lima, Peru
CIP-RRT	157:CGI044	CIP Regional Research & Training
CIP-TCO	157:CGI043	CIP Training and Communications Dev.
CIP64	164:CGI1004	CIP Backup Account
CIPCIM.KENYA	10074:CGU017	CIP/CIMMYT at ILRAD, Nairobi
CITI	157:CGI804	CITIBANK Citibank Intl Services, New York
CNCP.HALL	2022:SLS155	Account Rep, Ottawa
CNCP.HELP	2022:SLS155	Account Rep, Ottawa
CORNELL	157:CGI200	Cornell University, Int'l Agriculture Program
CPC	157:CGI207	CPC Carter Pres Ctr, Atlanta
CSI	157:CGI100	HQ, Palo Alto, CA, USA
CSI.BILODEAU	157:CGI103	Palo Alto, CA, USA
CSI.LINDSEY	157:CGI104	Palo Alto, CA, USA
CSI.NOVAK	157:CGI074	Cairns, Australia
CSI.OTTAWA	2020:IDR030	Ottawa Account, Temporary ID
CSIRO	157:CGI158	CSIRO Canberra City, Australia
CT-EXT-DIR	157:AGS450	U. of Conn., Agricultural Experiment Station
D.BALSON	2020:IDR010	IDRC - Information Sciences
D.BISHT	157:CGI505	ICRISAT Farm Development/Operations Manager
D.BOTTRELL	157:CGI606	CICP Univ. of Maryland
D.BUTLER	157:CGI505	ICRISAT Microclimatologist
D.DE-PADUA	2020:IDR001	IDRC Post Production Program Officer, Singapore
D.DEPADUA	2020:IDR004	IDRC - Post Production Systems, Singapore

D. EVANS	157:CGI505	ICRISAT	Manager, Housing and Food Services
D. FARIS	157:CGI505	ICRISAT	Coordinator, AGLN
D. FREEBAIRN	157:CGI062	U. of Minnesota,	Dept. of Soil Science
D. GOODMAN	10074:CGU022	IIMI	Director Admin and Finance
D. GREENBERG	10074:CGU004	ICRISATSC	Groundnut Breeder
D. GREENLAND	157:CGI401	IRRI	Deputy Director General
D. GROENFELDT	157:CGI129	IIMI	Traveling Account
D. HARRIS	10074:CGU007	Univ. of Nottingham	
D. HARWOOD	141:TCN405	WINROCK	GREENHOUSE CONF
D. HAYNES	157:CGI063	ICIPE	Deputy Director
D. J. HARRIS	157:CGI046	Consultant	
D. KAIMOWITZ	157:CGI601	ISNAR	Project Coord. - RTTL
D. LAING	157:CGI301	CIAT	Deputy Director General
D. MCDONALD	157:CGI505	ICRISAT	Groundnut Pathologist
D. MENTZ	10084:CAU001	CAB	Director General
D. MITRA	157:CGI505	ICRISAT	Fiscal Manager
D. NGYAARD	141:TCN329	FORD FOUNDATION	-- Cairo
D. OSWALT	157:CGI505	ICRISAT	Training Officer
D. PACHICO	157:CGI301	CIAT	Leader (Beans)
D. PADWA	141:UGA007	IICPAB	U OF CD/U OF GA
D. PLUCKNETT	157:CGI009	CG SEC	Scientific Advisor
D. PUCKRIDGE	157:CGI405	IRRI	Bangkok Office
D. REDDY	157:CGI505	ICRISAT	Groundnut Virologist
D. ROHRBACH	10074:CGU002	ICRISATZW	Economist
D. ROSE	141:TCN371	WINROCK-F	U. OF MINN.
D. SANNI	157:CGI125	WARDA	Director of Int'l Cooperation
D. SAUNDERS	157:CGI205	CIMMYT	Bangkok Office
D. SEXTON	10080:BTG005	British Telecom	Gold
D. SNYDER	141:UGA414	University of Georgia	
D. STRAUSS	157:CGI133	DIVERSITY Magazine,	Managing Editor
D. SWEENEY	10079:ARSCO2	Animals & Grassland	Research Institute, Maidenhead
D. THURSTON	157:CGI211	CORNELL	
D. UGENT	157:CGI802	CIPUS	Southern Illinois Univ
D. WATERHOUSE	157:CGI158	CSIRO	Canberra City, Australia
D. WEBB	2020:IDR005	IDRC - Forestry	Program, Bogota
D. WINKELMANN	157:CGI201	CIMMYT	Director General
DE-EXP-DIR	157:AGS525	U. of Delaw. College	of Agricultural Sciences
DIVERSITY	157:CGI133	Diversity,	Quarterly Scientific Journal
DR. RICHIE	157:AGS1221	Michigan State	University
E. COREA	157:CGI006	CG SEC	Senior Program Officer
E. CRASWELL	157:CGI036	Austral. Center	for Int'l. Agri. Res.
E. EWING	157:CGI210	CORNELL	
E. FRIERSON	157:CGI003	CG SEC	Librarian
E. JAVIER	157:CGI601	ISNAR	
E. SAARI	157:CGI071	CIMMYT-TURKEY	Wheat Pathologist/Breeder
E. SHULTZE	10074:CGU022	IIMI	Director Int'l Programs
E. SULZBERGER	157:CGI004	CG SEC	Information Officer
E. TERRY	157:CGI125	WARDA	Director General
E. VANDERVELD	157:CGI220	IIMI	Pakistan
E. WALKER	10080:BTG098	British Telecom	Gold - Edinburgh
E. WEBER	2020:IDR008	IDRC - Post Production	Systems, Delhi
F. BENTLEY	157:CGI806	IBSRAM	Edmonton
F. BIDINGER	157:CGI505	ICRISAT	Millet Physiologist
F. CABREJOS	157:CGI043	CIP	
F. CADY	141:TCN374	WINROCK-F	HAWAII
F. CHUMLEY	157:CGI047	IRRI	Central Research, DuPont
F. CUEVAS	157:CGI301	CIAT	IRRI/CIAT Liason
F. DAVISON	141:UGA003	IICPAB	UNIVERSITY GA
F. GERARD	157:CGI905	IIE	IPS
F. KRAMER	157:CGI051	CIAT	Director of Finance & Admin.
F. LI	157:CGI901	USAID	S & T, AGR
F. MACHARDY	157:CGI806	ICRISATGB	Chairman, Governing Board
F. ROCHE	157:CGI216	CORNELL	
F. TORRES	157:CGI301	CIAT	Deputy Director General
F. WALIYAR	157:CGI505	ICRISATSC	Groundnut Pathologist
FORD	141:TCN319	Ford Foundation	New York
FORD-CAIRO	141:TCN329	FORD FOUNDATION	-- Cairo
FORD-COMPROLLER	141:TCN307	FORD FOUNDATION	
FORD-DEL	141:TCN322	Ford Foundation	New Delhi
FORD-JAKARTA	141:TCN301	FORD FOUNDATION	
FORD-LIMA	141:TCN324	FORD FOUNDATION	LIMA
FORD-MANILA	141:TCN303	FORD FOUNDATION	

FORD-MEXICO	141:TCN306	FORD FOUNDATION MEXICO
FORD-NYO	141:TCN318	FORD FOUNDATION COM
FORD-NYO-ADMIN	141:TCN321	FORD FOUNDATION ADMIN.
FORD-RIO	141:TCN325	FORD FOUNDATION RIO
G.BANTA	2020:IDR006	IDRC - Agricultural Economics, Vancouver
G.CAMPBELL	157:CGI050	WSU Professor of Soil Sciences
G.CARLSON	157:AGS1790	NC State, Economist
G.CARPENTER	157:CGI100	CSI Administrator
G.CARTER	157:CGI207	CPC
G.CLABAUGH	141:TCN003	TCN
G.DONOVAN	157:AGS2050	U. of Rhode Island, Col. of Resource Dev., Dean
G.GALVEZ	157:CGI109	CIAT Head - Bean Program (Lima, Peru)
G.GETTINBY	10074:CGU012	ILRAD Consultant, Strathclyde University
G.GRANADOS	157:CGI205	CIMMYT Bangkok Office
G.GUNASEKERA	157:CGI505	ICRISAT Advisor to DG for Donor Relations
G.HABICH	157:CGI301	CIAT Coordinator Training
G.HALL	141:TCN326	FORD FOUNDATION HUM RTS
G.HAWTIN	2020:IDR006	IDRC - Crop & Animal Production, Vancouver
G.KOCHERT	141:UGA417	IICPAB BOTANY, U OF GA
G.LEVINE	157:CGI215	CORNELL
G.LINDSEY	157:CGI104	CSI Director
G.MACNEIL	157:CGI125	WARDA Director of Admin and Finance
G.NINA	157:CGI301	CIAT Admin. Asst. of Telecom
G.NORTON	157:CGI602	ISNAR-USA Virginia Polytechnic U.
G.NTOUKAM57	157:CGI130	PURDUE - Maroua, Camaroon (US Account)
G.NTOUKAM74	10074:CGU001	PURDUE - Maroua, Camaroon (UK Account)
G.PERSLEY	157:CGI036	Austral. Center for Int'l. Agri. Res.
G.ROBERTSON	157:CGI043	CIP
G.SMITH	157:CGI505	ICRISAT Soil Scientist
G.TONNING	141:TCN321	FORD FOUNDATION OFFICE
G.VARUGHESE	157:CGI201	CIMMYT Assoc. Director, Wheat Program
G.YOUNTS	141:UGA004	IICPAB VP/SERVICES/UGA
GCRI	10079:ARS003	Glasshouse/Crops Res. Inst. Littlehampton, W.Susse
GURUNADH	157:CGI505	ICRISAT CBMS Operator
H-J.BRAUN	157:CGI071	CIMMYT-TURKEY Wheat Breeder
H.ALVAREZ	157:CGI201	CIMMYT Purchasing Officer
H.DEBOECK	157:CGI008	CG SEC Project Officer, Finance
H.ELL IOT	157:CGI601	i^HISNAR DDG, Research and Training
H.ESCOBAR	2020:IDR005	IDRC - Agricultural Economics, Bogota
H.FELDSTEIN	157:CGI126	IRRI Collaborator
H.K.JAIN	157:CGI501	ISNAR DDG, Cooperation with National Systems
H.LI-PUN	2020:IDR005	IDRC - Animal Production Systems, Bogota
H.MCARTHUR	157:CGI065	U. of Hawaii, Int'l. Agri. Programs Office
H.NIXON	2020:IDR034	IDRC - EDP Services
H.RINCON	157:CGI043	CIP
H.SHUYLER	157:CGI156	Moderator Post-Harvest Conference
H.VANRHEENEN	157:CGI505	ICRISAT Chickpea Breeder
H.YOUNG	157:CGI202	CIMMYT Consultant
H.ZANDSTRA	2020:IDR001	IDRC - Agriculture Director, Ottawa
HAI-SING	2020:IDR004	IDRC, Singapore Regional Office
HI_AGRON_SS	157:CGI055	U. of Hawaii, Dept. of Agron & Soil Sci. /General
I.KHAN	157:CGI804	CITIBANK ACC. AD. - IIRI
I.LAQUALI	10074:CGU004	ICRISATSC Exec. Admin. Computer Asst.
I.MORISON	141:TCN377	WINROCK-F AID WASHINGTON
IADS	141:TCN408	WINROCK Washington Office
IAP-UARK	157:CGI007	Int'l. Agric. Programs - Univ. of Arkansas
IBPGR	157:CGI101	IBPGR General HQ Address, Rome
IBPGR-DELHI	157:CGI114	IBPGR New Delhi, India
IBSNAT	157:CGI057	U. of Hawaii, Intl. Benchmark Sites Net. AT Trans.
IBSRAM	157:CGI806	IBSRAM Edmonton, Alberta, Canada
ICIPE	157:CGI063	ICIPE Nairobi, Kenya
ICIPE57	157:CGI063	Test Account
ICLARM	157:CGI226	ICLARM Manila, Phillipines
ICR-EARSAM	10074:CGU027	ICRISATKN East Africa Reg. Sorghum & Millet
ICR-EARSAM57	157:CGI113	ICRISATKN System 57 Account (Backup)
ICRISAT	157:CGI505	ICRISAT GENERAL ADDRESS
ICRISAT74	10074:CGU003	ICRISAT System 74 Account (Backup)
ICRISATML	157:CGI135	ICRISAT Bamako, Mali
ICRISATSC	10074:CGU004	ICRISATSC ICRISAT Sahelian Center
ICRISATSC57	157:CGI504	ICRISATSC System 57 Account
ICRISATSC74	10074:CGU004	ICRISATSC System 74 Account
ICRISATZW	10074:CGU002	ICRISATZW Bulawayo, Zimbabwe

ICRISATZW57	157:CGI222	ICRISATZW Bulawayo, Zimbabwe - US Account
IDRC	2020:IDR001	IDRC GENERAL ADDRESS
IDRC.AFNS.AKER	2020:IDR010	IDRC - Crop Production Systems, Nairobi
IDRC.AFNS.AZAKI	2020:IDR009	IDRC - Forestry Program, Dakar
IDRC.AFNS.BERNACS	2020:IDR001	IDRC - Fisheries Program, Ottawa
IDRC.AFNS.ERACHED	2020:IDR007	IDRC - Crop Production Systems, Cairo
IDRC.AFNS.KOKA	2020:IDR008	IDRC - Forestry Program, Delhi
IDRC.AFNS.MBASSEY	2020:IDR009	IDRC - Post Production Systems, Dakar
IDRC.AFNS.OSCMIDT	2020:IDR010	IDRC - Post Production Systems, Nairobi
IDRC.AFNS.RARTHUR	2020:IDR004	IDRC - Fisheries Program, Singapore
IDRC.AFNS.RAYLING	2020:IDR010	IDRC - Forestry Program, Nairobi
IDRC.AFNS.RYOUNG	2020:IDR001	IDRC - Post Production Systems, Ottawa
IDRC.AFNS.SKQALA	2020:IDR009	IDRC - Crop Production Systems, Dakar
IDRC.AFNS.SPENJ	2020:IDR001	IDRC - Agriculture Deputy Director
IDRC.ASRO	2020:IDR004	IDRC - Singapore Regional Office
IDRC.EARO	2020:IDR010	IDRC - Nairobi Regional Office
IDRC.GBANTA	2020:IDR006	IDRC - Gordon Banta (AFNS/Vancouver)
IDRC.GHAWTIN	2020:IDR027	IDRC - Geoff Hawtin (AFNS/Vancouver)
IDRC.HNIXON	2020:IDR037	IDRC EDP
IDRC.JSHAW	2020:IDR003	IDRC - J.Shaw (EDP)
IDRC.LARO	2020:IDR005	IDRC - Bogota Regional Office
IDRC.LTHURSTON	2020:IDR032	IDRC - Lynn Thurston (EDP)
IDRC.MERO	2020:IDR007	IDRC - Cairo Regional Office
IDRC.OTTA.ADMN	2020:IDR001	IDRC - Administration
IDRC.OTTA.AFNS	2020:IDR001	IDRC - Agriculture, Food & Nutrition Sciences Divi
IDRC.OTTA.COMM	2020:IDR001	IDRC - Communications Division
IDRC.OTTA.EES	2020:IDR001	IDRC - Earth and Engineering Sciences Div.
IDRC.OTTA.EO	2020:IDR001	IDRC - Executive Office
IDRC.OTTA.FAD	2020:IDR001	IDRC - Fellowships & Awards Division
IDRC.OTTA.GCU	2020:IDR001	IDRC - General Counsel Unit
IDRC.OTTA.HRD	2020:IDR001	IDRC - Human Resources
IDRC.OTTA.HSD	2020:IDR001	IDRC - Health Sciences Division
IDRC.OTTA.IA	2020:IDR001	IDRC - Internal Audit
IDRC.OTTA.ISD	2020:IDR001	IDRC - Information Sciences Division
IDRC.OTTA.OPE	2020:IDR001	IDRC - Office of Planning & Evaluation
IDRC.OTTA.RESEARCH	2020:IDR001	IDRC - Research Programs
IDRC.OTTA.RESOURCES	2020:IDR001	IDRC - Resources
IDRC.OTTA.SEC	2020:IDR001	IDRC - Secretary's Office
IDRC.OTTA.SSD	2020:IDR001	IDRC - Social Sciences Division
IDRC.OTTA.TO	2020:IDR001	IDRC - Treasurer's Office
IDRC.OTTAWA	2020:IDR001	IDRC General address
IDRC.PLAHEY	2020:IDR002	IDRC - Paul Lahey (EDP) Mail Manager
IDRC.SARO	2020:IDR008	IDRC - New Delhi Regional Office
IDRC.TMURRAY	2020:IDR029	IDRC - Ted Murray (EDP)
IDRC.VANCOUVER	2020:IDR006	IDRC - Vancouver Office
IDRC.WARO	2020:IDR009	IDRC - Dakar Regional Office
IER-MALI	10074:CGU011	IER Bamako, Mali
IFAR	141:TCN408	Int'l Fund for Agricultural Research Washington
IFDC	157:CGI032	Int'l Fertilizer Dev. Center, Alabama
IFPRI	157:CGI701	IFPRI GENERAL ADDRESS, Washington,
IIE	157:CGI906	IIE Inst. of Int'l. Education, Ne
IIMI	10074:CGU022	IIMI Digana Village, Sri Lanka
IIMI-KAT	157:CGI106	Int'l Irrigation Mngmt. - Kathmandu, Nepal
IITA57	157:CGI072	International Inst. of Tropical Agriculture
ILRAD	10074:CGU005	ILRAD Intl Lab. Res. on Animal Diseases, Nair
IMPORTS	157:CGI704	CIAT Supplies Department
IHR	157:CGI040	Institute for Medical Res., Papua New Guinea
IN-ADN-DIR	157:AGSB41	
INIBAP.TEST	157:CGI233	INIBAP Montpellier, FRANCE
INTERMAIL	157:NSF153	Intermail Gateway to Bitnet, EARN
INTSORMIL	157:CGI025	INTSORMIL U. of Nebraska, Lincoln
INTSORMIL57	157:CGI025	INTSORMIL U. of Nebraska, Lincoln
INTSORMIL64	164:CGI1005	INTSORMIL Backup Account
IPL	157:CGI906	IIE Intl. Personnel Services
IPS	157:CGI905	IIE Intl. Purchasing Services
IRRI	157:CGI401	IRRI GENERAL ADDRESS
IRRI-BANGKOK	157:CGI405	IRRI BANGKOK REGIONAL OFFICE
IRRI-MANILA	157:CGI403	IRRI
ISNAR	157:CGI601	ISNAR GENERAL ADDRESS, The Hague
ISNAR-BOGOR	157:CGI902	ISNAR-INDO Indonesia
ISSA	10074:CGU004	ICRISATSC Exec. Admin. Computer Asst.
J.ANDERSON	157:CGI014	CG SEC Consultant

J. ARIHARA	157:CGI505	ICRISAT Assoc. Pulse Physiologist
J. B. D	157:CGI402	IRRI Travelling account
J. BAIDU-FORSON	157:CGI505	ICRISATSC Economist
J. BENNOIT	157:AGS1050	NECID Representative, UMO
J. BINGEN	157:CGI087	ISNAR/OFCOR
J. BURFORD	157:CGI505	ICRISAT Soil Chemist
J. CLARK	157:CGI702	IBPGR Seed Handling Unit
J. COCK	157:CGI301	CIAT Leader (Cassava)
J. CUBERO	157:CGI078	Cordoba, Spain
J. CURTIS	157:CGI209	CORNELL
J. DE-WET	157:CGI505	ICRISAT Program Director, Cereals Program
J. DEBOER	157:CGI116	WINROCK Kathmandu, Nepal
J. DILLON	157:CGI506	ICRISATAU Australia
J. DORAN	141:TCN309	FORD FOUNDATION INTERNAL
J. DUBIN	157:CGI089	CIMMYT Katmandu, Nepal
J. DUCEY	157:CGI083	CSI Programming Consultant
J. ESTES	157:CGI505	ICRISAT Computer Services Officer
J. FLINN	157:CGI138	IRRI Head - Ag Econ Program
J. FREDERICK	157:CGI025	INTSORMIL
J. GALLAGHER	157:CGI133	DIVERSITY Magazine, Assoc. Editor
J. GLENN	157:CGI150	Agricultural Development Cooperative Intl.(ACDI)
J. GRIFFIN	157:CGI064	CSI Administrator
J. HOLDEN	157:CGI059	IBPGR Board Member
J. HOLDEN74	10074:CGU015	IBPGR, Board Member (UK Account)
J. HOPKINS	10074:CGU004	ICRISATSC Economist, IFPRI
J. HOWARD	157:AGS305	National Agricultural Library (NAL), Director
J. JAFFE	141:TCN313	FORD FOUNDATION
J. KANWAR	157:CGI505	ICRISAT DDG, Emeritus
J. KEY	141:UGA414	IICPAB U.GA.VP.RESEARCH
J. LEACH	157:CGI048	U. of Kansas, Plant Pathology Dept.
J. LONGMIRE	157:CGI023	CIMMYT Pakistan Economist
J. LOWENTHAL	157:CGI111	USAID/ANE/ARD Chief
J. M. PEACOCK	157:CGI505	ICRISAT Sorghum Physiologist
J. MAEGHER	157:CGI079	Australia
J. MAINA	157:CGI063	IC [^] HCIPE Computer Specialist
J. MANN	157:CGI069	CICP University of Miami
J. MARCHUM	157:AGS1150	U. of Mass. Assoc. Dir. College of Food and Nat. Resources
J. MCWILLIAM	157:CGI034	Austral. Center for Int'l. Agri. Res.
J. MELLOR	157:CGI701	IFPRI Director General
J. METCALFE	10084:CAU001	CAB Director, Information Services
J. MONTEITH	157:CGI505	ICRISAT Program Director Resource Management
J. MONYO	157:CGI501	TAC SEC Executive Secretary
J. MORGAN	157:CGI131	Rodale - Chairman Philadelphia, PA
J. MOSS	157:CGI505	ICRISAT Groundnut Cytogeneticist
J. MYERS	157:AGS003	USDA/CSRS/CRIS
J. NICKEL	157:CGI301	CIAT Director General
J. OVALLE	157:CGI201	CIMMYT Computer Operations Coord
J. PEACOCK	157:CGI018	IBPGR Chairman, IBPGR
J. PURYEAR	141:TCN328	FORD FOUNDATION LIMA
J. RYAN	157:CGI035	Austral. Center for Int'l. Agri. Res.
J. SAIPRASAD	157:CGI505	ICRISAT Asst. Manager, Comp. Svcs.
J. SCOTT	10074:CGU005	ILRAD
J. SHAW	2020:IDR003	MAIL MGR BACKUP IDRC OTTAWA
J. SNOW	157:AGS1631	IAFP Assistant Director, Rutgers
J. STEWART	157:CGI201	CIMMYT Executive Officer
J. STRACHAN	157:CGI601	ISNAR Asst. Librarian
J. TOLEDO	157:CGI301	CIAT Leader (Pastures)
J. TOLL	10074:CGU004	ICRISATSC IBPGR Field Officer for West Africa
J. VALLE-RIESTRA	157:CGI801	CIP Deputy Director General
J. WERDER	10074:CGU004	ICRISATSC Millet Pathologist
J. WHITE	164:ACM167	XEROX PARC
J. WIGHTMAN	157:CGI505	ICRISAT Groundnut Entomologist
J. WILLIAMS	157:CGI505	ICRISAT Groundnut Physiologist
J. WITCOMBE	157:CGI505	ICRISAT Millet Breeder
J. YOHE	157:CGI025	INTSORMIL
J. ZULKOSKI	157:CGI105	Rockefeller Foundation, New York
JMB	157:CGI096	IRRI Michael Bonman Traveling Account
JN	157:CGI020	CIAT (Special Account)
JWE	157:CGI502	J. Estes Traveling Account
K. BARKER	141:TCN370	WINROCK -F WINROCK -DC
K. BROWN	157:CGI801	CIP Dir. Reg. Res. & Training
K. HEONG	157:CGI147	IRRI Traveling Account

115

K.KAWANO	157:CGI305	CIAT	Bangkok Office
K.KITTLESON	157:AGS1221	Michigan	State University
K.LAMPE	157:CGI401	IRRI	Director General
K.LARYEA	157:CGI505	ICRISAT	Soil Physicist
K.LEE	157:CGI505	ICRISAT	Millet Microbiologist
K.LEUSCHNER	10074:CGU002	ICRISATZW	Sorghum Entomologist
K.MACDICKEN	141:TCN370	WINROCK-F	BANGKOK
K.MACKAY	2020:IDR004	IDRC	- Crop Production Systems, Singapore
K.NOVAK	157:CGI074	CGNET	Australia
K.NOVAK74	10074:CGU021	CSI	Australia
K.NWANZE	157:CGI505	ICRISAT	Sorghum Entomologist
K.OKADA	157:CGI505	ICRISAT	Asst. Pulse Microbiologist
K.PARTON	157:CGI039	U. of New	England, Dept. of Agri. Econ., Australia
K.RUSSELL	157:AGS3080	NAL Chief,	Public Services Division
K.SRINIVASAN	157:CGI505	ICRISAT	ADG (Liason)
K.VIJ	157:CGI505	ICRISAT	New Delhi Office
K.WALDRON	157:CGI804	CITIBANK	ACCOUNT MANAGEMENT
K.WOODFORD	10084:CAU001	CAB	Director, Scientific Services
KENSEED	10074:CGU030	IBPGR	Nairobi, Kenya (ILRAD)
L.CHOLNOKY	157:CGI804	CITIBANK	MARKETING
L.D.S	157:CGI221	ICRISAT	L.Swindale Traveling Account
L.DEWEY	141:TCN327	FORD FOUNDATION	BILATRL
L.DURE	141:UGA415	IICPAB	ISPMB
L.FLYNN	157:CGI505	ICRISAT	Computer Services
L.FUSSELL	10074:CGU004	ICRISATSC	Millet Agronomist
L.HALSEY	157:CGI701	IFPRI	Assoc. Dir. Fin./Admin.
L.HARAVU	157:CGI505	ICRISAT	Librarian
L.HARPER	157:CGI133	DIVERSITY	Magazine, Business Manager
L.HERRINGTON	157:CGI205	CIMMYT	Bangkok Office
L.HOUSE	10074:CGU002	ICRISATZW	SADCC/ICRISAT Proj Mgr
L.HUSSEY	157:CGI801	CIP	Controller
L.LEON	157:CGI301	CIAT	IFOC/CIAT Project
L.MARCHAIS	10074:CGU004	ICRISATSC	Geneticist, ORSTOM
L.MUGHOGHO	157:CGI505	ICRISAT	Sorghum Pathologist
L.PETERSON	157:CGI043	CIP	
L.PIERRO	157:AGS450	AES, U. of Conn.,	Associate Director
L.PRDENZA	141:UGA413	IICPAB	UGA/BIOT
L.RANDALL	141:UGA002	IICPAB	IICPAB Staff
L.SINGH	157:CGI505	ICRISAT	Pigeonpea Breeder
L.STIFEL	10074:CGU018	IITA	Director General
L.SWINDALE	157:CGI505	ICRISAT	Director General
L.UNNEVEHR	157:CGI042	U. of Illinois,	Dept. of Ag. Econ.
L.WAGNER	2020:IDR001	IDRC	Agriculture Exec Scientific Asst, Ottawa
L.ZUIDEMA	157:CGI209	CORNELL	
LAHEY.PAUL	2020:IDR002	MAIL MANAGER	IDRC OTTAWA 613-598-0529
LARO	2020:IDR005	IDRC, LARO,	Bogota
LDS74	10074:CGU028	ICRISAT	L.Swindale (UK Account)
M.ANDERS	157:CGI505	ICRISAT	Production Agronomist
M.BAREPICKLE	157:CGI201	CIMMYT	
M.BEAUSSART	2020:IDR001	IDRC	- Canadian Cooperative Projects, Ottawa
M.BENAVIDES	157:CGI801	CIP	
M.COLLINSON	157:CGI015	CG SEC	Scientific Advisor
M.DESSERT	157:CGI304	CIAT	Reg. Coord. Beans (Costa Rica)
M.GOMEZ	10074:CGU002	ICRISATZW	Food Technologist
M.GOON	157:CGI505	ICRISAT	ADG (Administrator)
M.HARDING	141:TCN317	FORD FOUNDATION	
M.KENWARD	10083:NSM005	New Scientist,	Editor
M.KLAIJ	10074:CGU004	ICRISATSC	Agricultural Engineer
M.LEON	157:CGI041	PAHO	
M.LICEA	157:CGI804	CITIBANK	ACC. AD. - ILCA/IITA/OTH
M.LUKEFAHR	10074:CGU004	ICRISATSC	Cereals Entomologist
M.MCFADDEN	141:TCN375	WINROCK-F	U.S. FOREST SERV
M.MENGESHA	157:CGI505	ICRISAT	Germplasm Botanist
M.MILLARD	157:CGI124	USDA	Iowa State U.
M.MILLER	157:AGC017	WINROCK	COMMUNICATIONS
M.OSMANZAI	10074:CGU002	ICRISATZW	Agronomist
M.PERRY	157:CGI803	IBPGR/USDA	Documentation
M.PETERS	157:CGI804	CITIBANK	ACC. AD. - ICRAF/ICRISAT
M.PIMBERT	157:CGI505	ICRISAT	Entomologist
M.PINA	157:CGI043	CIP	Head, Training & Comm.
M.R.VEGA	157:CGI401	IRRI	
M.RIVES	157:CGI021	CG SEC	Technical Consultant

M. SANDS	157:CGI151	Rodale International
M. SHENK	157:CGI706	CICP/IPPC Oregon State University
M. SHEPARD	157:CGI132	IRRI Traveling Account
M. SIVAKUMAR	10074:CGU004	ICRISATSC Agroclimatologist
M. SMITH	157:CGI076	CORNELL
M. SNYDER	157:CGI139	ISNAR Colleague - South Carolina
M. SVENDSEN	157:CGI081	IFPRI
M. SWAMINATHAN	157:CGI401	IRRI Director General
M. TER KUILE	157:CGI229	CIDA MTC
M. TRAORE	10074:CGU011	INTSORMIL Bamako, Mali
M. V. K. SIVAKUMAR	10074:CGU004	ICRISATSC
M. VAN-DEN-BERG	157:CGI201	CIMMYT Software Consultant
MA-EXP-DIR	157:AGS1150	U. of Mass. College of Food and Natural Resources
ME-EXT-DIR	157:AGS1050	U. of Maine, Office of Internat'l Res. & Dev.
MERO	2020:IDR007	IDRC, MERO, Cairo
MIAMI	157:CGI306	CIAT MIAMI-OFFICE
MSU	157:AGS1221	Michigan State University
N. AE	157:CGI505	ICRISAT Assoc. Pulse Microbiologist
N. BENINATI	157:CGI135	ICRISATML Sorghum Breeder, Mali
N. BREDIN	157:CGI201	CIMMYT Programmer/Analyst
N. BRIGGS	10079:APS001	Food Res Inst Reading, Shinfield, Reading
N. COLLINS	141:TCN319	Ford Foundation
N. JANUS	157:CGI094	CARINET
N. L. INNES	10087:NQ003	ICRISATGB Member, Governing Board
N. MATEO	2020:IDR008	IDRC - Crop Production Systems, Delhi
N. SAYWARD	141:TCN316	FORD FOUNDATION INVMNT
N. SMITH	157:CGI022	U. of Florida
NC-NCSU-ECON	157:AGS1790	NC State U., Economics Dept.
NEW.SCIENTIST	10083:NSM005	New Scientist (UK)
NH-EXP-DIR	157:AGS1575	U. of New Hampshire, Agricultural Experiment Stati
NIAB	10081:MMU414	Nat Inst of Ag Botany, Cambridge, UK
NIFTAL	157:CGI056	U. of Hawaii, Nitrogen Fixation by Trop. Agric. Legumes
NJ-IAFP	157:AGS1631	Internat'l Agriculture & Food Program, Rutge
NY-EXP-DIR-CU	157:AGS1730	Cornell, NY State College of Ag. & Life Sciences
O. CIFERRI	141:UGA005	IICPAB ISPMB
OBREGON	157:CGI201	CIMMYT Obregon Field Station
P. ADKISSON	157:AGS2276	ICRISATGB Member, Governing Board
P. ALBERSHEIM	141:UGA416	IICPAB DIR.CCRC, U OF GA
P. ANDERSEN	157:CGI214	CORNELL
P. ANDERSEN57	157:CGI120	CORNELL Telex account
P. BALLANTYNE	157:CGI601	ISNAR Librarian
P. COOPER	157:CGI401	IRRI
P. EWELL	157:CGI026	ISNAR-USA Ithaca, New York
P. FIESS	157:CGI804	CITIBANK MARKETING
P. HEYWOOD	157:CGI040	Institute for Medical Res., Papua New Guinea
P. HOBBS	157:CGI089	CIMMYT Nepal Regional Wheat Agronomist
P. KENMORE	157:CGI705	CICP Manila
P. LAHEY	2020:IDR002	MAIL MANAGER IDRC OTTAWA 613-598-0529
P. MATLON	157:CGI125	WAROA Director of Research
P. PARDEY	157:CGI603	ISNAR-USA Univ. of Minnesota
P. PRICE	157:CGI095	Dartmouth University
P. ROBERTS-PICHETT	157:CGI501	TAC SEC Deputy Exec. Sec
P. ROSALES	157:CGI063	CIMMYT
P. SERAFINI	157:CGI007	IAP U. of Arkansas
P. STARKEY	10072:EPS1020	Consultant Reading, U.K.
P. SUBRAHMANYAM	10074:CGU004	ICRISATSC Groudnut Pathologist
P. TENG	157:CGI605	CICP Univ. of Minnesota
P. THORPE	157:ONU1108	ACCIS United Nations
P. TOOLEY	157:CGI127	USDA/ARS
POST-HARVEST	157:CGI156	CGNET/CARINET Post-Harvest Conference
PRC	10079:ARS005	Poultry Research Centre, Edinburgh, UK
PURDUE-AGBO	157:CGI141	Purdue Agric. Business Office
PURDUE-AGECON	157:CGI234	Purdue Agricultural Economics
PURDUE-DWTHOMAS	157:CGI140	Purdue Director of Int'l Programs
PURDUE-NAARP	157:CGI142	Purdue Niger Agr. Research Project
PURDUE-OCGBA	157:CGI143	Purdue Office of Contracts & Grants
PURDUE-PPMP	157:CGI146	Purdue Pest Management
PURDUE-RIISP	157:CGI073	Univer`H`H`H`H`HPurdue University
QUEENSLAND.PPB	157:CGI091	Queensland Plant Pathology Branch
R. AYLING	157:CGI125	WARDA Special Assistant to DG
R. BARKER	157:CGI212	CORNELL
R. BILODEAU	157:CGI103	CSI Network Services Coordinator

R. BLUMBERG	157:CGI111	USAID/ANE/ARD
R. BOURQUEIN	157:CGI401	IRRI Director of Administration
R. BOVSUN	157:CGI804	CITIDANK ELECTRONIC SUPPORT
R. BUZETA	2020:IDR005	IDRC - Fisheries Program, Bogota
R. CLARK	10087:NQQ003	Scottish Crop Research Institute, Dundee
R. CLIFFORD	157:CGI201	CIMMYT Controller
R. COFFMAN	157:CGI208	CORNELL Plant Breeding Department
R. CORMIER	157:CGI201	CIMMYT Systems/Softw. Superviso
R. DEUSON	157:CGI108	USDA Purdue
R. DONALDSON	157:CGI702	IFPRI Head, Computer Services
R. FREDERIKSEN	157:AGS2275	Texas Experimental Station
R. GIBBONS	10074:CGU004	ICRISATSC Director
R. HASELKORN	141:UGA006	IICPAB ISPMB
R. HAVENER	141:TCN400	WINROCK President
R. HERDT	157:CGI010	CG SEC Washington, D.C.
R. HERTFORD	157:AGS1631	IAFP Director, Rutgers
R. JAMBUNATHAN	157:CGI505	ICRISAT Biochemist
R. LENTON	10074:CGU022	IIMI Director General
R. LOEB	141:TCN001	TCN President
R. MATTHEWS	10074:CGU007	Univ. of Nottingham
R. MAXWELL	157:AGS2505	NECID Representative, UWV
R. MUELLER	157:CGI505	ICRISAT Economist
R. OSLER	157:CGI201	CIMMYT Deputy Director General
R. PADMINI	157:CGI505	ICRISAT Asst. Travel Officer
R. PIGGOT	157:CGI038	U. of New England, Dept. of Agri. Econ., Australia
R. SABOT	157:CGI088	IFPRI Williamstown, MA
R. SAWYER	157:CGI801	CIP Director General
R. SHRIMPTON	157:CGI217	CORNELL
R. SLATTERY	157:CGI905	IPS
R. SMITH	157:CGI065	U. of Hawaii, Int'l. Agri. Programs Office
R. SMITH-UNDP	157:UDP001	U.N. Development Program, New York
R. TADVALKAR	157:CGI012	CG SEC Senior Program Officer
R. TREICHLER	157:CGI301	CIAT Asst. to Director General
R. VAIDYANATHAN	157:CGI505	ICRISAT Purchase & Supplies Mana
R. VALENTIN	2020:IDR001	IDRC - Information Sciences
R. VANDENBELDT	10074:CGU004	ICRISATSC AgroForester
R. WARD	157:CGI068	CIMMYT - HARARE
R. WARD74	10074:CGU016	CIMMYT - HARARE (UK Account)
R. WEDDERBURN	157:CGI205	CIMMYT Bangkok Office
R. YODER	10074:CGU024	IIMI
R. YOST	157:CGI053	U. of Hawaii, Dept. of Agron & Soil Sci.
R. ZACHMANN	157:CGI043	CIP
R. ZEIGLER	157:CGI301	CIAT Leader (Rice)
RI-CES-DIR	157:AGS2050	URI, College of Resource Development
RICH	152:TM1002	TELEMATICS INT'L
ROCKEFELLER	157:CGI105	Rockefeller Foundation
RODALE	157:CGI131	RODALE Philadelphia, PA
S. AMAYA	157:CGI301	CIAT Communication Specialist
S. AMBROSE	10074:CGU002	ICRISATZW Government Liaison Officer
S. BECKERMAN	157:CGI232	Seth Beckerman Consultant
S. BIGGS	157:CGI033	U. of East Anglia, U.K.
S. BIGGS74	10074:CGU008	U. of East Anglia, U.K.
S. BRETH	141:TCN408	WINROCK Washington Office
S. C. HARRIS	157:CGI046	Consultant
S. CAMPBELL	157:CGI052	U. of Hawaii, Dept. of Agron & Soil Sci.
S. COAKLEY	157:CGI075	Nat'l Center for Atmosphere Research
S. COX	141:TCN323	FORD FOUNDATION MEXICO
S. EL-SWAIFY	157:CGI054	U. of Hawaii, Dept. of Agron & Soil Sci. /Chair
S. GUPTA	10074:CGU002	ICRISATZW Millet Breeder
S. HALL	157:CGI505	ICRISAT Research Editor
S. KING	157:CGI505	ICRISAT Millet Pathologist
S. LEE	157:CGI218	CGNET Collaborator
S. LEONG	157:CGI060	U. of Wisconsin, Dept. of Plant Pathology
S. LOTA	157:CGI063	ICIPE Electrical Engineer
S. LUTHRA	157:CGI505	ICRISAT Manager, Comp. Svcs
S. MILLER	157:CGI706	CICP/IPPC Oregon State University
S. MUKURU	10074:CGU027	ICRISATKN EARSAM Sorghum Breeder
S. NIGAM	157:CGI505	ICRISAT Groundnut Breeder
S. OCONNOR	157:CGI401	IRRI Computer Services
S. O'IROR	10074:CGU004	ICRISATSC Millet Breeder/Regional Trials Officer
S. OZGEDIZ	157:CGI002	CG SEC Management Advisor
S. PANDEY	157:CGI301	CIAT Cimmyt Andean Region

S.POATS	157:CGI045	Univ. of Florida
S.PROCHASKA	157:AGR002	U.S. Office of Information
S.RAWLINS	157:AGS4004	USDA-ARS
S.SHARROCK	157:CGI137	IBPGR Intern - QDPI Nambour Australia
S.SHETTY	157:CGI135	157:CGI135 ICRISATML Agronomist, Mali
S.TOSTAIN	10074:CGU004	ICRISATSC Geneticist, ORSTOM
S.VIRMANI	157:CGI505	ICRISAT Agroclimatologist
S.WHEELANS	157:CGI017	IBPGR IBPGR In-Vitro Database
SCOBIE	157:CGI029	SIGMA1 New Zealand
SCRI	10087:NQQ003	Scottish Crop Research Institute, Dundee
SETH. ICRISAT	157:CGI224	S.Beckerman - ICRISAT Account
SETH. ISNAR	157:CGI225	S.Beckerman - ISNAR Account
SIGMA1	157:CGI028	SIGMA1 Main Address, Research Triangle
SIGMA1-DC	157:CGI030	SIGMA1 Washington, D.C.
SIGMA1-NZ	157:CGI029	Sigma One Corp. New Zealand
SIGMA1-QUITO	157:CGI031	SIGMA1 Quito, Ecuador
SOILCON	157:CGI058	Soil Conserv. Res. Branch, Australia
SUMINISTROS	157:CGI306	CIAT MIAMI
SUTAT	157:CGI071	CIMMYT-TURKEY Maize Breeder
T.BRUN	157:CGI077	CORNELL
T.FISCHER	157:CGI201	CIMMYT Director, Wheat Program
T.GOPALAKRISHNA	157:CGI505	ICRISAT Purchasing Officer
T.HARGROVE	157:CGI401	IRRI Head, Information Serv.
T.JOHNSTON	157:CGI805	IRRI Pioneer Elec (Oregon)
T.KESSINGER	141:TCN322	Ford Foundation - Delhi Office
T.KLOSKY	157:CGI701	IFPRI Librarian
T.LINKLETTER	141:TCN373	WINROCK-F COSTA RICA
T.MELLEM	10074:CGU002	ICRISATZW CBMS Operator
T.MILLER	141:TCN304	FORD FOUNDATION PRI
T.MURRAY	2020:IDR029	IDRC EDP Services
T.ROTHERMEL	141:UDP014	United Nations Development Program
T.SMITH	157:CGI804	CITIBANK ACCOUNT ADMIN.
T.WAGLE	157:CGI906	IIE IPL
T.WALKER	157:CGI505	ICRISAT Economist
T.WESTING	157:CGI007	IAP U. of Arkansas, Assoc. Dean
T.WILLIAMS	157:CGI019	IBPGR Director
TAC	157:CGI501	TAC SEC GENERAL ADDRESS Rome
TAC-NETH	157:CGI231	TAC Wageningen, The Netherlands
TAC-UCD	157:CGI223	TAC Chairman, Davis, California
TRICIA	10080:BTG078	British Telecom Gold - Edinburgh
JNDP	157:UDP001	UN Development Programs
UNE	157:CGI037	University of New England, Dept of Agri. Econ.
V.ANDERSON	141:TCN307	FORD FOUNDATION
V.GUIRAGOSSIAN	10074:CGU027	ICRISATKN EARSAM Team Leader Coordinator
V.MCGOUGH	157:CGI505	ICRISATSC Manager, PPS Expediting Team
V.REYNOSA	157:CGI804	CITIBANK ACC. AD. - CIP/CIAT
V.RUTTAN	157:CGI603	ISNAR-USA Univ. of Minnesota
V.STUBBINS	157:CGI123	CSI Administrative Officer
VANCOUVER	2020:IDR006	IDRC, Vancouver
VANCOUV RES	157:CGI110	Agriculture Canada Vancouver
VT-EXP-DIR	157:AGS2351	U. of Vermont, College of Ag. & Life Sciences
W.DE-MILLIANO	10074:CGU002	ICRISATZW Pathologist
W.EDWARDSON	2020:IDR005	IDRC - Post Production Systems, Bogota
W.FALCON	157:CGI230	Food Research Institute, Director (Stanford University)
W.H.ARNOLD	10074:CGU031	TAC UK
W.HAMANN	157:CGI801	CIP Asst. to Director General
W.HOFMAN	157:CGI049	U. of Arizona, Head of Plant Sciences
W.KELLY	157:AGS2351	NECID Representative, UVM
W.MARTIN	10074:CGU004	Agronomist (Univ. of Hohenheim)
W.ROBERTS	141:TCN402	WINROCK ATMOSPHERIC RES.
W.TOSSELL	157:CGI128	IBPGR Board of Trustees
W.URBAN	157:AGS1576	U. of New Hampshire
WARDA	157:CGI125	WARDA, Abidjan, Ivory Coast
WINROCK	141:TCN400	WINROCK-AR HEADQUARTERS
WINROCK-BANGKOK	141:TCN401	WINROCK Bangkok Office
WINROCK-DC	141:TCN408	WINROCK-DC WASHINGTON OFFICE
WINROCK-HQ	141:TCN400	WINROCK Headquarters Mt. Petitjean, AR
WINROCK-JAKARTA	141:TCN403	WINROCK-JK JAKARTA OFFICE
WINROCK-NEPAL	157:CGI116	WINROCK Foundation - Kathmandu
WV-EXP-DIR	157:AGS2505	U. of W.Virginia, College of Agriculture and Forests
Y.NENE	157:CGI505	ICRISAT Program Director, Legumes Pr

Send, Read or Scan:

HIGHER AGRICULTURAL EDUCATION IN ASIA AND THE NEAR EAST*

by

Lawrence Busch
University of Kentucky, Lexington
and ORSTOM, Paris, France

Introduction.

One of the great institutional innovations of the nineteenth century was the creation of agricultural universities.** Behind this seemingly simple idea were the notions that: (1) Farming could benefit from the systematic application of the findings of scientific and technical studies. Thereby, (2) the level of living of the entire rural population could be improved bringing prosperity to all, and (3) the farm and rural population would be brought more fully into the political life of the nation. These universities would develop activities which would include research in a variety of different disciplines, instruction of students enrolled in undergraduate and graduate programs, and the extension of research findings and non-formal education for people working in rural areas. Initially, these universities were established in Europe, North America, and Australasia. Then, during the 1960s and 1970s, most Third World nations followed suit. Often this was accomplished as a result of projects sponsored by the Agency for International Development (AID) and its predecessor agencies.

Over the years, these universities have grown and evolved in many different ways. This paper was written with the intent of sharing these experiences. First, it summarizes the findings of a ten nation study of agricultural universities sponsored by AID.*** Then, the changes affecting the organization, structure, mission, and functioning of agricultural universities are examined. Next, some strategies that agricultural universities can use as they attempt to meet the challenges posed by these changes are proposed.. Finally, suggestions are made as to approaches that AID can follow in light of the ANE strategy statement.

Some Study Findings and Issues.

The study undertaken by AID involved 23 universities in 10 nations: Brazil, Dominican Republic, Ethiopia, India, Indonesia, Malawi, Mexico, Morocco, Nigeria, and Thailand. In each case one or more teams were sent for various periods to evaluate the agricultural universities. The findings were such that while there is wide variation in the organization, mission, and functioning of these institutions, there were far more similarities than differences among them. Hence, it was possible to develop several generalizations about them.

For example, in virtually every case examined the agricultural university in question had been institutionalized and was now an accepted part of the national scene. Every institution could point to some successes, many of great magnitude, in the field of higher agricultural education. Graduates of the various agricultural universities were to be found across a wide range of different vocations within the public sector. Thus they were involved in scientific research, technological development, education and communication within most ministries of agriculture, in agricultural extension services, and

In many other agriculture-related commissions and services. In some nations they were also found in considerable numbers in the private sector. Finally, of course, many have stayed on in academia and have become professors themselves. These graduates have undoubtedly changed all these organizations by infusing new competencies, energies and understandings into them.

In addition, the study teams noted considerable successes in the application of technological research and development. The very impressive gains in overall food production that were noted could often be associated with the activities of agricultural universities. These improvements in crop plant productivity have not been confined to the use of higher yielding varieties alone. The development of better fertilizer regimes, new cropping patterns, the integrated control of pests, parasites and pathogens, and the resolution of micronutrient shortages have all been noted as well.

Most could also point to successes in the adoption of improved animal agriculture. Improvements ranged from the breeding of more efficient animals, to improved animal nutrition, to the widespread use of artificial insemination. These animal production increases were found in a whole host of livestock species including poultry, pigs, cattle, buffalo, sheep, goats and even fish, silkworms and honeybees.

Improvements in credit facilities, marketing infrastructures and the development of other vital services could also be directly attributed to the functions of the universities in some instances. And a similar story could also be told for changes in the standards of nutrition, hygiene and literacy in many rural communities.

As this brief discussion makes clear, the achievements of the agricultural universities have been substantial, especially given the short period of their existence. In addition to these constructive achievements, however, the study also revealed a wide variety of issues of concern which were threatening to the continuing development of many, if not most of these institutions. Indeed, these issues are so widespread around the world that they merit discussion here in some detail.

1. Mission. Organizations, like individuals, engage in purposeful activities. These purposes are regarded as the "mission" of the organization and, in the corporate world, they are often formalized as written statements. There was an identifiable sense of mission in all of the universities examined although there were very wide differences in the extent to which it was formalized. At the most effective of these institutions, missions were clearly defined, known to all associated with the university, and the subject of continuous redefinition in light of changing realities. However, at many institutions missions were poorly defined, rarely discussed, and a subject of which few were even aware. Hence, there was a concern that faculty, staff, students, and others associated with the university were floundering.

2. Role in National Development. The mission of universities very often includes the notion of the role of the organization in the overall development of the region in which it is located or even of the nation as a whole. That is to say, the university was and is expected by the government to play a relatively important role in ameliorating real problems and improving real situations faced by the people in their everyday lives. Nevertheless, the study teams noted wide variations in the degree to which both members of the

university community and those outside the university were aware of this important role. This variation was found both within and across nations. In some cases not only did the university community work hard to achieve this goal but the importance of this role was well understood by government officials and farmers. In other cases, however, those within and outside the university community were not aware of this as a goal and were even surprised when it was mentioned.

3. Leadership. No matter what system of governance a university may have, leadership remains an essential component of its functioning. In particular in the early stages of institutional development, the review teams found that one or more dynamic leaders were a key variable that often made a difference between success or failure. In some cases leadership was rewarded by verbal and written praise, promotion, and advancement of intellectual projects. However, in other cases, leadership was frustrated by rapid rotation through various leadership roles, diffuse lines of authority, or overly rigid systems of rules and procedures.

4. Environmental concerns. When the agricultural universities studied were founded, environmental issues were of far less concern than they are today. This was in part due to a lack of awareness, but it was also due to lower levels of environmental degradation of all sorts. In any case, concern over environmental pollution stemming from agricultural activities emerged at most of the institutions studied. However, only a few of the institutions had developed programs that integrated environmental concerns into their ongoing teaching, research, and extension programs.

5. Employment of graduates. All of the institutions studied were founded at a time when national agricultural (and related) services were very short of qualified personnel. Hence, the emphasis in the educational programs of the universities was on preparing graduates for public service careers. In most nations, agricultural civil service positions are no longer available in large numbers. This has markedly affected the employment prospects of graduates with higher degrees, which in turn has depressed enrollments in graduate degrees. In response to these changes, some universities have adapted their curricula to focus more on the knowledge and skills needed for employment in the private, commercial sector. Many, on the other hand, have actually reduced undergraduate enrollments as a reaction to the shrinking demands of the civil service.

6. Breadth of Perspective. One major reason for the formation of many agricultural universities during the 1950s and 1960s was an almost universal concern about serious shortages of food. This led to a strong emphasis on the need to increase dramatically the levels of agricultural production. This strong orientation toward production, to the virtual exclusion of other goals, has remained a central feature of many of the institutions included in the present study. However, as is noted below, the needs of those in the agricultural and rural sectors for sustainable development have changed very significantly over the years, and indeed they continue to change at an ever-increasing rate today.

7. Organizational linkages. The most effective agricultural universities studied have developed strong linkages with various other organizations. These active inter-relationships involve extension and extension-related services, farmer organizations, input suppliers, output processors, and the ministries of agriculture, livestock, education, planning and finance. It is as a result of

such inter-institutional cooperation that the successful universities have been so influential. On the other hand, many of the agricultural universities have remained, or have become detached from their institutional environment, such that they are remote from the very people they were designed to help.

Toward the Twenty-First Century

Today, after more than one hundred years of experience worldwide, these universities are increasingly finding themselves in social, political, cultural, technical, and natural environments that are rapidly changing. Moreover, the changes that are occurring are likely to require profound adaptations that would not have even been contemplated as little as twenty years ago.

All nations of the world are now faced by a rapidly changing global agriculture. Agricultural commodities of all kinds now exist in a volatile world market in which new technical changes can make previously distinct commodities interchangeable. Moreover, lower shipping costs resulting from improved air and sea transportation now make it possible for producers thousands of kilometers away to compete with local producers.

Dietary demands have also begun to change. Whereas in earlier decades the emphasis was on increasing demand for cereals, today consumers are seeking more variety in their diet and more meat, fruits, and vegetables. This is a result of the growing incomes, and thus increasing effective demands of substantial segments of the population in many nations. As these changes occur, there are emerging demands for scientists to address issues of post-harvest storage, processing and preservation in addition to increasing production. Also, as more and more nations reach the point where food production keeps pace with increasing effective demand, the problems of productivity and sustainability loom large. In periods of scarcity it is easy to convince farmers to produce more; in periods when supply begins to equal demand or even surpass it, serious problems relating to productivity emerge. This is as true in Western Europe, the United States, and Australia as it is in less developed nations. Under these circumstances questions concerning the economic aspects of food production assume a much higher profile.

The higher levels of production have brought with them the recognition of environmental deterioration including soil erosion, salinization, aquifer depletion, deforestation, chemical pollution, and destruction of the habitats of wildlife. These issues could remain largely ignored as long as they were of relatively minor proportions. Today, however, in some areas of the world deforestation threatens to create major climatic changes and/or to destroy irrigation systems. Similarly, the widespread use (and misuse) of agricultural chemicals in an effort to increase production has led to both acute and chronic illness among farmers, farmworkers, and even urban consumers. It has also reduced fish populations thereby eliminating a valuable natural resource. Considerable research efforts will be needed to develop safer chemicals, biological substitutes, and new cultural practices that require less intervention.

The linkages between agriculture, industry, and the service sector are being rethought as the problem of finding work for all has taken on global proportions. Today, nearly every nation of the world faces considerable unemployment. Previous solutions tended to focus entirely on the industrial

sector. However, it is now apparent that industrial development alone will not be adequate to provide employment for all. At the same time, technical changes in agriculture have often been labor-displacing, even in areas where labor was in short supply. Only recently has it become apparent that more consideration will have to be given to the linkages between farm and off-farm activities if agriculture is to remain a dynamic sector of the economy. This means that more attention in both research and teaching will need to be devoted to village-level processing of agricultural products, to part-time non-farm activities for farmers, and to the development of new products and markets.

New developments in science and technology are likely to have a profound effect on world agriculture, both at the production and processing stages. In the field of molecular biology recent developments have made possible the transfer of genetic material from one organism to another. This has opened huge new areas of research in plant and animal improvement.

Nor are the new developments limited to molecular biology. Recent developments in computerization have begun to affect agriculture in three ways: First, computers represent a resource for the processing and storage of vast amounts of information. Second, computers also present researchers with the capacity to simulate very complex interactions as mathematical functions. This will have many uses from aiding on-farm decisions to guiding experimental research. Finally, computers are now being incorporated into mechanized systems such as controlled-environment housing for plants and livestock, into irrigation systems and even cultivation machinery.

Whilst at first glance most of this high technology seems very remote from the realities of village life, rare indeed are those places in the world not yet serviced by transistor radios or even television sets. Indeed, many of these new developments will be much cheaper and/or more effective, than the present human services they would replace; and extension services are a clear case in point.

Most of the scientific and technological developments mentioned above have been associated with new understanding of "the way the world seems to work": New theories and principles from the sciences which underpin agricultural development. Universities have been very good at generating these new concepts and about translating them into useful technologies for use in the field. Thus, innovative agricultural management practices have been developed based on new theories from biology, physics, mathematics and chemistry, and from economics, sociology, psychology and anthropology. What these same universities have been less successful at, is generating theories and developing practices which they can use in their own self-management!

These new developments in theories, practices and philosophies are placing fresh demands on agricultural universities across the world. They are requiring these institutions to draw upon bodies of knowledge previously outside their normal domains of expertise. This also means that they will more than probably want to add to their faculty establishments academics from fields far removed from what traditionally have been seen as the core disciplines of agriculture. There will also be the need for new sciences to be actually created, especially for those concerned with the analysis of complexity. Perhaps the greatest change in the way universities currently operate, however, will be in the areas of policies and operations for the allocation of scarce

resources, and in the way the potential impacts of the various activities are assessed and used in management.

Strategies for the Future.

In short, the new worldwide challenge for the agricultural universities is to move from a focus on food production to sustainable and productive rural development. This will include a shift in the way the universities are both organized and managed. Several steps in these directions have already been taken by individuals within universities in virtually every nation. They have recognized that agriculture needs to move away from a commodity focus to an emphasis on the development of new agricultural systems. These new and complex systems will include not merely the production of agricultural commodities but their integration with other key activities of the farm household, including concern for markets for their sale, facilities for their processing, the delivery of farm inputs, the availability of credit, the formulation of national resource and agricultural policies, and measures of effective demand.

Restructuring agricultural universities throughout the world to meet these new challenges requires not merely the addition of new departments but consideration of new ways of knowing as well as new kinds of knowledge. For example, there is now a whole range of new theories of knowledge and its diffusion. There have been major changes in cognitive theory, the theory of research, and philosophy of science. These new theories suggest that, rather than a single way, there are multiple ways by which knowledge can be created, each of which is relevant and appropriate under different circumstances. Moreover, thinking is shifting from a focus on the parts to a focus on the whole, where knowledge about how the parts fit together is regarded as just as important as knowledge about the parts themselves. Furthermore, borrowing a metaphor from biology, development is being reconceptualized as the co-evolution of people with their environments. Put differently, people and their institutions do not simply exist, but are constantly responding to changes in their social and natural environments. These changes, in turn, change the environment again in a continuing process of co-adaptation and co-development.

The import of this change of perspective is that agricultural universities are no longer being seen as places where knowledge is created by scientists, handed to students or extension workers, and in turn passed on to farmers. Instead, as universities struggle to remain relevant to future needs, they are developing new approaches, new curricula, new paradigms, new theories and new practices, based on the active participation of all as learners. That is to say, agricultural universities are now being thought about such that they are seen as places for the simultaneous learning of all actors--students, faculty, farmers, public officials, and others--about the real issues faced by the agricultural and rural sector.

The problems and responsibilities facing all agricultural universities including those in more as well as less developed nations are such that they can only succeed if they become proactive--seeking to restructure their own environment so as to insure the success of their mission. This requires rethinking the way in which agricultural universities function so as to make impacts rather than outputs the criteria of success. In short, it requires an ongoing process of strategic planning.

Only by marshalling the capacities of all members of the organization and by building in mechanisms for response to change can organizations function effectively in such rapidly changing environments. This means that planning and evaluation cannot be activities engaged in once every year or five years but must become a central feature of the ongoing activities of the organization. Similarly, priority setting must be given greater weight than it has had in the past. It also means that individual and organizational learning must be designed into the institutional fabric. In particular, instead of emphasizing knowledge we need to emphasize ways of knowing.

Considerable research indicates that organizational change is most effective and lasting when it is the product of widespread participation of people from all strata within the organization. Moreover, it is unfair to expect top administrators to accomplish these tasks themselves. Everyone needs to be exposed not only to new visions but to strategies for thinking about new visions, for what we are talking about here is not mere tinkering with curricula or re-ordering research priorities, but fundamental reform of the purposes, functions and organizational structures of universities. The kind of fundamental change needed is one that challenges worldviews, paradigms, and philosophical stances. This is inherently disturbing for it forces people to question those things not usually questioned, and to face issues not usually faced.

Another aspect of strategic planning is the need to monitor and document the impacts that agricultural university programs and projects have. All too often universities have only vague information on the success of adoption of recommended techniques and practices. They need to use such information to document their successes and to correct their mistakes. Also, such information needs to be used to show state and central government officials that agricultural education, research, and extension are investments in the future of the state and nation and not costs to be borne as the price of progress.

Finally, agricultural universities throughout the world will only continue to flourish to the extent that they build constituent groups in their respective nations and states. The organization of farmers (already underway in some nations) is essential to the political support of the universities. It also offers an excellent vehicle by which they may make their needs and demands known to university scientists.

What AID can do.

The draft Asia and Near East Agricultural Strategy Statement divides the nations of the region into three socioeconomic groupings. In each, it may be argued, agriculture remains an important aspect of the national economy. However, given the different needs of each of the three groups, AID's strategy for the next several decades will have to be considerably different from what it was in the recent past.

The low income agricultural countries have yet to develop adequate agricultural research, teaching, and extension institutions. These nations will need help in developing new institutions and/or in making considerable improvements in already existing ones. Though the specifics will have to vary with each nation, it is reasonable to argue that conventional AID-sponsored Institution Building programs will be needed for the next several decades in these nations. Nevertheless, these programs can build upon the lessons learned from

older Institution Building programs. Of particular import is the need for long-term support that opens linkages to the entire US Land-Grant university system. Short term or fluctuating support appears to have little effect. In addition, such programs will need to spend more time and effort in building effective political support in the host country for agricultural universities. In particular, evaluations of previous projects emphasize the need for host country participants to have a clear idea of the mission of the new institution if it is to succeed. Still another aspect relates to the range of disciplines represented in the university. Previous Institution Building projects often overemphasized the production sciences and paid little attention to either the social or environmental and natural resource sciences. Given the enormous progress made in these fields over the last several decades, as well as the now well-established shortcomings of universities without them, every effort should be made to see that they are included in new programs and projects. Finally, new projects should take advantage of the newly emerging systems orientation to help new agricultural universities to create truly interdisciplinary programs that can address the full range of complex socioeconomic issues facing agriculture. This will not be easy as US Land-Grant schools are only now beginning to move in this direction. The intent of Institution Building projects is not that carbon copies of the Land-Grant institutions be developed overseas, but that institutions are developed that can become effective partners in the worldwide development process. For this to happen, it is essential that even new institutions be on the cutting edge of both scientific and institutional change in both the US and in over nations of the world. While the functions of the Land-Grant schools must be fulfilled in all nations if agricultural development is to succeed, there is no guarantee that the Land-Grant model will automatically lead to success or that lack of it will lead to failure. Each nation must find its own way.

The Low-Income Transitional Economies pose another set of problems. Most of these nations already possess agricultural universities, often built with previous AID support. Some, such as India, possess vast systems of agricultural universities while others such as Morocco possess just one. In general, these nations' universities are characterized by unevenness. In some areas they have very effective programs while in others they are in need of considerable technical help. Often, universities in these nations suffer from (a) a collective forgetting of the mission of the agricultural university, and (b) considerable isolation from the mainstream of agricultural research, extension, and teaching around the world. Thus, AID sponsored programs in the future will need to do three things: First, they will need to help these nations to reestablish their priorities for their agricultural universities through the use of tools such as (but not limited to) strategic planning. It is worth noting here that the need is much less for technical assistance to improve a particular subject field than it is for assistance in conceptualizing what the mission of the university should be and how it can best be accomplished. Accomplishing this will not be easy as US universities are also only now learning how to do this, and some are doing it much better than others. All could do it better than they are now.

Second, AID can help these institutions to develop new and more effective linkages with other agricultural universities in the US and around the world, such that they can become full partners in world agricultural development. Finally, AID can be of assistance in providing financial support that will permit these institutions to develop new competencies in accordance with their planning and prioritizing processes. Almost undoubtedly, such activities

would include the development or improvement of policy analysis within the universities. All of these activities will require that AID take on more and more a new role as supporter of cooperative relationships between mature institutions in furtherance of development goals. While technical assistance will continue, it will be limited to certain areas defined as weak and in need of improvement, as part of an overall on-going university planning process.

AID's strategy for the Middle Income Industrializing nations with respect to agricultural universities will include many of the activities described above for the transitional nations. However, in addition, AID will need to help these nations' agricultural universities to deal with the new agricultural problems and issues that appear when a nation becomes predominantly industrial. These nations are likely to become partners with the US Land-Grant institutions in the resolution of common environmental, social, and economic problems related to the development of a sustainable and highly productive agriculture, as well as problems related to changing consumer preferences and food processing. Thus, for these nations, the emphasis should overwhelmingly be on partnership and cooperation, not only in the exchange of technical information but in the exchange of institutional strategies and approaches to learning.

All of this poses significant problems for AID. The strategies described above will differ from nation to nation reflecting the uneven development of the region and the differing needs of its populations. This represents a break with the earlier AID approach of having a single strategy that could be used everywhere. In addition, across the board this new approach requires cooperation rather than aid in the classic sense. This means that greater tact will be needed on the part of AID personnel, more willingness to listen to and hear how others conceptualize problems. It means that project details will have to be left to others to define and execute; AID will no longer be able to do it all. Making these changes will require new forms of contracting both in the US and abroad and, perhaps, the development of entirely new forms of institutional relations between US universities, universities in developing nations, and other relevant parties.

Conclusions: Building Effective Agricultural Universities

There are at least three ways to think about organizations. The most common is to think of them as being well-bounded with little contact with or influence from their external environment. The second is to think of them as responding to a continuing array of pressures and requests from an external environment that may be friendly or hostile. The third is to think of organizations as active shapers of their own environment.

The majority of leaders of agricultural universities around the world seem to fall into the first category. They receive a certain sum annually from their governments which they employ in about the same way as they employed the money the year before. A smaller number are very effective in following the second model. They attempt to respond rapidly to clients and in so doing are able to increase their resources. However, they do this at the expense of having coherent goals. Their goals become whatever their clients' goals happen to be at that time. Finally, a small number fall into the third category. They have a vision of what their institutions should be, who they should serve, what projects and programs they should undertake, and they actively seek support to further those ends.

The challenge facing most agricultural universities around the world over the next decade -- including without question those in the U.S.-- is to move from model one or two to model three. Unfortunately, no blueprint exists for accomplishing a task of this magnitude for those who have been successful have often been unreflective about their endeavor, chalking it up to the charisma of one or two individuals. Nevertheless, some guidelines can be put forward.

Perhaps the key feature of such change is political support from the national government that will permit the agricultural university to develop into a proactive organization. Without that clearly demonstrated political support and commitment, it is unlikely that the universities themselves will accomplish much.

Also of particular importance is the formation of linkages between the university and the other organizations that are found in its immediate environment. The nature of these connections may vary from the very informal to the very formalized. A second element in restructuring the university's environment is having a process of strategic planning as described above. Only by having a clearly established planning process that produces plans which are highly flexible can a university hope to be a creative and innovative organization producing innovative and creative ideas and people!

A central feature in reorganizing the university's environment must be the use of the extension service to feed information into the university. By this is not meant feedback on adoption of innovations by farmers, but translation of farmers' needs into researchable topics. In all nations of the world this is an exceedingly difficult goal to achieve. In fact, the most effective extension services (and by implication the most effective research organizations) are those that have developed the mechanisms necessary to insure that the research that farmers want is the research that is being done. In short, farmers must be taken seriously as partners in the development process in order to insure the success of the university in its role.

Worldwide, it is a curious fact that students have rarely been used to help universities accomplish this end. Though many universities have introduced practicums as means for introducing students to agriculture and rural life as it is practiced, students have not been used to gather information on issues of concern to farmers that research might be able to solve. This would serve the twin goals of educating students as to the nature of village life and providing an easy, effective way of insuring that the university faculty was conducting research on topics relevant to the real needs of farmers and rural residents.

One particular advantage that agricultural universities have in reconstructing the environment in which they find themselves is the very technology that they are capable of generating. Technology is an extraordinarily powerful tool for reconstructing the social world. One need only look at the profound social changes that have accompanied technical changes (e.g., the Green Revolution) to begin to understand the power of technical change. Of course critics of the Green Revolution have, with some accuracy, noted that some of the social changes that occurred as a result of the Green Revolution were undesirable. This is because the technical consequences of the technical changes were not considered conjointly with the socioeconomic consequences. With the advantage of the great strides and mistakes of the Green Revolution behind us, we can now see that agricultural universities have an enormous source of potential power to bring about dramatic

planned social change if they plan technical changes while incorporating in advance social science knowledge about their probable impacts. The point to be emphasized, however, is that social scientists cannot merely be brought in to assess the impacts of new technologies after they are developed; they must be involved in the planning for those technologies so that the intended beneficiaries do in fact benefit, and the consequences are known in advance.

In conclusion, the agricultural universities have accomplished much in the short period of their existence. Their very success has created a new range of problems that were only vaguely foreseen at their inception. The challenge for universities is to move from production to productivity, from immediate needs to long term sustainability, from disciplinary to interdisciplinary research, from a commodity focus to a systems focus, from reactive organizations to proactive ones, from hierarchical organizations to participatory ones, from agricultural universities to universities for rural development. The challenge for AID is to help them to do just that.

Notes:

*This paper draws heavily on Richard Bawden and Lawrence Busch, "Agricultural Universities for the Twenty-First Century,"(1988).

**We use the term "agricultural university" here to refer to institutions of agricultural higher education. In most cases these institutions are the equivalent of universities. However, in many cases they are referred to by different names.

***More information on the individual country reports can be obtained by writing to PPC/CDIE, Room 105, SA-18, Agency for International Development, Washington, DC 20523.

A RURAL ECONOMIC GROWTH STRATEGY FOR ASIA AND THE NEAR EAST IN THE 1990's

(DRAFT--For Discussion Only)

ANE/TR/ARD
OFFICE OF TECHNICAL RESOURCES
BUREAU FOR ASIA AND THE NEAR EAST
AGENCY FOR INTERNATIONAL DEVELOPMENT

JANUARY, 1989

TABLE OF CONTENTS

	<u>page</u>
PREFACE	
EXECUTIVE SUMMARY	
I INTRODUCTION	1
II TWENTY YEARS OF AGRICULTURAL GROWTH IN ASIA AND THE NEAR EAST	4
A. Structural Adjustment	4
B. Agricultural Sector Adjustments	7
C. Common Themes in the Development of ANE Economies	10
1. Low Income Agricultural Economies	10
2. Low Income Transitional Economies	12
3. Middle Income Industrializing Economies	18
III ANE's RURAL SECTOR STRATEGY--PRESENT AND FUTURE	20
A. The Development Context	20
B. Institutional and Political Considerations	23
C. ANE Rural Sector Strategy Precepts	27
IV STRATEGY PROGRAM EMPHASES	30
A. Agricultural Production Technology	30
B. Agricultural Planning and Infrastructure	34
C. Trade and Market Development	39
D. Agro-Processing Development	41
E. Natural Resource Management	44
F. Human Capital and Institutional Development	48
V STRATEGY IMPLEMENTATION IMPLICATIONS	52
A. Sector Development Objectives and Investment Patterns	52
B. Staffing and Personnel Issues	54
C. Organization	55
D. Program Modalities	55
E. Summary and Implementation Measures	56

PREFACE

Among the major conclusions reached by the senior ARDO's attending ANE's 1987 Agriculture and Rural Development Officers Conference (Bangkok, Thailand) was the unarguable fact that the circumstances impacting on development in the ANE region had dramatically changed over the past fifteen years. ARDO's, in the 1990's, would be challenged to design and implement solutions to problems which did not fit the neat conceptual boxes which served to guide decisions in the 1970's and 1980's. ARDO's in the coming decade will have fewer resources to program, will program those resources in fewer sub-sectoral activities, and will have to program in areas which represent new intellectual challenges. The requirements for impact, however, from farmer's field to consumer's table, will be even greater.

The draft strategy "Rural Economic Growth in ANE Countries in the 1990's" is the response to the major recommendation of the 1987 conference. Senior ARDO's requested that ANE/TR/ARD take the lead in developing a region-specific articulation of the Administrator's focus statement which would provide detailed programmatic guidance for implementing the statement's key objectives (increased income, increased food availability, and enhancement of the natural resources base) and responding to the challenge of the 1990's. This draft strategy - the combined efforts of analysts within ARD as well as from other offices of AID/W - attempts to provide that guidance while taking into account the tremendous diversity of development circumstances faced by ANE countries stretching from Morocco to Fiji. The strategy does not dictate a single set of precepts for every country or even every country-type but does suggest a set of guidelines for making resource allocation decisions depending on the performance of the country in achieving sustained economic growth.

The draft strategy broadens the range of factors normally considered in an agricultural development strategy to include consideration of income levels, trade, agribusiness and off-farm employment, trade, exchange rates, urban food consumption and food processing behavior, food aid as a development (not budgetary) resource, capital markets development, and natural resources conservation. At this stage of its development, the draft strategy is just that, a draft. It will be used to provide the basis for discussion at the 1989 ARDO conference in Rabat, Morocco. Based on reactions from field staff, ANE/TR/ARD will finalize the strategy to serve as input for field agricultural and rural development programming in the 1990's.

Jim Lowenthal, Chief
ANE/TR/ARD
February 9, 1989

126

EXECUTIVE SUMMARY

During the past two decades, countries in the ANE region have witnessed varying but significant adjustments in their economic structure, especially agriculture. These changes and the problems associated with them, many of which transcend ANE's traditional agricultural production program orientation, dictate a reexamination of ANE's agricultural strategy. Such a review is timely, complementing Congressional review of current foreign assistance legislation and other evaluations initiated by the A.I.D. Administrator, BIFAD, Michigan State University and the S&T Bureau of A.I.D.

This report describes major economic and agricultural changes that have occurred in the ANE region over the past decade, aggregates ANE client countries into three types based on these past growth trends, discusses the major constraints to future growth in each type of economy, spells out ANE objectives and prioritizes possible investment options for each group, and recommends adjustments in ANE's structure and operations required to implement the strategy.

The analysis suggests the following conclusions:

1. The countries in the ANE region are not homogeneous, with per capita incomes ranging from \$150 per annum in Bangladesh to over \$6700 in Oman, and with a relatively smooth distribution up to at least \$1400 a year.
2. As per capita income increases, the relative importance of the agricultural sector as a source of income declines and the strategic role of industry becomes increasingly apparent. The relationship between per capita income and changes in economic structure suggests that strategic planning based on economic structure rather than geographic location would be a more effective overall approach.
3. Based on a structural analysis of agriculture in ANE client countries, three economic groups of countries are identified as the analytic basis of an ANE strategy. These groups are;
 - Low-Income Agricultural Economies (Bangladesh, Burma and Nepal), with per capita income of less than \$250 a year, and where agriculture produces more than 50 percent of income and industry less than 20 percent
 - Low-Income Transitional Economies (India, Sri Lanka, Pakistan, Indonesia, Yemen, Morocco, the Philippines and Egypt), with per capita incomes ranging from \$251 to \$750 per year, and where agriculture contributes less than 35 percent and industry more than 25 percent to per capita income; and

- Middle-Income Industrializing Economies (Thailand, Tunisia, Jordan and Oman), with per capita incomes above \$751 per year, and where agriculture provides less than 20 percent of income and industry more than 30 percent

4. Countries within these groups are at different stages in the development process. The normal development path starts with the introduction of new, high yielding cereal varieties complemented by improved rural infrastructure (roads and irrigation) and favorable government input and output price policies. Productivity increases and the associated grain surpluses find their way into other sectors through lower real food prices and increases in the demand for manufactured goods and services which result from higher agriculture incomes. As yield increase begin to slow, labor (particularly better educated young labor) begins to move out of agriculture and into faster growing sectors. Increases in urban and rural incomes, which continue to be supported by low food prices, increased rural demand for manufactured goods and lead to shifts in consumer demand away from basic cereals and toward processed and higher quality food. During this process the source of growth in agriculture shifts from production to processing, marketing and transportation for both domestic and ultimate export markets.

5. Since each of these groups are at different stage in the development process, they face different constraints to future growth.

In Low-Income Agricultural Economies, growth in cereals production, a major determinant in rural incomes employment and nutrition, has failed to keep pace with population growth; per capita caloric consumption remains nine percent below recommended levels; the intensity of agriculture production is low and the agriculture sector continues to absorb new labor, but at a rate below that in transitional economies. Here the major development objective are increasing basic cereals production and increasing the efficiency and effectiveness of the support services required for intensification. Investment in these countries would focus on:

- (a) improving the development, testing and diffusion of more productive cereals technologies;
- (b) improving the availability and efficiency of input supply markets, irrigation and transportation services; and
- (c) strengthening governments' analytical capacity to design, implement and monitor interventions and to determine the environmental consequences of production-related investments.

170

In Low-Income Transitional Economies, growth in overall agricultural cereal production exceeds population growth; per capita caloric intake is approaching recommended levels, labor absorption has begun to slow as increases in cereal production become more difficult to achieve; increased per capita incomes are leading to diversification in diets and growing demand for higher protein commodities, processed foods and fruits and vegetables; and interest in development of the industrial sector as a new source of income and employment is growing. Here the major development objectives are maintenance of sustained growth in cereals production combined with rapid expansion of the industrial sector, especially agro-processing, as an additional source of rural income and employment growth. Potential areas for ANE involvement include:

- strengthening government capacity to identify and change high cost policies which were adopted to increase cereal production but are no longer needed;
- continued support for agricultural research to increase the efficiency of the research system and assure continued sustainable growth in cereals production;
- programs to assist governments to withdraw from direct involvement in agricultural markets in favor of the private sector;
- efforts to encourage private sector investment in agro-processing to meet changes in domestic demand;
- efforts which liberalize domestic and international trade to lower the high costs regimes now faced by domestic agro-processors;
- improved watershed management, to assure sustained growth in agricultural production; and
- human and institutional capital formation, to provide the domestic skills and systems required to sustain the above initiatives.

In Medium-Income Industrializing Economies, growth in non-cereal agriculture is growing rapidly, new employment in agricultural-related industries continues to expand drawing more people out of agriculture, per capita caloric consumption is above minimum recommended levels and governments have redefined their position from controller of critical agricultural and food markets to facilitator of private sector investment and trade. Here, the major development objectives are to strengthen domestic institutions involved in the agricultural sector and assure that they are self-sustaining, and to link these institutions domestically and internationally in scientific and technical networks to assure the interchange of

information, ideas and technologies required to deal with new development problems as they arise. Potential areas of ANE involvement might include:

- Strengthening the links between domestic institutions involved in agricultural research, market management, agribusiness investment promotion, and international market promotion;
- strengthening contacts between domestic institutional networks and international centers of excellence in areas such as environmental protection and monitoring, international trade, and technology research and development.

6. An analysis of these investment options with respect to their direct and indirect impact on income and employment, their compatibility with U.S. political interests, and U.S. comparative advantage results in the following rank ordering of investment themes:

1. Increased staple cereal production
2. Growth in agro-processing
3. Trade and market development
4. Human capital development
5. Agriculture and infrastructure planning and management
6. Natural resource management

Each of these theme areas is discussed in more detail, and suggestions provided regarding specific investment options by theme and type of economy.

7. Focusing ANE program investments around these themes will require adjustments in ANE objectives and financial resource flows, in staffing patterns and skill areas, in mission and Bureau structure and organization, and in the types of program modalities available. Specific recommendations in each of these areas will be formulated following development of an ANE consensus on the Strategy and major areas of emphasis.

A RURAL ECONOMIC GROWTH STRATEGY FOR ASIA AND THE NEAR EAST IN THE 1990's*

I INTRODUCTION

Since the mid-1970's, AID's financial and human resources have been committed to supporting a basic human needs strategy of development. Agricultural programs have focused on improving agricultural production on land owned or operated by small or marginal rural farmers. This approach assumes that rapid increases in agricultural production lead to higher farm and rural bases incomes, increased rural employment, better nutrition and ultimately long-term national economic growth.

Over the past decade, AID has committed development assistance totaling \$6.9 billion to discover answers to problems that limit the growth in small farm agricultural production in the poorest countries of the world. In Asia and the Near East, \$2.8 billion supported activities to increase domestic and international capacity to develop and distribute new, more productive, agricultural technologies; to expand and stabilize the supply of critical farm inputs including irrigation water, fertilizer and agro chemicals; to set and maintain farm prices at levels that encouraged adoption of the new technologies and fostered growth in production and income; and to strengthen the reservoir of human capital and the institutions that mobilize that human capital for productive purposes.

This approach has met with significant successes. The widespread adoption of more productive rice and wheat technologies has led to renewal in research interest in a variety of other crops--corn, cassava, soybeans, chick peas and peanuts. Improvements in research facilities, irrigation infrastructure and input production and distribution systems are well along in many countries, and emphasis is turning to improving the management of the physical, financial and human resources associated with these capital investments. Many former subsistence farmers have progressed over the last decade to semi-commercial producers, and the timely supply of agricultural inputs, in the remotest parts of the region at prices farmers can afford, is increasingly commonplace. The technological problems that limited major cereals production have in many places been alleviated, at least for the time being, and per capita consumption and nutrition have improved.

* Prepared by Martin Hanratty and Charles Uphaus, Office of Technical Resources, Bureau for Asia and the Near East, with assistance from Ralph Cummings, Directorate for Food and Agriculture, Bureau for Science and Technology, Stan Peabody, Office of Technical Resources, Bureau for Asia and the Near East, and Marcus Ingle, University of Maryland.

Experience gained in formulating and administering farm price policies has led to a more sophisticated understanding of the relationship between technological innovation, input availability, production policy and macro economic policies and there is a greater appreciation for the need to understand agriculture as a part of a larger economic system when formulating agricultural policy. And finally, although pockets of poverty remain, in countries throughout the region average real per capita incomes in both rural and urban areas have improved, diets have diversified and demand for higher quality and processed agricultural product is becoming manifest.

However, while there has been significant progress, problems remain. Over the last five years, yield increases of major staples (rice and wheat) have slowed and slipped below population growth in many Asian and Near East countries. Little is known of the causes of the decline but this suggests that maintenance of yields for these cereals will be a continuing challenge through the 1990's. In addition, past increases in average per capita consumption levels, while a significant accomplishment, mask the fact that millions in the regions remain in the grip of poverty and malnutrition. Effective and cost efficient strategies targeted to the needs of these minorities need to be developed and tested. It is somewhat ironic that a majority of the malnourished in countries such as India, Nepal and Bangladesh live in or near areas of high agricultural productivity. Many, having no land, can only participate in the fruits of the "green revolution" through the provision of their daily labor, either on the farm or in the associated secondary processing and distribution systems.

In addition, inward-looking trade policies, which protect domestic agriculture input producers, maintain expensive and inefficient barriers to agricultural trade, and involve government at every step in the market chain, are commonplace in the region. Subsidies associated with food and fertilizer policies continue to place major drains on national treasuries. The increased profitability associated with the widespread acceptance of new technologies and the resultant government cost increases call into question both the continued need for and the financial sustainability of current subsidy packages. Careful analysis of the social costs of subsidies and the associated distribution of benefits, be they to farmers, output processors or input distributors or manufacturers, is required to support the difficult political choices required to implement long-term subsidy reduction strategies.

In another area, further intensification of agricultural production on prime land using modern technology, and the extensification of production into marginal and fragile areas as population grows, calls into question the sustainability of current technologies and production levels. New economic development efforts, which create productive employment opportunities outside the more fragile, low-productivity areas, are required to draw the next generation of marginal agriculturalists out of such areas. For those who remain, more environmentally sound techniques of intensified production, which maximize use of remaining labor, need to be developed.

Finally, productive employment for new entrants into the rural labor force is, and will continue to be, the problem in the 1990's. The limited demands that intensified cereal and secondary crop production will place on future rural labor pools means that the burden will fall on other, non-agricultural, sectors to absorb a major portion of this new labor. Basic education, which provides rural youth with the skills needed for entry into the non-agricultural processing and manufacturing sectors, will be critical to effecting the needed out migration.

Although elements of ANE's country programs have shifted as conditions have changed, the Agency's overall agricultural strategy remains focused on the problems of increased food supply and the conditions that constrain it. The appropriateness of this focus is being called into question given the structural adjustments which are occurring in the region and the array of problems these adjustments pose for continued economic growth.

These changes and the emerging problems suggest the need to reexamine ANE's agricultural strategy. The time is right for such a review. The U.S. Government is entering a period of political adjustment and is rethinking its foreign policy and development assistance priorities and programs. ANE's agricultural strategy review will complement the assessment of foreign assistance legislation currently underway in Congress, and will provide inputs into a number of other evaluations initiated by the AID Administrator, BIFAD, Michigan State University and the S&T Bureau of AID. Last, but by no means least, the evaluation responds to concerns voiced by ANE's Agricultural and Rural Development Officers at their 1987 conference regarding changing trends in policy, technology, the social and political environment, and the human capital and institutional base. The officers called for the development of a new, responsive strategy that would allow for country-specific articulation in light of the diversity of ANE countries.

This strategy represents the combined efforts of many AID and external experts, drawing heavily on the deliberations of the joint ANE-HIID Strategy Symposium held in September, 1988. It is presented in the following four chapters. Chapter II explores the extent to which structural adjustments have occurred over the last two decades and how individual countries or groups of countries have been affected in the process, proposes a three-stage typology for analysis of sectoral status and economic trends, and suggests specific development action or investments that will be required to sustain development. Chapter III examines A.I.D.'s current strategy, explores areas in which AID may have a comparative advantage, and presents a set of principles that determine the parameters for a new strategy. Chapter IV lays out the basic components of the strategy for each stage of the typology, and Chapter V explores some implications of the new strategy for Bureau and Agency implementation modalities, personnel and organizational structure.

142

II Twenty Years of Agricultural Growth in Asia and the Near East

During the past two decades, countries in the ANE region have witnessed varying but significant adjustments in their economic structure. Some, former recipients of AID assistance, have graduated to full status as independent players in the world economy. Others have pursued steady programs of adjustment which have led to changes in income and employment and set the stage for eventual graduation. Finally, there is a small but significant group that has, for a variety of reasons, stagnated.

This section examines this growth and draws from the emerging mosaic a set of common themes for the region. The analysis in no way substitutes for more detailed country specific reviews which are required to guide program and project adjustments in individual country programs. It does, however, allow for the verification of broad trends against which proposed adjustments in ANE regional strategy can be discussed. The analysis opens with an examination of over all economic growth and change, then explores specific adjustments that have occurred in the agricultural sector in three groups of countries, and closes with a discussion of cocommon themes within each group.

A. Structural Adjustment

For the purposes of identifying regional adjustments, fifteen countries, four in Southeast Asia, five in South Asia, six in the Near East are considered. Support for programs in these countries accounted for 82 and 50 percent respectively of ANE's Development Assistance and Economic Support Funds in FY88. In increasing order of per capita income, as reported by the World Bank, the countries are: Burma, Indonesia, the Philippines, and Thailand; Bangladesh, Nepal, India, Pakistan and Sri Lanka; and Yemen, Morocco, Egypt, Tunisia, Jordan and Oman.

Countries in the sample are diverse. Populations range from 1 million in Oman to 765 million in India. In 1985, average per capita incomes ranged from \$150 in Bangladesh to \$6730 in Oman, with a relatively smooth distribution at least up to \$1400 a year. Though significant variability exists amongst countries in the region, the economic parameters appearing in Table One suggest a common, yet strong relationship between economic structure and annual per capita GDP. As per capita income increases, the relative importance of the agricultural sector as the source of income declines and the strategic role of industry becomes increasingly apparent. For example, in 1985 annual per capita income in Bangladesh averaged \$150, with \$75 originating from agricultural activities. On the hand, in Thailand, where per capita income during the same year was \$800 only 17 per cent, or \$136, originated from agriculture. The remainder, \$664, was from economic activities in the industrial and service sectors.

14/84

TABLE ONE: MACRO ECONOMIC INDICATORS - ASIA AND THE NEAR EAST

COUNTRY	NATIONAL POPULATION (millions)	PER CAPITA 1985 (\$US)	ANNUAL GROWTH (percent)	GROSS DOMESTIC PRODUCT		
				SECTORAL COMPOSITION		
				AGRICULTURE (percent)	INDUSTRY (percent)	SERVICES (percent)
Low-income Agricultural Economies	155	161		51	13	36
Bangladesh	101	150	2.4	50	14	36
Nepal	17	160	0.1	62	12	26
Burma	37	190	0.4	48	13	39
Low-income Transitional Economies	1173	352		28	30	43
India	765	270	1.7	31	27	41
Sri Lanka	16	380	2.9	27	26	46
Pakistan	96	380	2.6	25	28	47
Indonesia	162	530	4.8	24	36	41
Arab Republic of Yemen	.8	550	5.3	34	16	50
Morocco	22	560	2.2	18	32	50
Philippines	55	580	2.3	27	32	41
Egypt	49	610	3.1	20	30	53
Middle-income Industrializing Countries	64	975		15	35	50
Thailand	52	800	4.0	17	31	50
Tunisia	7	1190	4.0	17	35	46
Jordan	4	1430	5.8	8	28	64
Oman	1	6730	5.7	3	59	38

4(a)

Source: World Development Report, (Washington, D.C.: The World Bank), 1987.

145

The relationships between per capita income and economic structure suggest that, for purposes of strategic planning, a functional rather than geographical grouping would be more meaningful in defining a new regional development strategy. Further analysis of data in Table One suggests the existence of three basic groupings: low income agricultural economies; low income transitional economies; and middle income industrialized economies. The first includes countries with per capita incomes of less than \$250 per year, where agriculture produces more than 50 percent of income and industry less than 20 percent. The second group--low income transitional economies--includes countries with per capita incomes ranging from \$251 to \$750 per year and where agriculture contributed less than 35 percent and industry more than 25 percent to per capita income. The last group--the middle income industrializing economies--includes countries with per capita incomes above \$751 per year, where agriculture provided less than 20 percent of income and the industrial sector more than 30 percent.

Using these criteria, ANE countries fall into the following groups:

I. Low Income Agricultural Economies

Bangladesh
Burma
Nepal

II. Low Income Transitional Economies

Egypt
India
Indonesia
Morocco
Pakistan
Philippines
Sri Lanka
Yemen

III. Middle Income Industrializing Economies

Jordan
Oman
Thailand
Tunisia

The economic structure of countries in each group is different. For example, per capita incomes range from an average low of \$161 in the low income agricultural economies to \$962 in the medium income industrialized economies. Differences stem largely from the differential growth rates over the last twenty years, whereby low-income transitional and middle-income industrializing countries grew an average of 60 and 250 percent faster, respectively, than the low-income agricultural economies.

In addition, the rapid growth evident in the latter two types of economies was accompanied by substantial adjustment in economic structure. In general, as growth occurred the importance of the agricultural sector as a source of new income and growth declined and was superseded by the industrial and services sectors. As the data in Table Two indicates, agriculture's share of GDP dropped from 51 per cent in low income industrial economies to 15 per cent in the middle income industrializing economies. This was accompanied by a doubling in the importance of the industrial sector and a one and a half times increase in the importance of the services sector as sources of GDP.

TABLE TWO. ECONOMIC CHARACTERISTICS OF ANE SUB-REGIONS

<u>ECONOMIC PARAMETERS</u>	<u>LOW INCOME AGRICULTURAL</u>	<u>LOW INCOME TRANSITIONAL</u>	<u>MIDDLE INCOME INDUSTRIALIZING</u>
Per capita income in 1935	\$161	\$321	\$978
Annual growth in GDP 1965-1985	1.6%	2.6%	4.3%
Composition of GDP in 1985			
Agriculture	51%	27%	15%
Industry	13%	30%	34%
Services	36%	43%	51%
Change in composition of GDP 1965-1985			
Agriculture	1.5%	-16.9%	-20.8%
Industry	1.9%	8.9%	10.9%
Services	-3.4%	7.7%	9.8%

The rate of structural adjustment in each group also varies substantially. For example, over the last twenty years (1965-1985) the changes in the proportion of GDP originating from agricultural sector activities in the low income agricultural economies remained almost constant, changing only 1.5 per cent. In low income transitional and middle income industrialized economies, agriculture's proportion of GDP changed substantially, declining 16.9 per cent in the former and 20.8 per cent in the latter. These declines were offset by substantial upward adjustments in industrial and service sector expansion.

Clearly, major adjustments in agriculture occur as economies develop and transform. The pace and ease by which countries make these transitions must be the focus of a rural sector development strategy. To develop such a strategy, an understanding of the adjustments which occur in the sector during growth is essential.

1471

B. Agricultural Sector Adjustments

Over three decades of experience has provided a number of insights with respect to the nature of these sectoral adjustments. The first is that food availability is critical to the political stability of nations everywhere; those in Asia and the Near East are no exception. Governments that have not provided adequate supplies of basic cereals at prices perceived as fair by both producers and consumers have undergone serious social disruption. Consequently, it is not surprising to find the majority of countries pursuing policies that aim to assure food security. In most cases, this has manifested itself initially in a drive for cereals self-sufficiency. In addition to infrastructural and institutional investments in pursuit of this objective, governments apply a variety of policy interventions, including input price subsidies and import restrictions. This combination of investment and policy measures has resulted in the successes noted above, and led to the point at which structural adjustment becomes essential if growth is to continue.

The introduction of new cereal varieties combined with improvements in rural infrastructure--notably irrigation and roads--and favorable government policies have led to increases in per hectare yields, increased employment and rising per capita incomes. Surpluses generated in agriculture typically find their way into other sectors through lower urban food prices, and consequently lower urban wages, and increases in the demand for manufactured goods and services which result from higher agricultural incomes.

As agriculture continues to grow, the demand for labor declines as yield increases begin to slow. New entrants into the rural labor force, who are often better educated, tend to look to the industrial and services sectors for employment. Expansion in these sectors caused by growing domestic demand for non agricultural goods and services leads to increased employment there, and to declines, first in the rate of growth of the agricultural labor force and then in its relative size, and a decline in the proportion of net national income generated by agricultural sector activities. Increases in urban sector incomes, which continue to be supported by low food prices, lead to shifts in consumer demand away from basic cereals toward increased consumption of high quality protein in the form of meat, poultry and dairy products and greater dietary reliance on processed rather than bulk agricultural products. During this process the source of growth in agricultural employment shifts from field production to processing, marketing and transportation, initially to meet domestic demand and later to service exports.

As the income data in Table One suggest, the agricultural sectors in ANE countries are at different levels in this development process. A more detailed look at the sector in each of the three groups of countries outlined above is provided in Table Three.

TABLE THREE CHANGES IN SELECTED AGRICULTURAL DEVELOPMENT
INDICATORS BY TYPE OF ECONOMY - 1965 TO 1985

<u>INDICATORS</u>	<u>PERIOD</u>	<u>MEASURES</u>	<u>LOW INCOME AGRICULTURAL</u>	<u>LOW INCOME TRANSITIONAL</u>	<u>MIDDLE INCOME INDUSTRIALIZING</u>
1. GROSS DOMESTIC PRODUCT	1985	\$ PER CAPITA	16	352	975
2. POPULATION	1965-1985	ANNUAL GROWTH	2.6	2.3	2.5
3. AGRICULTURE					
TOTAL PRODUCTION	1965-1985	ANNUAL GROWTH	2.5	3.3	3.8
CEREAL PRODUCTION	1965-1985	ANNUAL GROWTH	2.4	2.7	1.1
FERTILIZER USE	1985	KG PER HECTARE	101	435	90
IRRIGATED AREA	1985	% ARIABLE LAND	18	31	18
4. AGRICULTURAL LABOR FORCE	1965-1985	ANNUAL GROWTH	1.3	1.4	1.5
4. CONSUMPTION					
CALORIES PER DAY	1981	CALORIES	2057	2112	2327
PERCENT OF REQUIREMENTS	1981	% OF REQUIREMENT	91	96	104

Source: FAO and World Bank Data

These data suggest some very interesting relations supporting the descriptions provided above. For example, in the low income agricultural economies, annual growth over the last 20 years in overall agricultural production has just managed to keep pace with population growth. Growth in cereals production, a major determinant in rural incomes, employment and nutrition, has failed to keep pace with population growth, and per capita caloric consumption remains nine per cent below recommended levels. Fertilizer use and irrigated area, both proxies for the intensity of agricultural production, remain low. The sector continues to absorb labor, but at a rate below that in transitional economies where both total agricultural and cereal production exceed population growth. In such an economy, gains in cereal productivity represent one of the major constraints to further development. Unless constraints to increased productivity can be overcome, employment growth will be limited, consumption of non-agricultural goods and services will be below required levels, and the transfer of excess resources to the industrial and services sectors will be non-existent.

In the transitional economies, a more dynamic picture emerges. Here growth in both total agricultural and cereal production exceed population growth, increased agricultural productivity has led to increased employment and per capita caloric consumption has increased and is approaching recommended levels. Growth levels in agriculture suggest the development of a surplus, available for industrial and service sector growth.

The transfer of resources from agriculture to these other sectors, and their consequent growth, has already occurred in the middle income industrializing economies. Here the data suggest a relative decline in cereal production but an overall increase in total agricultural production. Such adjustments would be expected as incomes rise and diet becomes more varied. Also, with the rapid increase in non-cereal production, daily per capita caloric intake has increased to 106 per cent of recommended requirements and the growth in cereals has fallen behind population growth. A major portion of this population, however, is not finding employment in the agricultural sector, and growth in the agricultural labor force has declined from 1.9 per cent during the first five years of the decade to 0.7 per cent during the second half. With the decline in the growth of the agricultural labor force and the generation of excess sectoral production, it is highly likely that a substantial number of rural residents are now employed in either industrial or service sector occupations, on a part-time or full-time basis.

There clearly has been a change in the socio-economic composition of countries in the ANE region over the last decade. Currently, most of these countries benefit from surpluses in agricultural output, increasing employment in agricultural production and the beginnings of non agricultural sector expansion. Only a limited number of countries continue to have serious problems with the production of major cereals, and the majority have begun to expand non cereal production.

Growth in non-cereal production is in response to shifts in demand, where the importance of cereals tends to decline as incomes rise. Increasing daily caloric consumption and the relative declines in cereal consumption imply significant diversification in diets. These dietary adjustments are accompanied by shifts in the patterns of employment, wherein more and more new entrants into the labor force find employment outside agriculture. This, in turn, has three implications:

- Growth in income and employment in transitional and industrializing economies in the decade ahead will be dependent on growth outside the traditional agricultural sector. Although agriculture will remain important, it will not be the major employer of labor in a majority of countries in the region.
- As countries advance from low income and transitional agricultural economies to middle income industrializing economies, there is a clear trend toward outmigration of male labor from rural to urban areas. This changes the composition of the rural labor force towards higher female participation, as laborers as well as managers. (The percentage of females in the rural labor force exhibits a striking increase as economies develop, from roughly 20 percent in the low income agricultural economies, to nearly 50 percent in the middle income industrial economies.)
- As the location of employment shifts from agriculture to non agricultural sectors, the importance of food processing and marketing will increase. The growing number of people who will be moving from agriculture will need to eat. And what they will eat will be changing away from cereals to higher protein and more processed foods.

These economic changes that are under way in the region are paralleled by significant environmental, institutional, human capital, and political changes. As noted above, the sustainability of the production gains achieved is being called into question, both in terms of the natural resource base and the institutions that have been established to promote and support agricultural development. The human capital base has broadened significantly, and there has been a substantial increase in the number and complexity of development institutions. The question at this point is how AID's regional agricultural strategy can respond to these changes and continue to influence and encourage economic development, while enhancing equity and conservation of the natural resource base.

C. Common Themes in the Development of ANE Economies

1. Low Income Agricultural Economies

Program investments in these economies tend to follow traditional agricultural investment patterns, concentrating on increasing the per capita availability of basic food grains. Common themes are coordinated investments in agricultural research and technology diffusion, input supply, rural public services, policy analysis and human capital, combined with increasing awareness of natural resource implications of production-oriented investments.

a. Research & Technology Diffusion: Improvement in agricultural research system performance in such countries is essential to: a) more effectively use the scarce physical and human resources available; b) set in place and strengthen appropriate institutional mechanisms for defining and updating research agendas; and c) increase the capability of management structures to effectively identify key problems, allocate adequate resources to their solution and move on to new problems when former ones have been resolved. Strengthening linkages between a country's research establishment and outside agencies or groups is important to facilitate research already underway, to assist in identifying new problems and required solutions and to assist in marketing new solutions.

b. Input Supply: Comprehensive agricultural development programs in these low-income agricultural countries must deal with two main input supply issues. The first is to insure that adequate supplies of key production inputs are available where and when required by farmers. Governments' recognition of the importance of input supply as a basis for expanding HYV cultivation has led to their direct involvement and control over domestic input production, importation and distribution. In many cases, this involvement has persisted, even after it has become clear that private sector involvement is almost always more effective and less prone to inefficiency.

The second issue is the efficient use of subsidies to encourage expanded distribution and farm level demand for inputs. In situations where basic input markets exist, and input use is substantially below efficient levels, price subsidies have proven effective in encouraging more wide spread and efficient use. However, subsidies, if used, need to be structured in such a way that as distribution and farm use approach efficient levels, the subsidy is systematically reduced until full cost pricing is achieved.

c. Public Services & Infrastructure: Complementing the provision of physical inputs is the critical importance of selected public services, particularly irrigation and transportation. The expansion of irrigation reduces risks associated with high input agriculture, encourages farmers to adopt new technologies developed and distributed by government, results in higher yields and cropping intensities with two and three crops per year grown on the same acreage where one crop was grown before, and leads to the expansion of production to new areas.

There is little argument about the critical role government must play in the construction of new and the rehabilitation of old irrigation systems. There is less unanimity regarding irrigation system operation and maintenance. Preliminary evidence suggests that irrigation authorities can be more efficient if they limit their involvement to the operation and maintenance of the major structures and canals, and have water users maintain the remainder of the system. Unfortunately, acceptable models providing detailed descriptions of this division of responsibilities remain to be developed and tested.

Improvements in transportation services to minimize disruptions in input supply and to facilitate the collection, processing and distribution of basic staple grains are also preconditions to the subsequent generation and transfer of economic surpluses originating from the agricultural sector. Transportation services not only include an adequate physical network, but also effective, least cost mechanisms for maintaining existing systems, policy environments that encourage the expansion of private sector involvement in the sector and effective public tax mechanisms to assure adequate financing for expansion, operation and maintenance.

d. Policy Analysis: Support is needed initially to create and then to strengthen agencies within government to undertake policy formulation and analysis, and to establish and improve the data collection and personnel systems which support these efforts. This capacity is often essential to provide the analysis supporting a reduction in public sector control of agricultural input and output markets, to identify potential areas of new economic growth and to design the needed government incentive package to lever private sector investment, and to monitor key indicators of market performance so market failure can be identified and appropriate government interventions initiated. Capacity development efforts, some similar in design but serving the needs of different political clientel in a government-making decision system, are required to improve analysis and to raise the level of debate surrounding critical agricultural policy issues in the system.

Of particular importance in this process is the development of an effective food price stabilization program. Price stability in these economies is critical to encourage continued adoption of new technologies and to guard against the rapid deterioration in the welfare of the urban and rural poor. An effective stabilization program would maintain major grain prices within bounds established by the government and allow prices over time to mirror longer term adjustments in international prices. An agency responsible for such a program, alone or in collaboration with the private sector, would manage a combined domestic and international market intervention program, buying and selling grain as required to meet domestic consumer and producer price targets and maintain and manage sufficient "iron" stocks for use during times of national emergency.

e. Natural Resources: Confronted by problems of basic food production, limited budgets and scarce management resources, it is not surprising that governments in low income agricultural economies do not view natural resource conservation investments as matters of high priority. Officials often regard the objectives of increased production and natural resource conservation as conflicting, at least in the short run. In such cases, development assistance should focus on ensuring the environmental soundness of interventions and on setting up a program for environmental monitoring, laying the groundwork for subsequent, more focused interventions in the future. Development assistance programs and agencies should recognize that policies will be deliberately biased in favor of production; e.g., through fertilizer and pesticide subsidies. A major goal in such cases is to help assure that the true net costs and benefits of these policies are known and that decision-makers are aware of the real costs involved.

f. Human and Institutional Capital: Underlying the above is the basic need for trained manpower at all levels, and particularly in the research, analysis and management fields. There is an urgent need to enhance and sustain the effective performance of key policy, research, extension, input supply, output processing and local level institutions involved in major cereal production. This will include focused interventions that consider the appropriate mix of governmental and private entities, the increasing role of women and youth in productive activities, and the issue of self-financing to at least partially offset the increasing costs associated with new or enhanced research, infrastructure related services and governmental personnel systems. A large part of any development strategy in these economies will include substantial support for professional education and training, initially outside the country, while domestic institutions are being improved.

2. Low Income Transitional Economies

These economies have experienced limited success in their development programs. Applied agricultural research and dissemination of high yielding rice and wheat varieties has paid off, production has increased, per capita consumption is up and the agricultural sector has begun shifting from subsistence to commercial agriculture. Gains in agriculture are reflected in overall increases in per capita income, adjustments in food demand and the growing importance of the service and industrial sectors.

151

These relative successes have led to the need for change. Development assistance must recognize this need and focus on building the human and institutional capacity required to make the necessary policy and program adjustments. Major increases in value added from food grain production have largely played out; future increases required to keep ahead of population and income growth will be harder to achieve. New sources of rapid growth in the service and industrial sectors must be identified and manipulated if the income and employment growth process, initiated in the agricultural sector, is to continue. Past development models that rely heavily upon government intervention, and which have generally proven expensive and detrimental to private sector participation, need to be changed if the desired growth in services and industrial production is to be achieved.

The transition, from a low-productivity, largely agricultural economy with a weak commercial basis to a middle income, industrializing economy, is a period where improvements in management of existing resources rather than rapid expansion of infrastructure will provide the basis for growth. This is an area where new approaches in development assistance, both programmatic and operational, appear warranted. Common themes in effecting such a transformation are agricultural policy reform, technological innovation, agro-based industry development, expanded trade, natural resource conservation, and continued human capital development. These are discussed briefly below along with possible transformation-enhancing interventions.

a) Agricultural Policy: The policy environment established to achieve major increases in grain production needs to be carefully reviewed and adjusted to reflect current conditions. Specific programs, including input/output subsidies, the supply of infrastructure services and control of major input and output markets were conceived and implemented in periods of low per capita food availability in order to maintain political stability, to marshal limited government and managerial financial resources and focus them on key social problems, and to encourage the widespread adoption of new, highly productive yet risky agricultural technologies. These programs, while effective in raising food production, have often resulted in governmental involvement at every step in the production, marketing and distribution system. As coverage has expanded, absolute costs have skyrocketed and there is serious concern over whether these programs should or could be expanded in their present form to encompass a wider range of crops.

Investments to improve national capacity to identify outdated policies, to measure the economic and social costs of continuing existing or alternative policies, and to move economically preferred approaches through the political system are essential if nations are to develop a dynamic policy response capability. These investments include a well-articulated and up-to-date base for monitoring current conditions and testing alternative policy options, and, building on earlier investments in capacity building, strong analytical units in agencies having a major interest in agriculture--Ministries of Agriculture, Planning, Finance and the Central Bank. While duplication of effort is a concern, multiple investments in different organizations are necessary to raise the level of debate, and to fully analyze and articulate the diverse political views which are imbedded in a proposed policy adjustment. Finally, sustained

growth of institutional capacity, preferably outside government, needs to be encouraged to monitor longer term adjustments and to recommend alternative programs to meet employment and income objectives.

b) Technical Innovation: Technical innovation in agriculture continues to be a critical component of a development strategy in low-income transitional economies, especially in view of the recent evidence suggesting alarming and consistent declines in the rate of yield increase of basic cereals. There is general agreement that rates of past increases in yields, due largely to the widespread use of improved genetic material, the provision of irrigation, and the availability of adequate supplies of fertilizer and agrochemicals at the farm level, will be difficult to sustain. Increases over the next decade will likely result in large part from improvements in crop management, including more timely irrigation, the widespread adoption of integrated pest management techniques, and the use of more optimal fertilizer mixes, among others. Development and dissemination of these improved management techniques may be more difficult and costly than previous interventions, since they will be more area-specific and, thus, appropriate for a more limited number of farmers. Although marginal, increases in cereal yields associated with improved management will be essential in the medium term to keep up with population and income growth and to buy time until bio-technology research can generate longer term, non-marginal increases in yields.

Although the private sector has committed substantial investments to further bio-technology, research in this area cannot be completely ignored. Current research, conducted by large, multi-national seed production, research and pharmaceutical conglomerates, can be expected to focus on commodities that promise the highest return and serve markets which promise the most widespread and stable long term demand. Such research may or may not be consistent with the need of poorer farmers in ANE countries. Investments are required to reposition and focus international agricultural research centers to identify and carry out basic research in this area and to explore new forms of cooperation between public and private research organization, be they at the national, international or multi-national level.

The heavy emphasis placed on cereals research reflects the social, macro-economic and political importance of these commodities. This does not, however, preclude research on secondary food crops, tree crops or horticulture products. Dependent on a country or region's comparative advantage, these crops may play an important role in increasing value added, employment and income or in protecting downstream investments. Strong, integrated, management information systems need to be developed within research establishments to identify problems which are amenable to solutions, to support only research which has a high probability of significantly reducing the costs of production (increasing a crop's comparative advantage) or raising yields and to monitor the application of resources, both human and financial, to the solution of key problems. Such systems are essential in managing the allocation of resources between major cereals and secondary crop research, and between irrigated and upland secondary crop production.

c) Growth of Agro-Processing: While growth in major cereal and secondary crop production will continue to productively employ new entrants into the rural labor force in the foreseeable future, the rate of increase in labor absorption will continue to decline due to the limited area available for the expansion of cereal production, the limited increased yield potential, and the lower labor requirements associated with most secondary crop production. Rising rural unemployment appears likely, unless alternative job opportunities can be created.

Adjustments in demand which accompany rising incomes in the low-income transitional economies may provide a solution to this dilemma. Diets tend to change as incomes rise. With each additional dollar earned, less is being spent on cereals and more on high protein food, processed and prepared food products, and canned and fresh fruits and vegetables. In most instances the collection, processing and distribution of these products vis-a-vis other industries (e.g., textiles, shoes, electronics) is labor-intensive, requires lower capital investment, and uses relatively simple and easily maintained technologies.

The rapid expansion of agroprocessing and secondary support facilities could provide productive employment to under and unemployed rural labor; expand and stabilize demand for selected secondary crops, fruits, vegetable, meat and dairy products; and meet growing domestic demand while setting the technological and managerial base for future exports. Much of the labor force in these industries will be drawn from marginal agricultural areas. Out-migration from these areas in the medium to long term could lead to adjustments in cropping patterns to reflect more limited labor availability, and the less intensive agriculture which would result--i.e. fruit or forage production--would tend to be less environmentally stressful than present intensive (cereal production) uses.

To encourage the growth of agro-processing, a variety of development related investments are required. Improvement in a government's ability to plan and implement infrastructure development programs in support of agro-processing investments is essential. Promotional activities and services aimed at decreasing pre-investment and initial operating costs of agro-industries can also be effective in channeling investments toward designated locations or product lines. Consistent, clearly articulated and stable industrial policies are important in encouraging agro-processing investments and reducing pre-investment costs. Start up costs could be further reduced and selective activities (i.e. manpower development) encouraged through the use tax policies. Finally, expansion of the capital markets to increase the supply and reduce the cost of domestic equity financing should be considered.

d) Trade Liberalization: A relatively open market trading regime is essential to development of an efficient, demand-driven production, processing and marketing system. To move in this direction, adjustments in trade policies and regulatory agencies will likely be required. For example, countries in this group, having passed through a period of food scarcity, are often left with antiquated food and agriculture input supply agencies. These agencies continue to control basic agricultural and food markets through direct

management of domestic production facilities, maintenance of monopoly import rights over key commodities and inputs, management of large subsidy programs via administered input/output price systems, control of food procurement, and the maintenance of sole distribution rights over food and inputs - often down to the community level. Over time these agencies have either (1) expanded, assuming control over additional agricultural inputs or non-staple food commodities; (2) been replicated to manage the production, importation and/or marketing of other "strategic" commodities (plastic, tin plate, agricultural machinery); or (3) been augmented by the strengthening or development of new agencies to manage commodity export promotion.

These agencies have served an important function, but at substantial cost. Strong vested interests have developed which manage these inefficient collection, processing and distribution systems; limit or exclude private sector participation; and, often lobby in opposition to the enactment of market liberalization policies. In addition, many of the nations in this group have continued to follow monetary policies which isolate domestic financial markets from world markets. Overvalued exchange rates, credit rationing, and interest rate controls have constrained domestic resource mobilization, limited the availability of investment capital and have retarded the growth of domestic processing industries. As an extension of this set of inward-looking policies, many countries have established artificial trade barriers, initially to protect infant industries. Once established, it has been difficult to rescind these barriers and to wean individual interest groups from the benefits they confer.

Effecting change within these systems is difficult, but critical to establishing an efficient agro-processing sector. A number of actions, which move toward opening domestic markets and linking them to international counterparts could be considered. For example, at the macro level a review of exchange rate policy could be initiated to assess the disruptive effects current policy is having on agricultural production and agro-processing development. Similar reviews of banking policies could lead to the use by banks of interest rates more closely approaching real market rates and thus rationalize bank savings and lending policies and allow banks to provide the full range of services required by investors.

Improvements in basic import/export administration, import licensing requirements and port procedures could also prove beneficial. Reform of import and export permit systems, which confer monopoly control on individuals and/or agencies for the import and export of products, would result in the transfer of rents normally accruing to permit holders to government via tariff or excise payments, and would be more amenable to change if major distortions persisted. Finally, improvements in the management of port facilities which increase competition between cargo handlers, and reduce demurrage and warehousing fees could reduce the cost of inputs to agricultural processors.

The review and restructuring of state commodity trading operations would be appropriate given improvements in domestic markets, the increased sophistication of private traders and trading houses and more effective banking services. Restructuring of government operated state trading companies to actively involve them in price stabilization rather than commodity supply management would require maintenance of a producer/consumer price target system

through the active participation of private trading companies in the domestic and international market. Price bands maintained by this system should be set close to international border prices and allowed to move in line with longer-run international price adjustments.

Trading companies, through the manipulation of domestic stocks purchased to protect floor prices, could buffer the domestic market from short-term international or national price fluxuation. In the long term, such market operations should be self-financing. In the short-term, however, public financing would probably be required.

Price stabilization efforts could be complemented by a reduction in the number of commodities normally managed by a state trading entity. Limiting operations to major staples, like rice and wheat, reduces both logistical and financial problems. Importation of other non-staple commodities could then be picked up by private trading houses and if necessary monitored by the state trading agency. The adjustments suggested above would require substantial donor support to define problems, assess alternatives, implement decisions and structural adjustments and underwrite a portion of the risk associated with these changes.

e) Natural Resources: Although the relative importance of the agriculture sector declines over time in these countries as industry grows, the absolute size of the sector assures that it will continue to be an important component in national economic growth. Sustained growth in agricultural employment and incomes will require careful management of the natural resource base which underlies agricultural productivity. Land, water and vegetative resources are coming under increasing pressure as production intensifies on prime land, as population densities increase in upland and marginal areas and as new areas are opened for agricultural exploitation. With major cereal production problems reduced to manageable proportions, countries in this group can and must begin strengthening legislative, planning and administrative capacity to deal with sustained agricultural productivity and natural resource conservation.

f) Human and Institutional Capital: The low income transitional economies require a strengthened human and institutional base to successfully make the necessary policy and program adjustments discussed above. The major needs include (a) more efficient inter-organizational structures for analysis, research and management of the adjustment process, (b) a strengthened institutional infrastructure of laws and rules at the central and local/urban levels, and (c) upgraded technical and managerial personnel in transitional areas such as agro-processing, export promotion and crop diversification. To support the demand-led strategy, enhanced and sustained institutions, many of them crosscutting one or more organizations, will be required to support policy analysis and implementation management, research on trade adjustments, labor force analysis, improved utilization of infrastructure, new information systems to support decision making, and better management of the natural resource base. Private and NGO institutions may be called upon to perform a number of expanded roles in employment, natural resource conservation, and education.

With adjustments in agriculture will also come the need for special consideration of gender roles, minority concerns and distributional issues. Specialized education outside the country will remain necessary, but with increasing technical and managerial training being provided in-country.

3. Middle Income Industrializing Economies

These economies typically have solved the grain self-sufficiency problem either through intensified per capita production or through food grain imports. They are well along on an industrialization policy, and are beginning to draw a large share of new entrants in the agricultural labor force in non-farm employment. The basic commercial laws and capital markets are in place to facilitate modern market operations, and trade policy has shifted from a protectionist posture to one of export trade promotion. Hidden trade barriers have been eliminated and more transparent tariff structures, generally in line with international levels, have been adopted. Also, a nascent capacity to identify and resolve trade disputes is commonly being brought to bear in bilateral and multi-lateral trade negotiations. Finally, these nations have installed the basic administration, legal and monitoring structures required to implement environmental protection legislation.

Basically, countries in this group have successfully managed the transition from a major dependence on agriculture as the prime source of growth to a more balanced growth pattern involving the agricultural, industrial and service sectors. Their success is often mirrored in a growing sense of national identity and pride. The role of A.I.D. in these countries would be expected to be radically different from lower income countries, consisting more of support for selective national initiatives and institutions than active involvement in defining specific problems and implementing solutions.

Most of these countries, however, lack the sophisticated internal structures and external global linkages which will allow them to accelerate and sustain a rapid development process. As the agro-industry base expands and technology development becomes more capital intensive, new and more adaptive institutional structures and processes are needed to formulate and implement increasingly complex policies, to stay abreast of rapidly changing technologies in the biological and information sciences, and to respond to international trade opportunities. Also, in selective, high payoff areas such as environmental protection or biotechnology, these countries may require continuing programmatic support for new institutional development initiatives.

For such countries to continue to develop, it is essential for them to have high quality domestic institutions and networks which tie individuals and institutions together in a system of shared ideas which energizes the links between domestic institutions and individuals and various centers of scientific and analytical excellence throughout the world. Strengthening domestic networks and linking them to existing international networks should encourage and sustain the plurality of ideas and institutions that a modern state needs to deal with a dynamically changing internal and external environment.

At this stage of development, as the economy expands and more women are drawn into the labor force (both on and off-farm), these countries have the need and the opportunity to more directly and effectively address gender and equity issues. Finally, there is a need and an opportunity for these countries (for political, technical and financial reasons) to form institutional relationships with neighboring lower income economies for the purposes of technical cooperation and education.

Development assistance programs, financing and staff would be expected to reflect this growing domestic capacity. Direct involvement in institutional development activities initiated earlier in areas such as the environment, agricultural research and financial markets would phase out in favor of mechanisms for encouraging meaningful collaborative research, scholarly exchange or specific training, and enhanced trade linkages. The participation of the nation's professional scientific and managerial community in efforts to assist less developed neighbors could be encouraged, along with the use of domestic universities and other facilities to train third country nationals.

Support for the development or strengthening of a series of independent research and development institutes, possibly tied to a national science foundation, could provide an important mechanism for allocating indirect support to training, inter-university exchange and research, and would probably require substantial adjustment in the means of providing assistance--e.g., from direct loans and/or grants to endowments generated via PL 480 monetizations.

III ANE's Rural Sector Strategy--Present and Future

Over the past 20 years, ANE's strategy has focused on increasing basic cereal production in the region in ways that assured that the benefits of growth were shared by different income groups in the society. Program investments have sought to improve basic cereals research and extension, to provide physical infrastructure and policies to assure adequate and efficient supply of required inputs such as water, fertilizer and credit, and to strengthen analytical capacity within government to effectively manage a country's agricultural production system. As the analysis above suggests, these investments have in part been successful. Per capita calorie consumption, income and employment have improved in the majority of countries in the region. But problems of sustainable agriculture, hard core pockets of poverty, continued population growth and environmental degradation persist.

With growth has come new problems and the need to reassess ANE's regional agricultural strategy. Strategic program adjustments are required to: (1) assure that current regional agricultural strategy is consistent with changing economic conditions and problems in the region; (2) determine if strategic themes can be readily translated into specific field actions with measurable outputs, (3) prioritize themes so as to facilitate field level choices under conditions of declining resources; and (4) demonstrate to Congress and U.S. interest groups that development resources are being used efficiently and effectively. An ANE rural sector strategy cannot, nor should it, address all of the development problems identified. Selective programming is required, based on the impact of assistance on income and employment, what A.I.D. does best, long term U.S. political and economic interests, and the chances of success. This is an argument for marshalling the human, financial and organizational resources needed to resolve the constraints to increased income and employment growth and, if need be, to make the necessary adjustments in program, staff and process to more effectively operate in the 1990's.

1. The Development Context

To continue economic growth already underway, ANE client countries will need to expand access to gainful employment and to increase incomes of populations living in both urban and rural areas. To accomplish this objective, private and public resources need to be committed to sustaining and increasing the rural employment base already established through the expansion of high-yielding cereal technologies, as well as to identifying and supporting public and private investments to develop and promote new, environmentally-sound, sources of rural sector growth.

Certainly, realization and maintenance of basic food security constitutes a priority claim on national attentions and resources. In the past, this has often taken the form of striving for self-sufficiency in basic cereals regardless of the economic merits of such a strategy. Of late there is increasing recognition of the costs involved in such a strategy and

acceptance of the idea of using the international market as a "balance wheel" in assuring national food security. However, any effective strategy must recognize and accommodate this priority objective, while retaining flexibility as to the means by which it is realized.

Both efficiency criteria and historical evidence dictate the expansion of private sector participation in rural economies. In countless instances this sector has proven that it can interpret market signals better, move faster and allocate scarce resources more efficiently, if given the opportunity, than public sector counterparts. However, the more active involvement of the private sector in development suggests a basic adjustment in the role of government, from a position of controller of economic development to the management and promotion of economic growth. Open currency exchange and banking systems, stable investment and legal environments, selected subsidization of new technologies and programs to encourage adoption, and capacity to detect and react to changing domestic and international market environments will be critical. Adjustments will neither be easy nor simple. External resources to encourage government policy adjustment in this direction, to identify the political and economic options available, and to absorb a portion of the associated risk and transition costs will be required.

The objective of increased agriculture-related income and employment through more efficient allocation and use of scarce resources leads to a number of key principles upon which a development strategy for the 1990s must stand.

First, in the decade ahead agriculture growth--especially, increases in basic cereals productivity--will continue to be a major source of new income and employment. However, agricultural expansion alone will not be sufficient to maintain acceptable rates of growth in per capita income as labor forces expand. Agriculture can be expected to decline in overall relative importance as an economy develops.

Second, efforts to maintain and improve the productivity of basic cereals production will continue to be critical because:

- Cereals production will continue to provide the single largest source of income and employment in ANE countries;
- Basic cereals will continue to be essential for national food security, price stabilization, and the maintenance of government credibility and political stability in all countries in the region;
- Cereals will continue to be the largest single source of protein and calories in the diets of poorer residents; and,
- Cereals will, for the medium term, remain the basic wage good of the region and will continue to be important in maintaining low nominal--not real--wage rates, which is critical to the expansion of private sector marketing, processing and distribution.

Third, while demand for agricultural products is diversifying and diets are changing, support for the expansion of non-staple commodity research and production should be determined more on the basis of a specific commodity's economic comparative advantage, importance as a raw material in the expansion of agro-processing, and compatibility with the diversification in effective

domestic and export demand than on production feasibility. In short, investments in non-staple commodity research and production must be led by demand, not a physical ability to produce the commodity.

Fourth, growth in higher value agricultural processing and marketing will be a prime source of expansion in rural employment, will lead to increasing incomes of underemployed rural residents, and will provide an important stimulus to marginal and subsistence farmers to relocate away from environmentally fragile, low productive areas. This will require:

- Government capacity to identify product growth lines to meet domestic and foreign demand, to analyze and implement selected policy changes to promote the expansion of agro-processing investments, and to locate, plan and implement public infrastructure investment required by processing facilities;
- Expansion of capital markets to increase the sources of equity capital;
- Reduction in protectionist trade barriers and their replacement by tariff systems which increase and promote the use of least cost inputs by agro-processors; and
- Restructuring of internal trade policies and transportation services to reduce the cost of raw and processed agricultural goods from farm to factory to consumer table or port.

Fifth, a transformation in the role of government from controller to promoter of economic development will require substantial restructuring of development institutions and a complementary expansion in the role of the private sector. Successes in certain developing countries--notably Thailand and Taiwan--in orchestrating this transformation, and the increasing costs associated with direct government interventions in rapidly expanding cereal production programs are combining to point out the economic and fiscal limitations of direct government involvement and the need for basic policy adjustments which establish an environment conducive to increased private sector investment. Governments throughout the region are beginning to realize the importance of:

- Targeting interventions only when private market performance falls below prescribed expectations;
- Establishing up to date legal, banking and contracting procedures which encourage the rapid, cost-effective expansion of market transactions, protect the rights of both buyers and sellers, and which quickly and effectively arbitrate disputes;
- Encouraging the development of more complex marketing systems required as development occurs, not only in terms of input supply and the processing and distribution of agricultural products, but also capital markets to provide investment capital for the expansion of processing facilities and commodity futures markets to absorb a portion of the risk associated with a modern agricultural production and processing system; and
- Increasing the effectiveness of taxation systems to both enhance public revenues required to carry out infrastructure investments needed to encourage industrial expansion as well as to provide incentives which channel private investment in desired areas.

Sixth, a sound natural resource management policy becomes increasingly important the long term productivity and efficient use of a nation's water and forest resources. This suggests the need for:

- Strengthened capacity within the public sector to identify and respond in a coordinated manner to stop or ameliorate the adverse environmental impacts of public and private investments;
- The adoption of long term environmental and water resources policies which clearly indicate the relative roles of the state and the private sector in the ownership and management of land and water resources, prioritize resource users, establish effective methods of arbitrating disputes, and set up effective public sector institutions to manage soil, water and forest resources as components in natural eco-systems; and
- The development of an information base to support and monitor the above.

Seventh, all of the adjustments suggested above will require major additions to the stock of human capital available to both the public and private sectors. Deepening of government analytical, planning and monitoring capacity as well as expansion of private sector entrepreneurial skills are necessary. This will require:

- Strengthening of governments' manpower planning capabilities to identify the specific skill areas in short supply, identify and implement policies which encourage adjustments in public and private educational institutions and programs, and to develop operational training plans to upgrade key skill levels;
- Establishing a wide range of new formal and informal training programs which specifically meet the needs of an expanding private sector. Areas likely to be in high demand might include commercial law, business management, marketing (international and domestic), investment analysis, accountancy, transportation management and computer science.

2. Institutional and Political Considerations

An action agenda to facilitate and quicken the structural adjustments facing ANE client countries is both complex and far reaching. ANE and the Agency neither have, nor will have, the staff or financial resources to assist countries in the region in facilitating change across the broad spectrum of needs. Choices have to be made which maximize the impact of scarce ANE resources in addressing the major problems constraining the expansion of incomes and employment, which meet realistic performance parameters imposed by the domestic political and economic environment within which A.I.D. operates, and which coincide with the comparative advantage (professional and organizational) of the Agency in administering development assistance.

a) The Domestic Political Environment

Articulation of an ANE rural sector strategy must consider the major economic and political adjustments which are likely to influence programing options through the decade ahead. The changing position of the U.S. in the international family of nations, the need to redress negative trade flows and

..

the increased emphasis that trade is likely to have in the formulation of U.S. foreign policy initiatives, and the increasingly important role that special interest groups play will all influence the types of programs ANE will be able to pursue.

A number of changes need to be considered:

- The growing complexity of the world trading system and the increased role that developing countries play in it, the destabilization of the American dollar, and the persistent U.S. budget deficit all suggest the likelihood of a stable or decreasing U.S. foreign assistance budget and the need for A.I.D. to increasingly work in a cooperative rather than a unilateral mode.
- The increased power that special interest groups--both agricultural and environmental--have in Congress will result in continued and possibly greater Congressional interest and oversight of A.I.D. and other multi-national development investments, the use of budget earmarking to assure that these outside interests are addressed in A.I.D. programs, and continued difficulties in generating the necessary political support to enact foreign assistance legislation.
- The growing concern over the U.S. trade deficit, the slow pace of trade liberalization negotiations and the resulting increase in protectionist tendencies could lead to trade conflicts between major trading nations, use of restrictive U.S. trade measures, and increased pressure on A.I.D. to promote U.S. markets and abstain from any investments which might result in increased competition for U.S. exporters in world markets.
- More widespread scientific and public understanding of global environmental problems--acid rain, ozone depletion, the "greenhouse effect", destruction of tropical forests, degradation of major watersheds (the Himalayas, for example)--will result in greater pressure on A.I.D. to commit resources to these problems, both in country programs and in the international arena.

While these trends will affect a broad range of U.S. programs and policies, they have particular relevance to A.I.D. and ANE's programming options. Specifically, these trends are likely to lead to;

- reduction in number and scaling back of the scope of Missions' specific program objectives;
- reduction of the number of A.I.D. program recipients;
- efforts to restore greater trust and confidence between Congress and A.I.D. in the implementation of the U.S. foreign assistance program;
- the need to strengthen the Agency's capacity to monitor and analyze commodity specific issues confronting interest groups and Congress, and to determine the most effective A.I.D. response consistent with the Agency's long term strategy objectives;
- the need to develop new ways of doing business which more efficiently use the Agency's scarce human and financial resources and maximize the Agency's ability to leverage funds from the larger donors--e.g., Japan and the multi-national banks;

In other words, during the 1990's ANE will likely be working in fewer countries, have less staff and fewer programmable financial resources, and face greater oversight by Congressional and interest groups. There will be continuing pressure, especially early in the decade, to establish effective programs which enhance U.S. trade flows and encourage liberalization of client country trade and private sector investment policy. Also, there will be increasing pressure on ANE to step up the volume of programming addressed toward the environmental problems that are increasing as development efforts intensify. Finally, there will be increased interest within the Agency in improved, more efficient management, including ways of increasing staff effectiveness, of identifying and testing innovative, high payoff solutions to development problems, and of leveraging financial resources controlled by other, larger donors to support promising solutions.

b) A.I.D.'s Comparative Strengths

With over 30 years' experience in foreign assistance programming A.I.D., and more specifically ANE, have developed recognized strengths relative to those of other multi- and bi-level donors in dealing with the economic development problems faced by client countries. The long term maintenance of a network of field offices with capable, in-country technical and administrative expertise provides both in-depth analytic capability combined with access to host country technicians and decision-makers. Through close, long-term involvement with the problems of production agriculture in the region, and more recent involvement in efforts to improve management of agricultural systems and undertake policy analysis and dialogue, A.I.D. personnel have gained both a depth of understanding of the production and administrative systems involved, and input into vital policy decision processes.

This long term involvement with host country policy makers has often led to the growth of collegial relations not enjoyed by other bi- and multi-lateral donors. Also, A.I.D.'s long term experimentation with the complex issues of institutional development has led to the formulation of common rules of thumb on the development of sustainable institutions. The lessons learned by ANE's institutional development activities are being drawn on by other donors-- notably the World Bank through cooperative rural development activities and, more recently, by Japan.

A.I.D. would not have been able to accomplish as much as it has without the unique strengths available in U.S. institutions. The U.S. agricultural research, extension and training university system has been intimately involved in international development efforts over three decades. Both as institutions and through their individual faculty members, they bring a unique capability to the agricultural development process garnered over years of involvement, from research and production to processing, policy analysis and marketing. The level of mutual trust and respect which characterize many of the relationships between these and host country institutions is a necessary condition for the difficult tasks of institutional restructuring and transformation that are required as economic structures adjust to growth. Access to this university system remains one of the primary selling points for the Agency's human resource development programs.

187

The presence of a large number of U.S. based private voluntary organizations, with extensive micro-level development experience, provides a unique resource to ANE to assist in defining, testing, and monitoring innovative solutions to critical private sector and rural development problems. These can be used to identify realistic approaches to rural problems, and to demonstrate how broader policy adjustments required to implement results will benefit target populations.

The strong U.S. technology base--especially in the advanced agricultural sciences, research management, communications and agro-processing and marketing--provides an unending array of proven technologies of value to client countries in their development efforts. When combined with the growing interest of U.S. manufacturers and processors in joint-venture developing country investments, well-developed U.S. based international capital markets and a focus on humanizing technological innovation, this sector processes unique capabilities for ANE development efforts in the low income transitional and middle income industrializing economies.

Finally, A.I.D. has access to a wider range of development assistance instruments and modalities than most other donors including both grants and concessional loans, the trade and development program, cash transfers, sector loans, plus PL 480 in all its manifestations. These various options combine to provide significant programmatic flexibility in responding to specific client country needs.

Although A.I.D. possesses or has access to many relative strengths, problems remain. Staff capabilities in such critical areas as macro-economic analysis and policy formulation, agro-processing development, trade, and capital market development are limited. Many of the important transitional issues faced by client countries cut across thematic and organizational lines with which the Agency is unprepared to deal. The urban-rural dichotomy which pervades much of A.I.D.'s strategic thinking, and the division between public enterprise and agricultural development activities are good cases in point. Finally, the ability of ANE, and the Agency as a whole, to formulate strategic issues and perform and/or manage first rate analysis--critical elements in innovative programming--is hampered by the absence of strong analytical staff. Dedication of staff and financial resources to this task is essential to develop programs which will remain up to date on the problems faced by A.I.D. client countries, which consolidate and transfer effective approaches between Bureaus, and which track international and domestic economic and political change and adjust A.I.D.'s strategies structure and program content accordingly.

3. ANE Rural Sector Strategy Precepts

ANE possess a unique set of qualities: long term experience in agricultural and rural development issues, an institutional presence in the countries, solid long term relationships with key development institutions, access to a unique and talented set of U.S. based professional staff, institutional and technical resources, and the availability of a wide range of assistance instruments. However, a sound strategy must be based on both current institutional strengths as well as accord with U.S. policy interests. Program areas to be emphasized in the ANE Rural Sector Strategy need to meet specific criteria. While according with overriding client country food security interests, they must:

- contribute to real increases in client country income and employment;
- meet policy parameters established by the Agency and/or Congress; and
- make maximum use of special A.I.D. and ANE strengths or capabilities (either those internal or accessible to the Agency), or potential strengths realizable through adjustments in personnel, organizational structure or procedures.

The list of possible interventions suggested will have differential impacts relative to each of the above three criteria. The impact of program investments on increasing income and employment, the overall strategic objective, will vary across activities and economic groups. For example, investments to increase or maintain staple cereal yields in both low income agricultural and transitional economies will have both direct and indirect impacts on labor force dynamics. In the latter group of countries, attainable rates of growth and labor absorption in agriculture will be lower. In these countries, growth in the industrial sector--especially rural and semi-rural agro-processing--could absorb substantial numbers of un- and underemployed rural residents. Factors which will facilitate this growth--revisions in trade policy, capital market development and infrastructure planning and management--will have a more indirect impact.

The impact of Agency and Congressional oversight is also an important factor in the selection of strategy components. Certain investment activities relate directly to these concerns, while others are more neutral. For example, focussing investments on assuring sustainable increases in per capita cereal availabilities encourages political stability, expands the buying power of poorer urban and rural consumers, and has limited impact on American producers and trade. On the other hand, investments in agro-processing, based on adjustments in domestic demand and supported by appropriate and effective research, could mean increased demand for U.S. exports. For example, the development of a modern poultry industry could lead to increased international purchases of equipment and feed, where the U.S. is a high quality and low cost producer. Finally, efforts to encourage private sector participation in marketing and processing, and emphasis on natural resource management, speak directly to U.S. interests and relative strengths. While it will be impossible to appease all interests, such efforts will go a long way in demonstrating that sound management of a nation's natural resource base is an important component of ANE's strategic objective of sustained income and employment growth in client countries.

Table Four provides a rough rank ordering of the impact of each of the possible interventions discussed earlier on the basis of their direct and indirect employment impacts, their compatibility with U.S. political and economic interests, and the availability of human or technological resources, either within or accessible to A.I.D., to bring to bear in their design and implementation. Numeric weights--a maximum of 20 points for direct, positive income and employment impacts, 10 for indirect impacts, 15 for U.S. political and economic policy compatibility, and 10 for extent of accord with A.I.D.'s comparative advantage, have been used to develop a crude rank ordering amongst possible activities.

Because of the general and overlapping nature of many of the interventions considered, and the complexity of the economic systems they will affect, the rank order presented should only be regarded as indicative of the potential importance of investment activities on achieving strategic goals. More detailed analysis, using a similar technique but based on country level analysis and more precisely defined goals, would be required to formulate country-specific investment strategies. However, the crude analysis presented in Table Four does suggest the following illustrative rank ordering of investment priorities:

1. Increased Staple Cereal Production: Investments in this area rank highest because of the relative importance of cereal production to national income growth, the relatively high impact that increased production has on direct farm employment, the degree to which production increases generate new employment in related agricultural enterprise (transportation, trade), and the significant relative strength of A.I.D. and the U.S. in cereals-related research--both technology and systems management.
2. Agro-Processing Development: The importance of activities which encourage expansion in this area, largely facilitated by private sector investments, results from the direct and indirect effects expansion will have on rural labor absorption and the prominent position of private sector development in U.S. foreign economic policy.
3. Trade and Market Development: Both components of this activity--trade reform and agricultural market development--would have a direct impact on reducing costs faced by agro-processors and consumers, and could potentially lead to expanded private sector investments in processing, growth in effective demand and, ultimately, increased labor absorption at the farm and agro-processing levels. Also, trade liberalization efforts form one of the center points in U.S. foreign policy initiatives in both developing and developed countries.
4. Human Capital Development, Infrastructure Planning and Management, and Agricultural Policy and Planning: All areas rank high because of the indirect impacts they have on the expansion of agro-processing and employment generation. In addition, A.I.D. possesses a strong comparative advantage in these areas. Agricultural policy and planning activities have more of a mixed impact; while directly influencing agricultural input/output price regimes which can favor increased production and employment, they will have relatively less impact on the private sector commercial activities on which income and employment growth strongly depend.

TABLE FOUR: IMPACT OF PROPOSED ANE INVESTMENTS ACTIVITIES ON STRATEGIC OBJECTIVES

ACTIVITIES	IMPACT ON INCOME AND EMPLOYMENT		COMPATIBILITY WITH U.S. ECONOMIC/ POLITICAL INTERESTS	HUMAN AND TECHNOLOGY RESOURCE AVAILABILITY		INVESTMENT IMPACT*	
	DIRECT	INDIRECT		A.I.D.	OTHER	NUMERICAL RANK SCOPE	ORDER
1. INCREASED STAPLE CEREAL PRODUCTION	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	51	1
2. AGRO-PROCESSING DEVELOPMENT	HIGH	MEDIUM	MEDIUM	LOW	HIGH	48	2
3. AGRO-PROCESSING INPUT SUPPLY	MEDIUM	MEDIUM	LOW	HIGH	MEDIUM	33	6
4. NATURAL RESOURCE MANAGEMENT	LOW	MEDIUM	HIGH	MEDIUM	HIGH	41	5
5. AGRICULTURAL POLICY AND PLANNING	MEDIUM	LOW	HIGH	MEDIUM	HIGH	43	4
6. TRADE AND MARKET DEVELOPMENT	MEDIUM	MEDIUM	HIGH	LOW	MEDIUM	45	3
7. HUMAN CAPITAL/INSTITUTIONAL DEVELOPMENT	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	43	4
8. CAPITAL MARKET DEVELOPMENT	MEDIUM	LOW	MEDIUM	LOW	HIGH	32	7
9. INFRASTRUCTURE PLANNING AND MANAGEMENT	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH	43	4

Notes: *Numeric weights used in calculating scores are as follows: a maximum of 20 points for direct income employment effects, 15 points for indirect impacts, 20 points for U.S. economic and political compatibility and 5 points each of human and technological resource availability in A.I.D. and outside. Activities are assessed as having high, medium and low impact which correspond to 100, 60 and 20 percent of maximum points respectively. Maximum score for activities which receive all high marks is 65 points.

28(a)

5. Natural Resource Management: While not having a direct, short-term impact on employment or incomes, sound use of a nation's productive natural resources mitigates against disruption in a country's basic agricultural production capability and ultimately assures long-term, stable growth in labor demand. In addition, activities in this area command strong U.S. interest group and Congressional support.
6. Institutional Development: This ranking results from the relatively low to medium impact it will have on employment in the medium term--viable, dynamic institutions able to respond to changing economic conditions are necessary to encourage and stabilize economic (and labor) growth--and the relatively moderate domestic U.S. interest in this area.
7. Agro-Processing Input Supply: This ranking results from the moderate impacts investments are likely to have on labor absorption, and the potential conflicts which could arise with U.S. commodity interest groups.
8. Capital Market Development: Although essential for the long-term growth in agro-processing, investments in these complex markets will be difficult to develop and relatively slow to expand. Substantial government experimentation will be required before concrete reforms are initiated.

The previous illustrative analysis and the overlap between different activities would suggest the following broad areas of ANE strategy emphasis:

- Agricultural Production Technology
- Agro-processing Development
- Trade and Market Development
- Agriculture and Infrastructure Planning and Management
- Human Capital and Institutional Development
- Natural Resource Management

In varying degrees, these themes can be incorporated into developmental programming for each of the types of economies differentiated above, and provide a focal point around which country agricultural programs can be organized. Because of the poor performance of food grain production in the low income agricultural economies, projects would continue focusing on improving basic cereal production so that per capita availability increases. In the low income transitional economies, programmatic emphasis could shift to activities that facilitate the development of the complex markets required to effectively transfer resources in and out of the agricultural sector. Finally, in the middle income industrializing economies, programmatic emphasis could move to the maintenance of host country institutions capable of carrying out the analysis required to make the necessary adjustments in internal development programs. Here, long term collegial relationships with individuals and institutions outside the host country would be extremely important. Common to all these themes in all contexts is the need for continued attention to human resource development, particularly in research, analysis and management.

IV Detailed Strategy Presentation

The actual set of investment activities comprising ANE's Rural Economic Growth Strategy will vary by the type of economy, and the unique social, political and economic environment present. The types of economies within which ANE must work and the general constraints faced in each have been discussed previously. This section explores each investment area, with specific emphasis on the type of projects or programs that might be considered for inclusion by Missions in reformulating their agricultural strategies to accord more closely with the income and employment objectives.

Needless to say, not all the activities mentioned under each investment theme will be appropriate for inclusion in a Mission's agricultural portfolio. Missions need the analytical capacity and political acumen to monitor and assess the political feasibility, the technical capability to explore feasible options to solving constraints if and when "windows of opportunity" present themselves, and the flexibility to reprogram resources, both human and financial, take action within the limited time frame afforded for change. This blending of economic, political and technical capabilities and strategic programming and technical interests into a flexible response capability will be discussed in Chapter V. Below is further consideration of strategic program themes and possible specific areas of engagement.

A. Agricultural Technology Innovation

In general, over the past two decades farmers have been "catching up" with the potential created by the innovations of the 1960s, and it will take considerable effort in agricultural technology over the next decade to ensure adequate cereal (rice and wheat) production to keep up with growing demand. The very dramatic increases in yield potential recorded up to 1965 have slowed dramatically; experiment station rice yields have actually declined since IR-8 appeared in 1965. (The new rice varieties do have important advantages over IR-8--their yields are more stable in the presence of insects and diseases, and they mature in fewer days, thereby permitting intensification of land use. However, they do not have higher yield potential.)

There has been some increase in yield potential of wheat varieties since 1965, but this has been modest compared to the sharp increase between 1961 and 1965. Considerable effort in the form of maintenance research is required just to stabilize yields--i.e., to keep ahead of pests, diseases, and other stresses. Newer techniques, such as biotechnology, have potential in helping alleviate some of the more difficult problems facing agriculture in the areas where physical, chemical, disease, and insect stresses limit production under existing technologies. However, short of unexpected breakthroughs in yield potential, near-term rice and wheat production gains will come primarily through management--i.e., agronomic--improvements.

While a gap between potential and actual achievement in rice and wheat production remains, the prospects for closing it further are daunting. Fertilizer use is already fairly high in most countries, and efficiency of fertilizer distribution and use is not improving very fast. Irrigation investment has almost halved in the past five years, and cannot be projected as a major source of accelerated growth. Price policies for cereals are generally good throughout the region; policy reforms cannot be counted upon as a major source for increased cereal production. And environmental stresses continue to undermine the production base.

There is more scope for increasing productivity of some other crops, particularly feedgrains and oilseeds. Livestock and agroforestry are also potential growth areas. However, the comparative advantage of most ANE countries in oilseed production is questionable, and U.S. agriculture interests in the oilseed issue will also have to be carefully weighed. Economic viability (especially, the agro-processing potential) and international trade considerations must dictate the scope for A.I.D. support for research on these subsidiary crops. Agro-processing research must similarly be closely attuned to market potential and financial viability, and considered in light of U.S. trade and commercial interests.

What this implies is that future agricultural technology challenges will be at least as important as in the past. Funding levels for research must be maintained at current levels just to stay even. There is still considerable underinvestment in agricultural research in the ANE countries, and targeted A.I.D. assistance to technological innovation will be necessary at the international, regional and national research levels.

The regional strategy starts with the International Agricultural Research Centers (IARCs), as their mandates cut across all countries of the region. Regardless of the strengths of the National Agricultural Research Systems (NARSs), there is need for IARCs to do such things as germplasm collection and maintenance, basic genetic improvement, and information exchange. These functions must be protected for key crops, at minimum, at current real levels of funding. Additional tasks such as support to NARS will require additional funding. In addition, strengthened international research efforts are needed in natural resources management and basic biological improvements for the tropics, which require additional funding and, perhaps, new institutions. Country program "buy-ins" to IARCs as well as ANE Bureau support will be required.

Historically, national agricultural research in the ANE region has received strong and continuous support. Additional research infrastructure is probably a declining assistance priority, at least for A.I.D. Several of the countries in the region have large numbers of trained researchers, although in these, researchers are becoming isolated due to limited opportunities for external networking. NARSs can carry out basic problem identification/adaptive research in a number of countries, primarily in South and Southeast Asia. However, the need remains for sustained, steady assistance (not necessarily at large financial resource levels) to all NARSs, the status of which can be characterized as follows:

- There are gaps in programs and trained staff in most;
- There is need for upgrading, improving human resource development in all;
- Biotechnology could be usefully promoted in many;
- Organizational management improvement is needed in all;
- Since near-future production gains are likely to come primarily from agronomic improvements--i.e., many different production variables--site-specific adaptive research and extension is increasingly important. (Research is needed on effective and efficient extension methodologies; we know what does not work but we do not know enough about what will work.)
- The private sector generally has been neglected in national agricultural research planning and management, but may have potential in some research and extension areas. Improvements in the legal environment--commercial law, regulations, grades and standards, property rights, etc.--may be the key way to create a favorable environment for private sector research and extension development.

a) Low-Income Agricultural Economies

Basic institution-building is the primary task in such countries. The most effective way to achieve this is to concentrate on developing "critical masses" of technological expertise to address production technologies for high-priority crops (in most instances, cereals). Research programming should focus on farm production problems. Human resource development and technical collaboration are the building blocks. Where basic research infrastructure is still needed, this might best be achieved by cooperating with other donors, such as the World Bank, from whom developing countries are receptive to the use of loans funds for buildings, library reference materials and research equipment. Facilitating participation in collaborative research networks, of which the IARCs and Collaborative Research Support Programs (CRSPs) are active participants, can be an effective means of supplementing and reinforcing the NARS programs.

b) Low-Income Transitional Economies

In some of the low-income transitional countries, the basic institution-building job is yet unfinished. In all of these countries, NARS institutions are fragile. Human resource development has the critical role of completing the task of building "critical masses" in key commodity and problem areas; these systems are also often in need of selective opportunities to get researchers involved more actively in the broader international research community, contributing to as well as learning from collaborative research networks. Technical assistance can still have an important role but increasingly in a "collaborative" rather than of an "assistance" mode. Research organization management (budgeting, planning, analysis) becomes increasingly important as progress is made in basic cereals production and future directions or objectives become less clear.

MS

Post-harvest, processing, and marketing will be increasingly important in such countries. A number of specific actions may be required in support of agro-processing investment: analysis of domestic demand to identify ongoing adjustments and general classes of food products likely to be in demand in the future; identification of forward and backward market linkages which affect the cost of processed products; and steps that can be taken to reduce raw material, packaging, and/or distribution costs; and the development of effective organizational models that locate, implement, and manage facilities. Targeted investments in agricultural research, which link consumer demand for processed products, processing requirements and farm level output, could lead to substantial returns and lay the base for private/public sector research coordination.

c) Middle-Income Industrializing Economies

The basic challenge in such countries is recognition of the maturity of their NAR systems and identification of the mutual benefit that could be realized from a more mature relationship--i.e., what the U.S. could learn from as well as contribute to the countries. A.I.D. will need to explore ways to develop more productive collaborative bilateral relationships between the U.S. and these countries to achieve three specific objectives of interest to the U.S.:

- to transform our development ties with these developing countries into more mature bilateral relationships that are based more directly on mutual benefit;
- to maintain and intensify relationships, building on the large investments already made, in order to better serve broad U.S. political, economic, and commercial, as well as development, interests; and
- to forge strong and sustainable ties between the commercial, scientific, technological, and other institutions of the U.S. and these developing countries by working with the institutions supported by A.I.D.'s bilateral assistance programs.

In addressing these objectives, A.I.D. will support activities primarily within three areas:

1. Technology exchange/networking and, where appropriate, scientific collaboration, through linkages to educational institutions, research labs, product development centers, state land-grant universities, state-level (U.S.) technology incubators, and similar institutions which would yield important mutual dividends to ADCs.
2. Education and training, which might include a broad range of activities, including cooperative research, faculty exchange, joint participation in academic proceedings, and student seminars abroad which are beneficial both to developing country and U.S. institutions of higher education.
3. Commercial investment in technology generation and diffusion, through facilitating analysis leading to policy reforms and serving as a broker for joint venture private investments.

M

Within these areas of emphasis, A.I.D.'s strategy would rely primarily on existing and well-functioning institutions and networks for program implementation. On the U.S. side, these institutions would include, inter alia, U.S. Government agencies, business firms, private voluntary and other non-governmental organizations, state development organizations, chambers of commerce and other associations of business firms, research and development laboratories, science and technology institutes, and both public and private universities. Well functioning, stable institutions in the client countries, supported over the long run by their own resources, are essential to such a relationship.

A number of different modalities or mechanisms could be used to implement a maturing relationship between the U.S. and the industrializing countries. These modalities all share three cardinal characteristics:

- Joint decision-making, involving representatives who might be drawn from government services, business, the university community, research institutes, private voluntary organizations, or other areas.
- Simplified, straight-forward procedures. Grants would be preferred since they are simpler and more consistent with the concept of support programs of mutual benefit.
- Joint funding. In the early stages, funding might come primarily from U.S. government sources; however the concept of shared contributions should be established from the beginning.

B. Agricultural Planning and Infrastructure

The ability of governments to adjust and respond in an appropriate and timely fashion to both domestic and external political and economic changes becomes critical as economies develop and become more complex; developing this response capability is one of the major goals of ANE's assistance. However, because of resource limitations the Bureau must carefully target its involvement in planning and management to those substantive areas where it has considerable expertise and knowledge of involved agencies (agricultural and irrigation planning and policy) and/or areas that support other priority investment activities (e.g., irrigation management as it effects cereal production, or transportation planning as it supports agro-processing or market development).

When considering investments in these areas, Mission programming needs to take advantage of and build upon the positive characteristics of the institutions with which it is working. Most of these are complex, hierarchical systems (normally extending beyond a single ministry), with numerous interrelated functions. It should be possible to identify key internal interest groups, points of access, and areas where programmatic interests coincide. The objectives of Mission involvement should then be to (1) strengthen analytical capabilities at key decision points and raise the level of debate, thus increasing the likelihood that the proposed intervention will be manageable and will result in acceptable problem solutions, and (2) to improve the effectiveness and efficiency of selected implementation units.

Improvements in the implementation and the management of interventions, many requiring large capital expenditures on infrastructure, will continue to be important. Rather than undertake these large capital expenditures, however, the strategy suggests ANE concentrate on improving the management of such investment programs. Modest construction investments, which provide the opportunity to introduce and test new construction technologies and management methods, should be considered, but the overall mode of assistance will move from construction to innovative/experimental systems management.

Addressing the specific needs associated with agricultural policy and planning capabilities, the strategy would focus on:

1. Strengthening the data collection, analysis and planning capabilities associated with cereal production. Of major importance will be an ability to: identify commodity production systems which have a dynamic comparative advantage; assess impacts of policy interventions on specific farm groups; determine the impacts of adjustments in subsidies on production, farm income and employment; determine the constraints to future increases in cereal production and least cost steps to overcome them; and monitor the analytical output of other planning units within government (transportation, industry, finance, central banks, input/output supply agencies) and identify their specific impacts on farm level production.
2. Strengthening the links between agencies which focus on planning and production and those responsible for more macro-level analysis and planning. Of particular importance are the links between agricultural production, exchange rate and tax policy formulation, infrastructure planning, and agro-processing trade and market development.
3. Strengthening the relative position of planning and analysis units within ministries of agriculture vis-a-vis those responsible for production. In the past, achievement of physical production targets has generally taken the lead in determining field programs. A more balanced perspective which blends supply requirements with both production and trade options will improve the efficiency of domestic production, move countries toward a policy of agricultural self-reliance rather than self-sufficiency, and decrease program costs.

Expansion of irrigation, in particular, has been a primary engine of the impressive growth in agricultural production achieved over the past two decades; although questions remain regarding the extent to which irrigation can remain a primary instrument of growth beyond the 1990's, the ANE Rural Economic Growth Strategy continues to place a strong emphasis on increasing effectively irrigated area to increase cereals production, and facilitate crop diversification and secondary agro-processing industries. As in the case of roads, future involvement will consist primarily of improving technical quality and developing effective operations and maintenance programs, rather than investments in new, large scale facilities. At the same time, attention will be devoted to improving analytical capabilities to judiciously plan and develop

infrastructure, as well as decentralizing maintenance functions to better assure the sustainability of facilities.

During the last two decades of rapid irrigation expansion, the principal focus of investment has been on major infrastructure development, particularly surface water facilities to expand water supplies and irrigate new land. As these sources of growth have become less abundant and more costly, greater attention has been given to groundwater development (in both the public and private sector), rehabilitation and improvement of existing systems, and improved efficiency and effectiveness in the operation and management of existing systems. Groundwater development has permitted rapid expansion of effectively irrigated area and yielded quick returns, particularly the use of shallow tubewells to supplement surface supplies. However, uncoordinated conjunctive use of surface and groundwater has wasted both financial and water resources.

Since the late 1970s, much attention has been devoted to improving the productivity and performance of existing irrigation systems. These programs commonly incorporated one or more of the following measures: introduction of new technologies; strengthening irrigation organizations; improvements in operation and maintenance--often accompanied new investments--and increased participation of farmers in management and decision making. Such efforts have largely been confined to pilot projects and schemes; demonstrated gains have not been widely expanded beyond pilot areas. One of the important challenges facing irrigation agencies is to explore ways to improve performance, sustain the gains and spread the techniques widely and rapidly, while reducing deterioration of water resources.

Although some country programs may include investment in new irrigation infrastructure, the general thrust of the Strategy is to increase access to reliable irrigation water by assisting irrigation agencies to improve their analytical, planning and management capabilities. In essence, the Strategy focuses on field applications of a program of human capital development and institutional strengthening--on the hardware applications of irrigation "software"--reflecting A.I.D.'s predominant experience and comparative advantage in the sector.

In terms of infrastructure planning and management, the Strategy concentrates on five elements:

1. Strengthen the analytical capacity of infrastructure development agencies, and introduce new procedures to identify problems, assess remedies, appraise investment programs and plan long term investment strategies;
2. Improve exploitation of existing facilities, by improving management of operations and maintenance, including minor structural improvements;

3. Rehabilitate and modernize existing systems to (a) overcome technical limits imposed by original designs, (b) respond to new use patterns, and (c) incorporate flexibility to accommodate future changes;
4. Strengthen management interventions in agencies, establish a service orientation toward user "clients," promote ongoing staff skill development and incorporate training programs into career patterns, re-define agency role vis-a-vis users and divest responsibilities for operations and maintenance to users;
5. Improve the planning and design of new facilities incorporating concepts of water resource planning and conjunctive use of surface and groundwater, introduce computer applications and computer modeling for management as well as design, explore the adaptation of new technologies, including pressure systems and water measurement/regulation, and involve the private sector in development and diffusion of new technology.

Suggestions for specific activities associated with agricultural planning and policy and infrastructure planning and management are presented below for each type of economy. Suggested actions focus only on production agriculture and its link to agro-processing. Complementary actions outside of this focal area are discussed in sections dealing with agro-processing development, trade and market development.

a) Low Income Agricultural Economies

In these countries, where food security concerns are paramount, program emphasis needs to be placed on understanding how farm level decisions are made, the impact of uncertain input supplies--irrigation, seed, information, fertilizer, etc.--on costs and production decisions, and how output markets are structured and influenced. Development of basic data systems and analytical capabilities to answer these questions will be essential to determine the impact of government-led interventions to increase production.

In infrastructure planning and management, emphasis is needed on developing opportunities to improve access and reliability of irrigation and transport services at lowest cost. This will likely include planned expansion and/or strategic rehabilitation of existing rural roads and surface irrigation systems, and experimentation with more decentralized operations and maintenance programs. Where groundwater exploitation is financially feasible, programs should promote private sector investment with appropriate public regulation. Both irrigation and rural road management institutions tend to be relatively weak in these countries, and clearly defined institutional strategies to promote increased efficiency and effectiveness are in order.

b) Low Income Transitional Economies

The resolution of basic grain supply and demand problems in these countries provides unique opportunities for restructuring the way policy is made or projects are implemented and operated. For example, as countries move from a single crop production focus to multiple crop production programs, economic analysis rather than supply potential becomes increasingly important as a guide for public investment decisions. Efforts specifically focused on strengthening economic analysis and its influence in the decision-making process vis-a-vis production-oriented agencies can have high payoff, especially in pointing out on-going inefficiencies. Expanding the agenda of these planning units to include consideration of the implications of macro-economic policies on agricultural production can help in developing a sound basis for considering and negotiating such policies.

Also, it is during this period that many governments begin to feel the substantial operation and maintenance costs associated with the infrastructure and institutions created to support increased cereals production. The inability of governments to maintain these systems often leads to decreased performance and constraints to further development. As this situation intensifies the need to rehabilitate such systems increases, and there is often a growing awareness that existing operation and maintenance procedures require modification. Focused efforts which take advantage of these trends and build upon the results of pilot and demonstration efforts can play an important part in Mission programming during this period.

c) Middle Income Industrializing Economies

By the time countries enter into this development phase, the basic planning and implementation structures and procedures which service agriculture policy formulation, transportation services and irrigation should be in place. In large part, AID's direct involvement is over. However, selected training of scientists and researchers and flexible support, largely under control of in-country institutions, can play an important role in strengthening links between advanced research and development efforts in the United States and client countries. For example, collaborative testing of new irrigation technologies such as drip and sprinkler irrigation could provide U.S. scientists and engineers with experience in adapting proven technologies to new conditions, could lead to improved applications for U.S. farmers, and build longer term collegial technology transfer and development networks.

Collaborative work on food policy issues would provide U.S. analysts with a better understanding of potential new markets for both U.S. imports and exports and lead to a greater degree of understanding between the U.S. and client countries of unique opportunities for cooperation in the future. Finally, an emphasis on these types of collaborative relationships could set the stage for the mutually-agreed reduction in other investments in the country and provide a basis for a lasting relationship after formal assistance activities are terminated.

121

C. Trade and Market Development

The ability of a nation to develop efficient agricultural marketing systems complemented by effective domestic and foreign trade policies constitutes one of the basic requisites for continued real growth in agricultural production and income, the expansion of domestic demand--first for cereals then higher value added products--and ultimate entry into selected international export markets. As already noted, the role of government in trade and market development must shift over time from one of control to one of facilitation and monitoring.

The importance of basic cereal production in low income agricultural economies often leads to heavy direct government involvement. With increased production and the advent of relatively assured cereal supplies, government's role can change to promoting growth in private sector processing capacity to meet the changing composition of domestic food demand. Government actions which increase price stability for major cereals and establish a policy environment to facilitate exchange can effectively decrease the costs of further production and processing, and encourage private sector involvement.

As experience in agro-processing leads to improvements in efficiency and constraints to domestic demand are addressed, government efforts to promote exports through market identification, promotion of domestic products and simplification of export procedures become critical. The availability of foreign exchange to procure additional processing technologies and inputs will facilitate further expansion and allow industries to reduce processing costs further by providing access to the complete economies of scale associated with modern agro-processing. It will also encourage more focused attention to development of national capacity and interest in trade.

This suggested transformation in government programs is not automatic nor easy. There are, however, means by which A.I.D. can support groups and individuals who advocate change, thus facilitating the adjustment process.

a) Low Income Agricultural Countries

In these predominately cereal deficit countries, programs need to focus on strengthening two related areas; marketing systems which deliver inputs to cereal producers and collect surplus output for transfer to non-farm consumers, and cereal price stabilization. To address the first, programs should focus on improving marketing efficiency, and system monitoring.

A.I.D. could support expansion or upgrading of basic agricultural input market facilities to minimize input supply disruptions and reduce the costs of intensifying cereal production. Such efforts should focus on increasing the efficiency of distribution systems, and encouraging price competition in local markets between government and private input suppliers. Commodity import programs focusing on key inputs could be effectively used to lever greater involvement of the private sector in input distribution.

To facilitate the eventual removal of government controls over input markets, monitoring systems will be required. Such systems should provide management entities with real time estimates of stocks at points in the distribution system, monitor input prices at the local and regional levels to identify where markets were operating imperfectly and thus pinpoint areas requiring government intervention, and track change in farm level use rates to enable planning for future offtake levels and the analysis of subsidy adjustments.

To assist governments in establishing effective cereal price support systems which make maximum use of private sector traders, A.I.D. could: establish and/or strengthen the logistical support systems required to backstop a price stabilization program; establish analytical units capable of monitoring cereal prices; establish and maintain public stocks at least cost levels, thus encouraging the shift from non-market distribution systems (rationing) to more market driven systems (floor and ceiling pricing supports); and monitor changes in domestic and international cereal markets which influence the timing, volume and costs associated with required cereal imports. PL 480 commodity programs to build adequate stocks or to assure supplies during periods of rapid drawdown could be useful in absorbing a portion of the risk associated with the conversion of stabilization programs to more private sector involvement.

Finally, A.I.D. could support programs which encourage private sector investment in input and output storage and processing facilities as they relate to cereals supplies. Adjustments in government licensing procedures, the provision of credit to finance private sector equity investments and testing of new, low cost storage techniques would encourage growth in private involvement.

b) Low Income Transitional Economies

As countries approach the point where domestically produced cereal supplies are roughly in equilibrium with domestic demand, the political support and economic justification for direct government involvement in agricultural input/output distribution systems diminishes. While continuing government efforts to stabilize basic cereal prices remains an important issue (because of the effect these prices have on overall welfare and agricultural and non-agricultural wage structures), adjustments in government ownership of agriculture-related industries and in trade and marketing policies which effect the rate of growth in private sector investment will be required.

A number of potential areas for involvement present themselves. Building on previous efforts, A.I.D. could continue involvement in restructuring government control and/or ownership of input production and distribution systems. Support could be used to restructure state trading entities and disengage them from non-cereal markets. To encourage appropriate private sector investment to meet adjustments in the domestic demand structure for food, changes in banking procedures, private sector investment promotion and tax policy could be supported.

Establishing consistent exchange rates, investment and tax policies which favor growth in domestic processing capacity could positively effect the costs and profits of private investors. The use of market interest rates would encourage the increased mobilization of domestic capital. The increased costs associated with such adjustments could be offset by tax breaks, which would allow governments to target incentives to specific types of industries, where domestic demand is increasing rapidly or where the nation has a proven comparative advantage in processing.

Finally, adjustments in trade policies, or more specifically, how nations can use trade policy to encourage expansion of domestic agro-processing capacity, will in many instances require major changes in the Ministry of Trade and ancillary trade-related agencies. Improved analytical capacity to explore the domestic implications of changes in trade policy, revised and streamlined administrative systems which license and monitor private sector trading activities and encourage investment, and strategies which identify and plan for growth in domestic trade will be required to develop the technical and political support required to dismantle hidden trade barriers and are areas for potential A.I.D. support.

c) Middle Income Industrializing Economies

The increased use of low cost domestic and imported items to feed the expansion of the agro-processing sector should eventually lead to expanding exports. Access to foreign markets and consequently to the foreign exchange earnings required to expand imports will depend in part on private sector capacity to tailor domestic production to meet foreign tastes and preferences and in part on a country's ability to participate fully and effectively in bi-lateral and multi-lateral trade negotiations. The capacity to monitor changes in the structure of foreign markets, to identify potential new markets and encourage appropriate adjustments in domestic production capacity, and to balance reciprocal trade flows with major trading partners, and to diversify markets are essential. A.I.D. efforts could focus on trade promotion and on the development of a permanent office or agency with the ability to undertake this analysis and coordinate in-country capacity to backstop and represent the nation's trade interests.

D. Agro-processing Development

Increased AID investments in support of growth in agro-processing and related service industries can provide substantial returns in terms of increased income and employment. Shifts in program emphasis in selected countries, where conditions are favorable, also build on A.I.D.'s extensive knowledge of agricultural production systems, lead to portfolio diversification, and put ANE programs directly in the mainstream of Agency concerns for expanding the participation of the private sector in development. Missions' decisions on what activities it can support in this new area and the product lines on which support will be focused depend on the following guidelines:

1. Investment decisions must be based on real changes in domestic demand, not supply potential. In the past, too many projects have ignored effective demand, only to be faced with limited markets, excess supply and rapidly declining prices and profit margins;
2. Agro-processing investment programs will not be possible in all ANE countries. Shifts in demand which signal increased consumption of higher protein foods and processed commodities occur as incomes rise. Thus, countries with very low incomes are not likely to find appropriate private sector investment opportunities;
3. Agro-processing investment programs must involve both the public and private sectors--with the former, to encourage withdrawal from direct involvement, and with the latter, to encourage and target investment to key high growth commodity areas; and
4. Focusing agro-processing development will require a number of complementary strategic program decisions within Missions. Targeting agricultural research investments to those which support an agro-processing thrust, support for modifying contract law and commodity specifications, promoting easing of import restrictions and country-specific production programs which effect the cost of inputs used by agro-processors, and increased emphasis on infrastructure planning and management which determine the location and support agro-processing investment are examples of the needed program decisions.

Areas of program emphasis which may be considered by Missions are presented below. Because of the basic nature of growth in this area, complementary investment activities can also be found in other investment categories.

a) Low Income Agricultural Economies

Low incomes and the predominance of cereals in domestic diets limit agro-processing investment in these countries. This does not mean, however, that Missions in some countries cannot begin to pursue a limited but active program that would set the stage for future development. For example, improved domestic capacity to conduct the detailed demand and market analysis which underpins agro-processing growth could pay off handsomely in the future. Although this may vary from country to country, such capacity development efforts may be better suited for agencies directly responsible for agro-processing development--ministries of trade, commerce and/or industry and national planning boards.

Also, a thorough understanding of domestic cereal markets could provide useful insights to A.I.D. and domestic counterparts in understanding potential future developments. Knowledge of these markets could lead to greater appreciation of their comparative economic strengths, initial efforts required to improve commodity specifications, contract procedures required to facilitate transactions, and the employment and income growth potential of agro-processing development.

b) Low Income Transitional Economies

These countries are typically moving through a period of rapid adjustments in agricultural product demand, and represent prime targets for Mission agro-processing investment programs. Efforts to expand capacity to analyze market demand down to the product line level will assist in defining private sector investment emphasis. The information generated from these analyses could then direct market testing of potential products. Results again would signal potential areas for growth, provide estimates of the potential size of processing facilities required, identify areas of concentrated demand, and provide invaluable information to expand efforts to set domestic product standards.

Missions could assist countries in implementing these pilot efforts, and in establishing specific agencies responsible for defining and maintaining product standards and expanding private sector marketing and advertising capacity. Identification of potential product growth areas would also complement analytical efforts in determining the specific type, size, location and support services required. For example, if processed poultry products were identified as a potential growth area, domestic analytical and administrative capacity would need to be established or strengthened to effectively translate changes in effective demand into specific changes in private sector investment flows. Such an agency would identify the most advantageous locations of the processing industry, ancillary feed mills, breeder stock, slaughter and freezer facilities and by-product processing operations required, and the range of public services and infrastructure needed to establish the industry.

Decisions taken above could lead to supportive activities in other program related areas: a refocusing of agricultural research efforts to increase the quality and level of inputs used by the processing industry--e.g., feed production; adjustment in import restrictions which effect the price and availability of required inputs--production and processing machinery, high protein feed ingredients, medicines, and packaging materials; and the establishment or development of quasi-public authorities which would oversee public infrastructure investments and manage area operations when completed. Finally, AID support could be provided to establish or strengthen domestic promotional efforts to increase private investment. The development of incentive packages including tax and tariff deferral policies, efforts to encourage joint foreign and domestic investments and adjustments in interest rate policy might be considered.

c) Middle Income Industrializing Economies

AID efforts in these countries would focus on expanding analytical capacity to identify and promote expansion of export sales of processed products. Missions involved in these countries could assist in efforts to examine and improve government export licensing procedures, in establishing links between domestic commodity processing groups and foreign counterparts to identify mutually advantageous promotional activities, in providing access to foreign expertise, and to assist domestic processors in identifying implements and improvements in product quality, organization and production and cost control. Activities outlined in the section on Trade and Market Development would compliment the above efforts.

E. Natural Resource Management

The fundamental natural resource problem confronting most developing countries is agricultural; i.e., that of meeting the present and future food production imperatives. As long as countries are faced with basic food security concerns, natural resource conservation will be a secondary concern at best. This is compounded by the foreign exchange earnings imperative, which often virtually dictates overexploitation of renewable resources (e.g., tropical forests), and by the overall perceived dichotomy between production and conservation interests. It is thus a basic premise of this Strategy that attainment of a reasonable degree of food security is an essential precondition to serious attention to natural resource issues, and that while it is a fact that production and conservation goals are complementary over the longer term, they may directly conflict in the short term for reasons that are sound.

A secondary consideration is that A.I.D., with its increasingly limited resources, cannot address the full range of natural resource conservation concerns in the course of implementing its programs. A.I.D. is a development agency, and will need to concentrate on those few key natural resource issues with the most significant implications for sustainable rural sector development.

Two further working hypotheses underlie the ANE strategy relative to natural resource conservation:

1. Natural resource degradation in most LDC contexts is primarily a function of poverty, the absence of economic alternatives, incomplete cost accounting and "wrong" policies;
2. The development of economically and environmentally viable farming systems for fragile areas (e.g., sloping lands, low rainfall areas) has very high costs relative to benefits. Attaining a higher level (more productive and/or more environmentally sound) of subsistence agriculture in such areas is not feasible as a long-term strategy.

The concerns being registered over the prospects for continued growth in basic cereals production adequate to meet the increasing demand, A.I.D.'s limited resources and its relative strengths combine to dictate primary program focus on striving to ensure the continued growth and long-term sustainability of agriculture in the areas of relatively higher potential. Given the above, the rural sector strategy relative to natural resources is to:

1. Through investment, employment and income growth in the relatively higher potential areas, encourage migration out of the environmentally fragile areas. (This recognizes that, as recently pointed out by Mellor, the historical answer to problems of low-potential areas has always contained a major element of migration, and accords well with the overall strategy emphasis on income, employment and food security.)
2. Develop indigenous institutions capable of fully analyzing environmental implications of specific programs and policies and presenting the results of such analyses to the wider public, as a means of breaking down the perceived dichotomy between resource conservation and production and educating the public to environmental concerns; and
3. Promote sustainable agricultural growth in the higher potential areas through careful environmental analyses and through interventions designed to enhance the productive viability of such areas. Specifically, this will consist of efforts (policies and programs) designed to ensure the continued viability of watersheds, and to conserve and upgrade soil and water resource quality.

What this suggests, in effect, is that in most LDC contexts the strategic focus will not be on natural resource conservation per se, but rather on natural resource conservation as a means of insuring countries' continuing ability to meet agricultural objectives. This could lead to similar interventions, e.g., promotion of agro-forestry in upper watershed areas, but with different objectives and different evaluation criteria.

A wide range of specific intervention options exists for implementing such a strategy, from data collection and monitoring to reforestation, pilot/demonstration projects, resettlement, price policy reform, tenurial reform and public education. The determination of the interventions to be pursued in specific country contexts at any particular time would be the provenance of a mission in mapping out its country strategy, but would be expected to accord with the overall strategic goals of income driven development/agricultural transformation and sustainability. A program of natural resource monitoring to identify priority problems combined with conservation education programs could be introduced at relatively early stages of development, and watershed planning and protection measures could be integrated with irrigation development or other infrastructure projects. Specific interventions aimed at resource conservation problems (e.g., policy analysis and reform, specialized institutional development, tenurial reform, resettlement, off-farm employment, reforestation) could follow as more information became available and progress was made on such other fronts as agricultural research and production.

The commercial agriculture orientation of the strategy does not mean that A.I.D. proposes to ignore the fragile and rapidly degrading regions, e.g., hill agriculture and sloping land agricultural technologies. It is clear that in many highly stressed areas large-scale out-migration is not a viable option over much, if not all, of our planning period. It does, however, recognize that there are resource limitations and comparative strengths that must be factored into country agricultural strategies. A.I.D. must continue to publicize the problems of such areas, and A.I.D. resources may be useful in leveraging other donor or host country investments in such cases. Also, the strategy is subject to country-specific interpretation and application--it is conceivable that as a country moved through Phase II ("Low Income Transitional") into Phase III ("Middle Income Industrializing") it would have both the interest and resources to more directly tackle natural resource and environmental interventions as such (e.g., Thailand).

Finally, an effective strategy must not only deal with current problems, but establish mechanisms to reduce or control natural resource degradation in the future. And, although population considerations per se do not fall within the purview of natural resource management policy, without an effective mechanism to limit the growth of populations in fragile or marginal areas and encourage out-migration to higher potential areas, the impact of other interventions will be diminished. Increased growth of agro-industries could, in the medium to long term, moderate population pressure in fragile, low-productivity areas by attracting labor from low-paying agricultural employment.

a) Low Income Agricultural Economies

As noted above, countries in this group tend to be absorbed with the production question--natural resource issues tend to be accorded lower priority. In such cases, an appropriate strategy is to concentrate on laying the groundwork for subsequent, more-focused interventions through (1) assessment and monitoring of natural resources; (2) identification of the environmental costs and benefits of policies and projects, in order to promote improved cost accounting; (3) promoting awareness of environmental issues, both in government policy circles and the wider public; and (4) ensuring the environmental soundness of specific interventions. All of these can be undertaken with a relatively minor commitment of resources, and are compatible with relative Agency strengths. Where serious problems exist and other donor resources are available, A.I.D. may be able to play a valuable brokering role, perhaps including some demonstration or pilot efforts.

129

b) Low Income Transitional Economies

The overall strategy for low-income transitional economies is more active, and is based on two premises: the need to ensure the continued viability and growth of agriculture in the higher potential areas, and the importance of water resources. Complementing these broader issues are a number of resource specific actions. For example, improved management of forest resources, especially the reform of policies regarding tenure and forest leases or direct reforestation programs, may be required to ensure protection of vital watersheds. In areas where mixed upland farming is prevalent, interventions could take the form of promoting agroforestry, and include introduction of new, mixed farming and terracing systems specifically designed to both limit soil erosion and increase farmers' incomes. Given the low incomes prevalent in such areas, access to credit may prove an essential part of any such program. Almost all types of program, however, will require a clear understanding of the rights and responsibilities of concerned parties (especially the local residents) if they are to have a chance of success.

Since watersheds typically do not follow national administrative lines, new models of organization which coordinate local, provincial and national efforts will frequently be required to effectively implement watershed-wide initiatives. To effectively carry out their coordinating role, watershed management activities need to be based on a national water resources plans and institutions that clearly set out the various riparian rights, priorities and mechanisms for resolving disputes.

One user group--possibly the most important at this stage of a country's development--requires focused consideration. Within countries in this group, irrigation systems represent the largest single user of water. Programs which improve the efficient use of this water, encourage the conjunctive use of both surface and subsurface water resource and limit agricultural based pollution and public health problems will be critical to continued growth in agricultural production, rural incomes and employment. Questions of improved design and management (especially in areas of limited supply), of ownership and control (among farmers, irrigation authorities and the state) and of long term financing (of operations and maintenance efforts) will continue to receive substantial attention in the years to come. Pilot programs which test alternative solutions to these and other equally pressing questions will continue to command a substantial portion of government as well as donor interest and investment.

Project design under these conditions needs to avoid various pitfalls: (1) programs need to be targeted, for example, not to areas where erosion is most evident but where continued erosion will have a significant impact on agricultural productivity; (2) farming systems research must be designed to absorb not current but future, and possibly reduced, labor forces; and (3) coordination between agencies having responsibilities for upland management cannot be assumed and usually must be explicitly included as a development objective in project design.

While continuing and expanding the environmental monitoring and impact assessment activities mentioned for the low-income agricultural economies, price policy and tenurial reforms are also likely targets for intervention for transitional economies where the cereal production imperative may not be so great. In these situations, solid policy analysis capability is essential in highlighting the social and economic costs and benefits of specific policies, programs and projects. Such countries may, depending on their overall food security situation, be in a position to begin diversifying their research effort to include work on appropriate production technologies for more fragile (arid, sloping) lands. Such countries may also be in a position to consider development of specialized institutions concentrating on environmental issues, both in terms of monitoring and analysis, and education.

Finally, with the development of agro-processing and increased commercialization comes the possibility of encouraging out-migration from the most environmentally vulnerable, low-productivity areas. Assistance programming will want to carefully consider the employment and indirect natural resource aspects of micro-industry, agro-processing and related infrastructure investments.

c) Middle Income Industrializing Economies

In such economies arises the possibility for direct environmental or natural resource conservation interventions as such. For A.I.D. this might take the form of expanding the roles and capabilities of environmental protection institutions, and involving such institutions in global networks, and of collaborative work on common problems (both methodological and technical), combined with support and involvement with agronomic and policy research and analysis systems.

E. Human and Institutional Development

A recurrent theme in each of the substantive areas is the critical importance of a strong human and institutional base in each country's continuing ability to meet its development objectives. For each group of economies there is a fundamental need for responsive, flexible, public and private institutions supported by appropriate laws and guided by an educated and committed management cadre. The key issue is not whether a strong ANE program involvement is needed and justified, but rather how to appropriately select and diligently pursue specific human and institutional development program activities for the three categories of economies in light of expected resource limitations and the long time horizons involved.

Several considerations can assist in selecting and implementing appropriate activities in this area. First, the ultimate test for success of human and institutional development efforts is the extent to which they create and leave behind the capacity for continued performance of key analysis, research and management functions (e.g., the institutional sustainability). A second consideration is that the appropriate human and institutional development response should be appropriate to the type of economy and the

nature of the specific problem. (For example, institutional development activities are more likely to take place within individual organizations for low income agricultural economies as compared to interorganizational settings in low income transitional economies.) The third consideration is that a considerable knowledge base on the relative effectiveness and costs of human and institutional development approaches has been assembled over the last 10 years which, if systematically applied, can greatly increase the sustained benefits associated with these efforts.

Given the above, ANE's strategy relative to human and institutional development is to:

- Incorporate human and institutional development dimensions as integral dimensions of the other program areas.
- Structure the human and institutional development program for a particular country according to the generic focus areas and strategies related to each of the three groupings of ANE of economies.

a) **Low Income Agricultural Economies**

For these countries, ANE's human and institutional development strategy for the 1990s will undergo several shifts. These include:

- Moving from the strengthening of the reservoir of human capital to an emphasis on the strengthening of organizational capital;
- Moving from capacity building to an emphasis on enhancing and sustaining the performance of agricultural institutions; and
- Moving from the pursuit of many human and institutional development objectives, mostly through the public sector, to a selected set of objectives in both public and private sector organizations.

The primary human and institutional development focal areas and associated approaches for these economies include:

- Enhance and sustain the effectiveness of the range of agricultural institutions involved in cereal production, with emphasis on their research, analysis and management functions. The approach should include a focus on the legal and procedural institutions that facilitate agricultural transformation.
- Develop the critical mass of technical and management skills in key cereals-related institutions, continuing to support U.S. and in-country education and training for scientists and administrators/managers.
- Upgrade basic skills for the rural labor force, with particular attention to the increasing number of females as farm laborers and decision-makers, and prepare the labor force for off-farm employment. This will involve increased basic and job-related training.
- Upgrade the capacity to trace policy effects from the national or sectoral to the household level, with particular emphasis on responses of individual producers to alternative policies and resource availabilities, and analysis of welfare impacts on specific household members.

1987

b) Low Income Transitional Economies

The human and institutional development strategy for the transitional economies will also see several major shifts in the 1990s. These include:

- Moving from the strengthening of the reservoir of human capital to an emphasis on the strengthening of inter-organizational capital;
- Moving from capacity building in agricultural institutions to an emphasis on enhancing and sustaining the efficient performance of program structures and processes; and
- Moving from the 'project' mode, accompanied by micro-management at the field level, to the expanded use of 'program' modes accompanied by more removed, indirect management by A.I.D.

The primary focal areas and associated approaches for the human and institutional development strategy in the transitional economies include:

- Enhancing and sustaining the efficiency of inter-organizational processes dealing with policy analysis, research and management of the adjustment process.
- Enhancing agricultural and rural sector institutional systems that can positively influence productivity and employment, including: (a) central functions of personnel, information and financial management and (b) local/urban functions of service delivery, maintenance, cost recovery, interest articulation, etc. This will involve investments in 'institutional infrastructure' at the central, regional and local levels, and include, e.g., information systems, financial management systems, and infrastructure planning and maintenance. etc.
- Upgrading specialized education in new technical and management fields via a continuation of U.S. and in country education and training programs. This may include the strengthening of governmental and private educational institutions.

The human and institutional development strategy for the transitional economies involves a broader array of institutions than the strategy for the agricultural economies. To handle this increased complexity, A.I.D. will need to more closely identify interests and institutional roles and capabilities, and play a more indirect, facilitative role in which major ownership for planning, implementation and results resides with the country.

c. Middle Income Industrializing Economies

ANE's proposed human and institutional development strategy for the 1990s represents a major break from the current approach. Specifically, the contrasts can be viewed as follows:

- Moving from a pursuit of the LDC 'graduate' approach, where assistance is gradually phased out, to a long range 'mutual benefits' approach, where A.I.D. remains actively involved in a mature set of relationships albeit with a much reduced and reoriented in-country presence.

- Moving from an emphasis on the strengthening of the reservoir of human capital to the strengthening of key scientific and executive leadership capital in cooperation with major U.S. universities, corporations and other international institutions.

The major human and institutional development focal areas and A.I.D. approaches encompassed by this shift in strategy include:

- Providing long-term support for selective, mutually beneficial transnational networks for technical and managerial exchange.
- Providing selective, long-term support for high priority institutional development initiatives related to specific agricultural program areas such as environmental protection, biotechnology, information systems or trade liberalization.
- Developing technical assistance and training linkages with neighboring low income agricultural and transitional economies to support their development and support the U.S.'s long term economic interests. In select cases, A.I.D. would provide program funding to strengthen a middle income country's performance and capacity to provide technical cooperation and training services for other countries on a cost recovery basis.

Implementing the human and institutional development strategy in the middle-income economies will require a different, more collaborative posture on the part of ARDOs. It will also involved a new set of diffuse networking roles with a range of highly competent individuals and organizations.

V Implications of the Strategy

This strategy goes far beyond the traditional borders of the agricultural sector to include natural resources, trade, agro-business, finance, and rural-urban linkages. The primary focus on employment, incomes and "demand driven" adjustments in agriculture, rather than the traditional production orientation, has significant implications for Agency program objectives, financial resource allocation, staffing patterns, organizational structure and programming modalities. This chapter examines these implications, and recommends specific changes which will need to be effected to implement the strategy.

[Note: What follows is essentially an annotated outline for the chapter. When completed, the sections of this chapter (investment patterns, personnel management, Agency organization and implementation modalities) will consider the current status, the changes suggested by the new Strategy, and final recommendations. Preliminary information on current status, where available, has been included under the relevant sub-headings. Completion of each section awaits the outcome of discussions of the overall strategy amongst Washington and field staff, consensus on strategic objectives and focus, and better articulation of potential activities for each group of countries.]

A. Sector Development Objectives and Investment Patterns

In the FY 1988 Congressional Presentation, the Agency presented an agricultural, rural development and nutrition focus statement calling for increases in the income of the poor majority, expansion of the availability and consumption of food, and maintenance and enhancement of a country's natural resource base. To achieve these objectives, the CP suggests the following investment themes for agriculture and rural development:

- Promote market-oriented, outward-looking trade and investment regimes;
- Encourage the introduction of advanced scientific research and technological innovation in support of agricultural development;
- Increase rural employment and incomes as a means of stimulating demand for domestic and foreign goods and services;
- Enhance the effectiveness of development institutions; and
- Conserve natural resources and protect the environment.

This focus statement and the suggested investment themes, while useful in explaining ANE's overall perspective, are too broad and fall short of providing adequate guidance to field staff in making programming decisions. The result is a wide range of program emphases, both within and among countries of the region.

1. Current ANE Objectives and Investment Trends:

A recent analysis by ANE/TR/ARD of agricultural programs in ten ANE countries found that five countries have programs in agro-business, marketing and private sector development, five are working in macro-economic policy formulation, all have programs to improve agricultural research capacity, rural development institutions and agricultural input supply management, and all are pursuing project to improve policy dialogue associated with sector issues.

A more exhaustive analysis commissioned by S&T/AGR suggests a much more traditional investment mix in both the ANE and overall Agency Agriculture and Rural Development portfolio. Examining over 1900 approved or planned projects, the analysis found the following investment pattern for the period 1984-89.

TABLE FIVE: ARD INVESTMENTS, 1984 TO 1989 (percent of total)

CATEGORY	ASIA AND THE NEAR EAST	TOTAL AID
Construction	24	17.5
Input Supply	23	19.0
Credit	(20)	(17.0)
Agricultural Inputs	(3)	(2.0)
Technology	24	26.0
Development	(6)	(11.5)
Transfer	(18)	(15.5)
Marketing	0	2.5
Agricultural Policy	18	22.0
Planning/Analysis	(6)	(6.0)
Sectoral Support	(12)	(16.0)
Human Resource Development	6	6.0
Educational Systems Development	(3)	(2.5)
Human Resource Development	(3)	(3.5)
Natural Resource Development	4	4.5
TOTAL	100	99.00
NUMBER OF PROJECTS EXAMINED	758	1938

NOTE: 18 of AID's total resources were committed to land tenure activities, but none in ANE

SOURCE: "Agriculture, Rural Development and Nutrition Portfolio Review: Analysis and Recommendations"; Chemonics International Consulting Division; December, 1988

This analysis, while suffering from methodological problems, suggests continued emphasis on construction, technology transfer (not research or technology development), input supply (primarily credit), and agricultural policy (primarily in the form of sectoral support programs) as key components in ANE country programs. The low level of investment in marketing, development of agricultural planning and analysis capacity, human resources, institutional development, agro-business and natural resources (a combined total of 26 percent) indicates the magnitude of the divergence between past and proposed program areas.

2. Areas of Emphasis--what changes are required to bring the program portfolio into accord with the Strategy?
3. Recommended Actions--what are recommended changes in overall objectives and quantity and type of financial flows?

B. Staffing and Personnel Issues

1. Current Staff Capabilities

According to the recent Phase I report of the ARDO personnel analysis, the current Agency cadre in the food, agriculture, rural development and natural resources backstops have impressive academic credentials and seem well qualified to manage current programs. As an example of the overall cadre, of the roughly 200 foreign service BS-10 officers, 82 percent have advanced degrees, 72 percent are at the FS-2 or above grade levels, 61 percent are under 45 years of age, 69 percent have less than ten years A.I.D. service. Major areas of academic specialization are agricultural economics, agronomy/soil science, general agriculture, and economics in that order. Of the 28 GS agricultural officers, 96 percent have advanced degrees (79 percent with PhDs). Major areas of specialization are economics, agronomy and social science. (Further information on the breakdown of skills or strengths within the agricultural economics group--e.g., production, resource economics, marketing, trade--is not available.)

ARDO personnel levels are relatively stable (the number of Foreign Service BS-10s has slipped slightly over the past ten years, from 230 to 211, but the relative strength compared to the entire Foreign Service has remained the same--11.4 percent.) Attrition among the Foreign Service BS-10s (due to all causes) has been fairly stable over the past several years at an average of seven officers per year, and is not projected to change. Intake of new employees, however, has slowed, which accounts for the gradual decline in numbers. Given the present and projected budgetary constraints, significant increases in the rate of hiring (with the possible exceptions of natural resources and private sector/agribusiness) are unlikely.

2. Future Staffing Requirements--what mix of skills will be required to implement the new strategy? What are the specific skill areas needed? How are these represented in the current staff profile? What are the least cost, most effective steps for improving staff capabilities in critical areas? Is outside recruiting feasible and in what areas? (Note: these are questions being addressed in the second phase of the ARDO personnel analysis.)

C. Organization

1. Current Organizational Structure

This will obviously vary widely from mission-to-mission. AID/W organization, however, can probably be taken as illustrative of the situation commonly encountered in the field. In essence, the Agency is not structured to deal effectively with integrated rural sector development involving, in addition to traditional agricultural production interests and capabilities, agri-business development, trade and marketing, and natural resource and environmental concerns. Within the ANE Bureau, natural resources, environment, agriculture/rural development and private sector responsibilities are split among two offices and four divisions. Separate strategy development exercises are currently in natural resources and rural sector development. Further complicating the situation are the PRE, S&T, PPC and FVA Bureaus, with distinct interests and clientele.

2. What changes may be needed in organizational structure? How can the Agency combine staff skills, financial resources and information in ways that effectively support implementation of the Strategy? How should ANE organize for the integration of private sector, natural resource and trade initiatives in its program? Are new organizational components required to address program changes?

3. Recommended Actions

D. Program Modalities

1. Currently Available Modalities

A.I.D. has available to it a wider range of assistance instruments than any other donor: grants, loans, PL 480 in all its manifestations, Trade & Development, and access to a large and effective PVO/NGO network and the U.S. agricultural research and analysis network. Implementation modalities include projects, cash transfers, sector programs, commodity import programs, cooperative agreements. It also has an established field presence and good access to both HC decision-makers and technocrats, demonstrated strengths in the area of sectoral analysis and sector-specific policy dialogue.

1972

2. Adequacy of Modalities to Implement the Strategy--are additional changes required? What modalities fit the requirements of project, sectoral policy approaches to programing? How can PL 480 resources be more effectively used? Can ANE take advantage of the synergistic impacts between and among modalities, if they exist?
 3. Recommendations
- E. Summary and Implementation Measures
1. Summary of recommended changes and action agents.
 2. Internal steps to be taken by ANE to implement recommendations.
 3. Outside contacts.
 4. Timing of actions.

**CURRENT INDEFINITE QUANTITY CONTRACTS
AWARDED BY M/SER/OP**

<u>SECTOR</u>	<u>CONTRACTOR</u>	<u>CONTRACT NO.</u>
Agriculture	Associates in Rural Development Burlington, VT 05401 (802)-658-3890	PDC-1406-I-00-7012-00
	Chemonics International Consulting Division 2000 M Street, N.W. Washington, DC 20036 (202)-466-5340	PDC-1406-I-00-7007-00
	Clapp & Mayne, Inc. 5530 Wisconsin Avenue Suite 115D Chevy Chase, MD 20015 (301)-951-4477	PDC-1406-I-00-7014-00
	Consortium for International Development 5151 East Broadway Suite 1500 Tucson, AZ 85711 (602)-745-0455	PDC-1406-I-00-7008-00
	Development Assistance Corp. 1415 11th Street, N.W. Washington, DC 20001 (202)-234-8842	PDC-4109-I-00-7082-00
	Development Associates, Inc. 2924 Columbia Pike Arlington, VA 22204-4399 (703)-979-0100	PDC-1406-I-00-7013-00
	Devres, Inc. 2426 Ontario Road, N.W. Washington, DC 20009 (202)-797-9610	PDC-1406-I-00-7013-00
	Dimpex Associates, Inc. 79 Madison Avenue New York, NY 10016 (212)-679-1977	PDC-4109-I-00-7115-00
	Experience, Inc. 1725 K Street, N.W. Washington, DC 20006 (202)-659-3864	PDC-1406-I-00-7011-00

<u>SECTOR</u>	<u>CONTRACTOR</u>	<u>CONTRACT NO.</u>
	International Resource Consultants, Inc. 1025 15th Street, N.W. Suite 500 Washington, DC 20005 (202)-638-2002	PDC-1406-I-00-7010-00
	Pragma Corporation 116 East Broad Street Falls Church, VA 22046 (703)-237-9303	PDC-1406-I-00-7009-00
	Southeast Consortium for International Development/ SECID Research International 400 Eastowne Drive Suite 207 Chapel Hill, NC 27514 (919)-493-4551	PDC-1406-I-00-7005-00
Environmental/ Natural Resources	Dames & Moore/Louis Berger International, Inc./Institute for Development Anthropology, Inc. 7101 Wisconsin Avenue, Suite 700 Bethesda, MD 20814-4870 (301)-652-2215	PDC-5517-I-00-7136-00
	Tropical Research & Development Inc./KBN Engineering Associated Sciences, Inc. 4010 Newberry Road, Suite D Gainesville, FL 32607	PDC-5517-I-00-7137-00
Macroeconomic Analysis	Chase Econometrics/ Louis Berger, International 150 Monument Road Bala Cynwyd, PA 19004-1780 (215)-895-4823	PDC-000-I-00-6136-00
	International Science & Technology Institute/Center for Development Technology 2033 M Street, N.W. Washington, DC 20036 (202)-466-7290	PDC-0000-I-00-6234-00
	Robert R. Nathan/Development Alternatives/Boston University 1301 Pennsylvania Avenue, N.W. Washington, DC 20004 (202)-393-2700	PDC-0000-I-00-6135-00

<u>SECTOR</u>	<u>CONTRACTOR</u>	<u>CONTRACT NO.</u>
	SRI International 1611 North Kent Street Arlington, VA 22209 (703)524-2053	PDC-0000-I-00-6133-00
Nutrition & Agriculture	Education Development Center 55 Chapen Street Newton, MA 02160 (617)-969-7100	PDC-1406-I-00-7029-00
	Research Triangle Institute/ Sigma One Corporation P.O. Box 12194 Research Triangle Park, NC 27709-2194 (919)-541-6000	PDC-1406-I-00-7028-00
Remote Sensing	Earth Satellite Corporation 7222 47th Street Chevy Chase, MD 20815 (301)-951-0104	PDC-1406-I-00-7070-00
	University of New Mexico/ Harza Engineering Company University of New Mexico Albuquerque, NM 87131 (505)-277-3622	PDC-5547-I-00-7071-00
Rural/Regional Income Generation	Pragma Corporation 116 East Broad Street Falls Church, VA 22046 (703)-237-9303	PDC-1096-I-00-7169-00
	Tropical Research & Development Inc. 519 NW 60th Street, Suite D Gainesville, FL 31607 (904)-378-1886	PDC-5315-1-00-8102-00
	Robert R. Nathan Associated, Inc./ IRG Ltd (Joint Contract) 1301 Pennsylvania Avenue, N.W. Washington, DC 20004 (202)-393-2700	PDC-5315-1-00-8100-00

<u>SECTOR</u>	<u>CONTRACTOR</u>	<u>CONTRACT NO.</u>
	Development Alternatives/Institute for Development Anthropology/ Research Triangle Institute (Joint Contract) 624 Ninth Street, N.W. Washington, DC 20001 (202)-783-9110	PDC-53115-1-0-8101-00
Institutional Development & Management	DAC International Inc. 2101 S. Street, S.W. Washington, DC 20008 (202)-698-1070	PDC-1096-1-00-7172-00
	Development Associates, Inc./Development Alternatives Inc. (Joint Venture) 2924 Columbia Pike Arlington, VA 22204 (703)-979-0108	PDC-5317-1-00-5217-00
	Management Systems International (MSI) 600 Water Street, S.W. Washington, DC 20024	PDC-5317-1-00-8122-00
Accounting/ Financial Management	DAC International, Inc. 1400 Eye Street, N.W. Washington, DC 20005 (202)-898-1070	OTR-0000-I-00-7149-00
	Price Waterhouse 1801 K Street, N.W. Washington, DC 20006 (202)-296-0800	OTR-0000-I-00-7226-00
	Arthur Young & Company 3000 K Street, N.W. Washington, DC 20007 (202)-956-6000	OTR-0000-I-00-7227-00

NOTE: Contractor names and addresses stated above are for those IQC contracts referenced in CIB-87-9 only. Please note that IQC contracts issued by Missions are for the use of those Missions only.

ANE/TR/ARD:2/13/89:8281D

AGRICULTURE AND RURAL DEVELOPMENT DIVISION

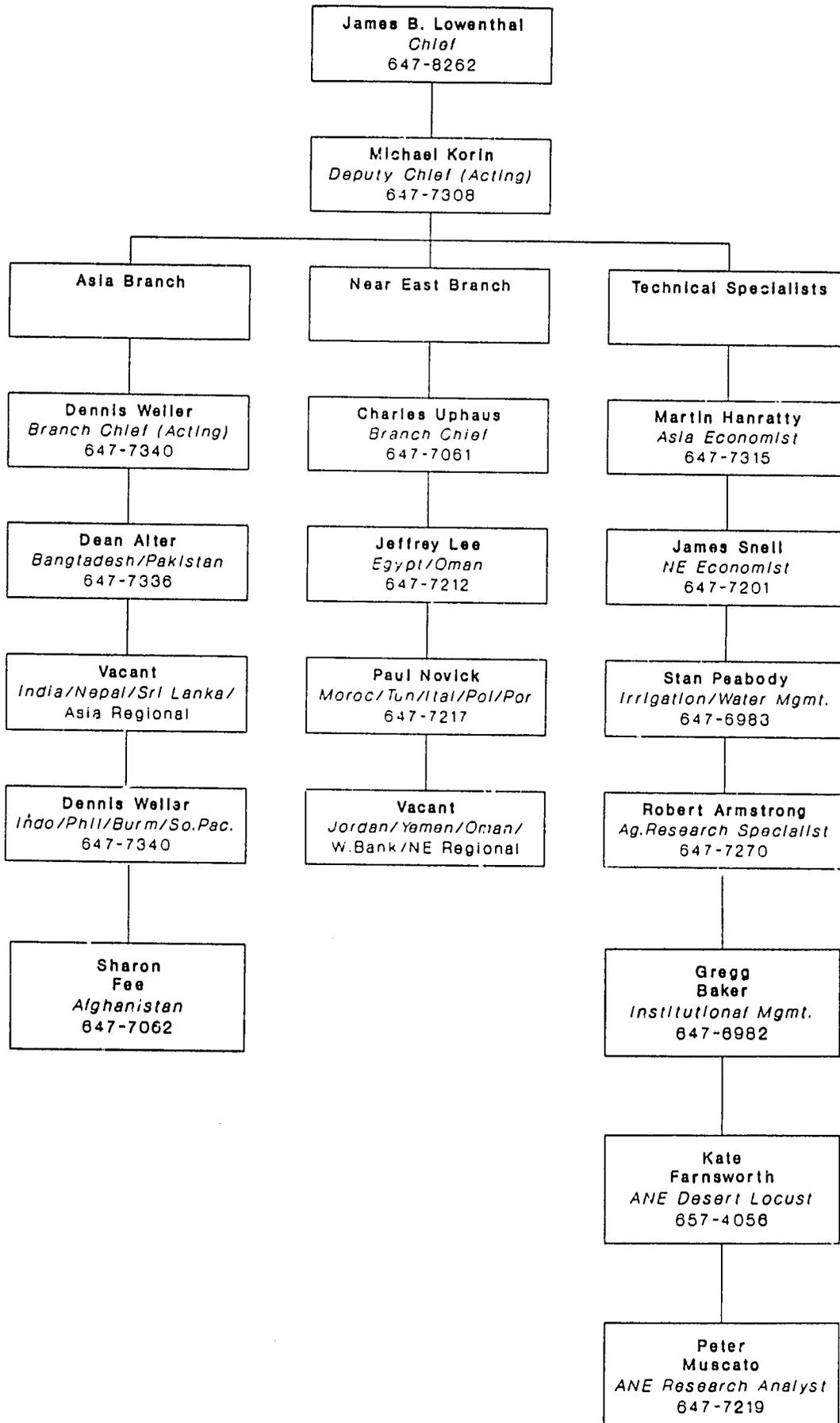
OFFICE OF TECHNICAL RESOURCES

ASIA AND NEAR EAST BUREAU

OFFICE OVERVIEW

January 31, 1989

ANE/TR/ARD Organization



CONTACTING ANE/TR/ARD

Telex: 62032386

Fax: 202-647-6962

Assignment	Name	Phone (202)
<u>Front Office</u>		
Chief ARD	LOWENTHAL, James	647-8262
Deputy Chief ARD (Acting)	KORIN, Michael	647-7308
Program Assistant	MEENAN, Vera	647-8263
Chief Secretary ARD	MCCOY, Teri	647-8262
<u>Asia Branch</u>		
Branch Chief (Acting)	WELLER, Dennis	647-7340
Secretary	JONES, Vercal	647-7327
Clerk Typist	JACKSON, Terri	647-7327
Bangladesh/India/Pakistan	ALTER, Dean	647-7336
Indonesia/Philippines/So.Pacific/Burma/ASEAN	WELLER, Dennis	647-7340
Afghanistan/Nepal/Sri Lanka/Thailand	FEE, Sharon	647-7062
<u>Near East Branch</u>		
Branch Chief (Acting)	UPHAUS, Charles	647-7061
Secretary	SCOTT, Elaine	647-7365
Clerk Typist	FARRELL, Ann	647-7364
Egypt	LEE, Jeff	647-7212
Morocco/Tunisia/Italy/Poland/Portugal	NOVICK, Paul	647-7217
Jordan/Oman/Tri-National/Yemen	UPHAUS, Charles	647-7061
West Bank-Gaza		
<u>Support Branch</u>		
Asia Ag Economist	HANRATTY, Marty	647-7315
Near East Ag Economist	SNELL, James	647-7201
ANE Irrigation/Water Management	PEABODY, Stan	647-6988
ANE Institutional Management	BAKER, Gregg	647-6982
ANE Ag Business/Ag Research Specialist	ARMSTRONG, Robert	647-7271
Desert Locust Task Force	FARNSWORTH, Kate	647-0685
Research Analyst	MUSCATO, Peter	647-7219
Secretary	MACHINIST, Jocelyn	647-7167
ISPAN Technical Support Center (Rosslyn)	THOMAS, Robert	(703)243-7911
Chief of Party (Acting)	Fax: (703) 525-9137	
	Tlx:276532(ISPAN UR)	

ARD STAFF BIO-SKETCHES

James Lowenthal - Division Chief

Ph.D - Organizational Sociology (1978), Masters - Public Management (1973), both from Vanderbilt University.

Experience: Peace Corps Volunteer, Niger;

Consultant - Management and Human Resources Development

AID: Near East Branch Chief; Niger; S&T/RD - Social Science Analyst

Teri McCoy - Chief Secretary

Completing a B.A. - Financial Management, George Mason University

Experience: Public Relations firm, Washington Times.

AID: Foreign Service Recruitment

Vera Meenan - Program Assistant

Technical College, Brazil

AID: Brazil, Philippines.

Robert Armstrong - ANE Ag Business/Ag Research Specialist

Ph.D. - Marketing and Organizational Behavior (1979), Michigan State University.

M.B.A. - Agribusiness (1959), Cornell University

AID: USAID/REDSO/ESA Nairobi - Senior Regional Ag. Officer and Chief of the Ag. and Natural Resources Division.

Martin Hanratty - Agricultural Economist for Asia

Ph.D. - Agricultural and Natural Resources Economics (1976), Michigan State University

Experience: Assistant Professor, Michigan State University; Program Officer, Ford Foundation

AID: Indonesia - Chief of Irrigation and Agricultural Planning Division.

James Snell - Agricultural Economist for Near East

Ph.D. - Agricultural Economics (1967), Michigan State University

Experience: University Teaching, Research & Extension,

University of Tennessee, Kansas State University/University of the Philippines; FAO, Iran

AID: Zambia

Stan Peabody - ANE Senior Water Management Specialist /ISPAN Project Officer

Ph.D. - Sociology (1976), Washington University, St. Louis; M.P.S. (Agr.) - International Agricultural and Rural Development (1978), Cornell University.

Experience: World Bank, Nepal; Consultant (Rural Development, Irrigation) -Indonesia, Sri Lanka, Pakistan, Peru, Dominican Republic, Lesotho.

Jocelyn Machinist - Secretary Support Branch

B.A. - Political Science (1988), University of California at Irvine

AID: PFM/PM/CSP - secretary

Ann Farrell - Clerk/Typist Support Branch

Attending Prince George's Community College

Major - Business Administration

AID: PFM/PM/ADM

- Gregg Baker - ANE Institutional Management Specialist**
M.A.L.D. - Fletcher School of Law and Diplomacy - International
Ag. Econ. (1985)
Experience: Small Enterprise Consultant, West Bank and
Philippines
AID: ANE Food Security Analyst (1987-88)
- Kate Farnsworth - Desert Locust Task Force Representative**
M.A.L.D. - Fletcher School of Law and Diplomacy - International
Ag. Econ. (1985)
Experience: Peace Corps, Cameroon
AID: Manager, Locust and Rat Emergency Programs - USAID/Khartoum
(1985-88)
- Michael Korin - Chief Asia Branch**
B.Sc. - Agronomy (1964), Southern Illinois University.
Advanced Studies in Business Administration - V.P.I. and
American University.
Experience: Peace Corps, Peru; USDA/PASA to AID, Vietnam,
Philippines;
AID: Indonesia; Sri Lanka - Chief of Ag. & Rural Development;
ANE/TR/ARD - India, Nepal, Sri Lanka backstop.
- Vercal Jones - Secretary Asia Branch**
Experience: Nuclear Regulatory Commission
AID: TR/Energy and Natural Resources.
- Terri Jackson - Clerk/Typist Asia Branch**
AID: Food For Peace
- Dean Alter - Bangladesh/Pakistan/India**
M.B.A. - (1972), University of Hawaii
AID: Bangladesh, Pakistan; SER/CM - Contract Negotiator; NE/PD - Project Development
Officer; Asia/EMS - Management Officer.
- Dennis Weller - Philippines/Indonesia/Burma/South Pacific/ASEAN**
M.S. - Agricultural Economics (1978), University of Tennessee
Experience: Peace Corps, Malaysia; Farming, Illinois
AID: Burma.
- Sharon Fee - Afghanistan/Nepal/Sri Lanka/Thailand**
M.S. - University of California/Davis
Agricultural Sciences Major: Poultry Husbandry
Experience: Peace Corps, Botswana (PSC)
AID: Somalia, Tanzania, Sudan
- Charles Uphaus - Chief Near East Branch**
M.S. - Agriculture and Natural Resources Economics (1975), University
of Hawaii (East West Center).
Experience: Peace Corps, Nepal
AID: Yemen, Sierra Leone, Sri Lanka.
- Elaine Scott - Secretary Near East**
Experience: Front End Department Head - Toys "R" Us

Jeffrey Lee - *Egypt*

M.A. - Economics (Marketing) (1976), University of Michigan.

AID: Yemen, Egypt, Sri Lanka; ANE/TR/ARD - Yemen, Tunisia, Morocco,
Egypt backstop.

Paul Novick - *Morocco/Tunisia/Poland/Portugal/Italy*

M.S. - Agricultural Economics, (1978), University of Maryland.

Experience: USDA, Ag. Economist, Peace Corps, Ethiopia

AID: Philippines, Tunisia.

CONTACTING ANE/TR/ARD

<u>FUNCTION</u>	<u>OFFICER</u>
Aid and Trade	Michael Korin/Marty Hanratty
Ag Marketing	Charles Uphaus
ARD Networking	Gregg Baker/Vera Meenan/Stan Peabody
ARD Personnel	Mike Korin
Agrarian Reform	Mike Korin
Agricultural & Rural Sector Councils	Jim Lowenthal
Agricultural Policy Analysis	Dennis Weller
Agricultural Strategy/ Modernizing Asia	Charles Uphaus/Marty Hanratty
Agriculture Education	Dennis Weller/Gregg Baker
ARD Microcomputer Capability	Vera Meenan/Teri McCoy
Farming System Research	Paul Novick
Fax, Telex, Telecommunications	Vera Meenan
Food Aid	Jim Snell
Food and Agriculture Task Force	Jim Lowenthal
Food Security/Drought Monitoring	Gregg Baker
ISPAN	Stan Peabody/Michael Korin
Institutional Sustainability	Jim Lowenthal/Gregg Baker
Land Reform/Land Transfer	Charles Uphaus/Dennis Weller
Livestock	Paul Novick/Sharon Fee
Locust Control	Paul Novick/Kate Farnsworth
Management Inform. System (ANE Project Data)	Paul Novick
Micro Enterprise Development	Gregg Baker/Robert Armstrong/Jeff Lee
Natural Resources	Charles Uphaus/Robert Armstrong
New Hire Personnel/ IDI Coordinator	Charles Uphaus
New Hire Training Course	Jim Lowenthal/Robert Armstrong

OICD/USDA(RSSA)	Mike Korin
Philippines Task Force	Mike Korin
Private Sector Development/ Ag Business	Robert Armstrong
Social Institutional Profile	Stan Peabody
S&T (General)	Dennis Weller
Technology Transfer	Robert Armstrong
Urban Rural Linkages	Stan Peabody
U.S. Agricultural Commodity Producers	Marty Hanratty/Jim Snell
WID	Sharon Fee
ARDO Conference	Charles Uphaus/Mike Korin/ Dennis Weller/Stan Peabody/ Peter Muscato
ANE Bureau ARD Strategy	Jim Lowenthal/Charles Uphaus/ Marty Hanratty/Stan Peabody

CONTACTING ARDOs IN THE FIELD

AFGHANISTAN - USAID/ISLAMABAD

Gary Lewis, ADO
Tel. 92-51-82-6161 Ext. 29
Box 4, APO New York 09614
Fax 92-51-824-086

BANGLADESH - USAID/DHAKA

Charles Hash, ADO
Tel. 880-2-235-081
Telex 950642319
Fax 880-2-411079

BURMA - USAID/RANGOON

Vacant
Tel. 82055 Ext. 285
USAID, Box B, APO San Francisco 96346
Telex 71321230(AIDRGN BM)

EGYPT - USAID/CAIRO

Ed Stains, ADO
Tel. 202-354-8211 Ext. 3215
Don Wadley, RDO
Ext. 3324
Embassy, Box 10, FPO New York 09527
Telex 9279993773(AMEMB)
Fax 20-2-356-2932

INDIA - USAID/New Delhi

Glen Anders, ADO (Water Resources)
91-11-608-480 Ext. 233
John Becker, ADO (Research)
91-11-608-480 Ext. 231
Telex 95303165207(ASOK IN)
95303165647(ASOK IN)
95303165269(USEM IN)

INDONESIA - USAID/JAKARTA

Marcus Winter, ADO
Tel. 62-21-360-360
USAID, Box 4, APO San Francisco 96356
Telex 79644215
Fax 62-21-360-644

JORDAN - USAID/AMMAN

Randall C. Cummings, ADO
Tel. 962-6-604-171
USAID, APO New York 09892
Telex 92521510+

MOROCCO - USAID/RABAT

Rollo L. Ehrich, ADO
Tel. 212-7-33690
USAID, APO New York 09284
Telex 93331005M
Fax 212-7-68279

NEPAL - USAID/KATHMANDU

Rob Thurston, ADO
Tel. 977-1-211-144

OMAN - USAID/MUSCAT

Duncan R. Miller, AID Representative
Tel. 96-8-703-000
Telex 9263785
Fax 96-8-797-778

PAKISTAN - USAID/ISLAMABAD

H. Pat Peterson, ADO
Tel. 92-51-824-071
Box 4, APO New York 09614
Telex 952254270(USAID PK)
Fax 92-51-824-086

PHILIPPINES - USAID/MANILA

Ken Prussner, ADO
Tel. 63-2-521-7116
USAID, APO San Francisco 96528
Telex 72227366
Fax Embassy: 63-2-522-4361
USAID: 63-2-521-5241

PORTUGAL - USAID/LISBON

David Leibson, AID Representative
Tel. 351-1-726-6600

SOUTH PACIFIC - USAID/SUVA

Eric Witt, Reg. Dev. Officer
Tel. 679-311-399
Telex 7922647(USAID FJ)
Fax 676-300-075

SRI LANKA - USAID/COLOMBO

John Flynn, ADO
Tel. 94-1-21271/21520, Ext. 208, 247, 325
Jack Pinney, Engr. & Water Resources
Tel. 94-1-21271 Ext. 217, 228, 232
Telex 95421305
FAX 941-549-070

THAILAND - USAID/BANGKOK

Doug Clark, TR
David Delgado, ADO
Tel. 66-2-252-8191
USAID, APO San Francisco 96346
Telex 78887058
Fax 66-2-555-3730

TUNISIA - USAID/TUNIS

Nancy Tumavick, PDO
Ans Burgett, ADO
Tel. 21-61-781-947
Telex 93414182
93413379(AMEMB)
Fax 216-1-789-719

YEMEN - USAID/SANAA

John B. Swanson, ADO
Tel. 967-2-231-213
Telex 9482797(EMBASANYE)
Fax 967-2-251-578

Number of Projects by Country FY 1989 (LOP \$ million)

<u>Country</u>	<u>Total</u>	<u>LOP</u>
Afghanistan	1	6.0
Bangladesh	5	147.4
Egypt	4	767.9
India	9	394.5
Indonesia	9	252.6
Jordan	2	32.5
Morocco	7	116.9
Nepal	8	107.1
Oman	1	40.0
Pakistan	11	1242.2
Philippines	5	119.9
South Pacific	2	18.0
Sri Lanka	10	247.7
Thailand	8	124.8
Tunisia	4	26.0
Yemen	5	135.3
Regional Projects	<u>8</u>	<u>125.1</u>
Totals	99	3903.9

Revised 2/1/89

287

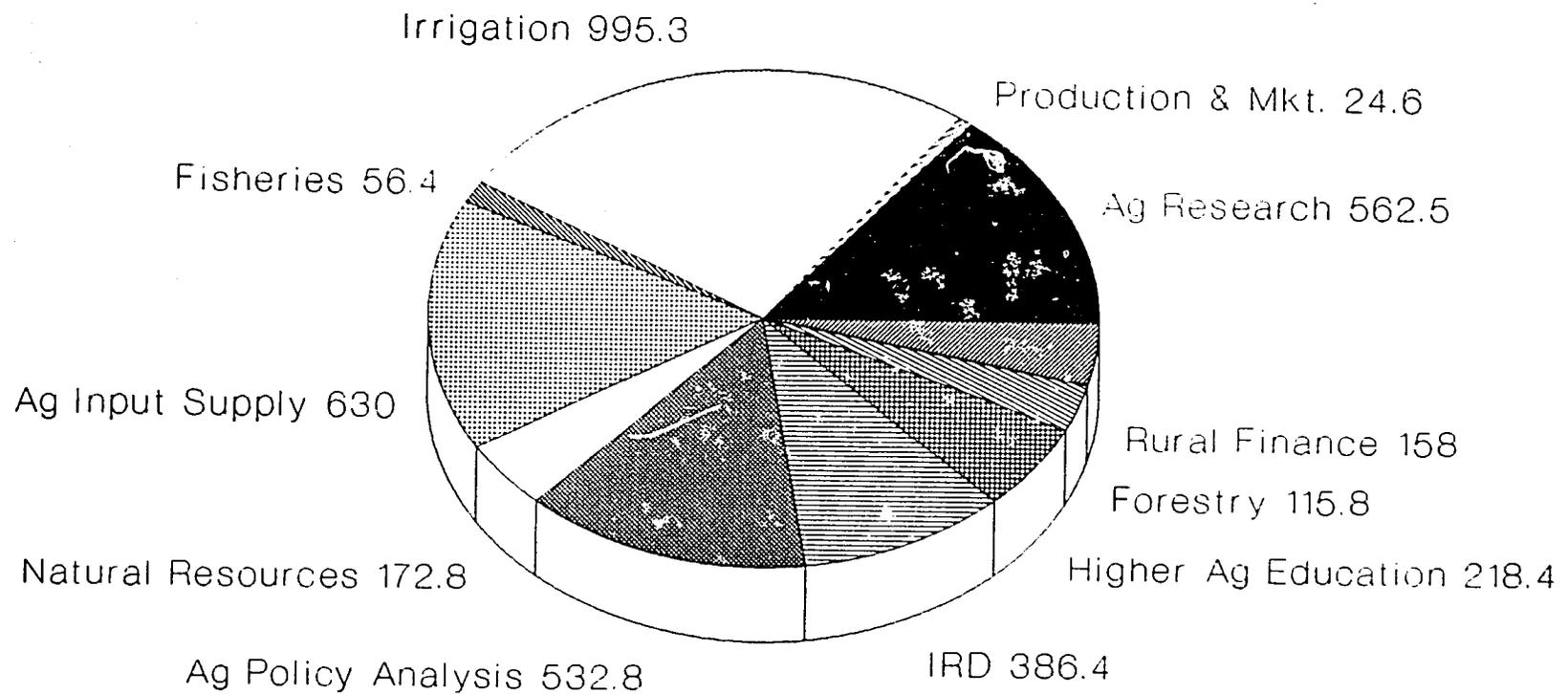
Number of Projects by Functional Category FY 1989

	<u>Total</u>	<u>LOP</u>
Agricultural Research	18	562.5
Irrigation	16	995.3
Agricultural Input Supply	2	630.0
Ag. Policy Analysis and Planning	12	532.8
Integrated Rural Development	15	386.4
Agricultural Education	10	218.4
Fisheries	4	56.4
Forestry	5	147.9
Natural Resources	10	172.8
Rural Finance	3	158.0
Crop Production and Marketing	4	43.4
TOTAL	99	3,903.9

Revised 2/1/89

2/1/89

LOP Cost of ANE ARD Projects (Function) FY 1989 (millions)



Revised 2/1/89

215

ARD COUNTRY HIGHLIGHTS

LEGEND FOR 1988 OBLIGATIONS (\$000)

DA = Development Assistance

ESF = Economic Support Fund

PL 480 = Total Titles I + II

Total Assistance = DA + ESF + PL 480

% of ANE = Country % of ANE Bureau Total Assistance

ARDN = Ag., Rural Development & Nutrition Account Funds

% ARDN = Country % of ANE Bureau ARDN Account Funds

BANGLADESH

Agricultural productivity must be increased to enhance food security by raising rural income and reducing the need for imported food grains. The Rural Electrification III Project increased power consumption by rural industries and commercial businesses, which helped to increase rural employment. In addition, the Fertilizer Distribution Improvement II Project resulted in an improved marketing system which in turn has increased fertilizer usage.

DA 58,500
ESF 0
PL480 75,000 (Title I 60,000; Title II 15,000)
Total 136,796
% ANE 3.82
ARDN 3,675
% ARDN 10.40

BURMA

Oilseeds is A.I.D./Burma's area of concentration in agriculture. The production part of the agriculture program is the largest and most important, with the provision of TSP fertilizer accounting for fully one-half of annual A.I.D./Burma expenditures. Although the production projects have offered the greatest short-term benefits to increasing edible oil availability and improving farm incomes, the research and processing projects offer complementarity and have the potential for offering greater long-term benefits.

DA 7,000
ESF 0
PL480 0
Total 7,000
% ANE 0.20
ARDN 3,675
% ARDN 1.89

EGYPT

The principal elements of this program are agricultural policy analysis and reform, agricultural research, technology dissemination, irrigation, and agricultural credit. Three "mega-projects" are at the center of A.I.D.'s program. (1) The National Research Project (NARP) has as its goal to increase agricultural

productivity by improving the quality of technologies available to farmers. NARP is a comprehensive, umbrella project that will make improvements in the following areas of agricultural research: management, research methods, personnel development, data collection and analysis, information utilization and dissemination, seed production facilities and commodities. (2) In Egypt where over 99% of all agriculture is irrigated, water is the most important limiting factor on agricultural production and irrigation is the predominant agriculture infrastructure. The Irrigation Management Systems Project is a 10 year \$340 million complex program designed to address inefficiencies in managing its water resources. (3) Under the Agricultural Production Credit Project, farmers are provided with credit at real market rates for small scale investments in agricultural inputs and farm improvements. In FY 1989 A.I.D. plans to provide an additional \$75 million to this project.

DA 0
 ESF 820,000
 PL480 182,502 (Title I; 180,000 Title II 2,502)
 Total 1,002,502
 % ANE 27.97

INDIA

A.I.D.'s agricultural resource management program in India aims to modernize and integrate the management of India's agricultural resources, including water, land, and agricultural technology. The Maharashtra and Madhya Pradesh Minor Irrigation Projects have been fine tuned to resolve issues of water management and related engineering policy questions with dramatic results. Policy changes induced through these projects on 13 irrigation systems have been incorporated into approximately 250 non-A.I.D. systems by state irrigation service engineers, increasing efficiency and fostering an environment conducive to further modernization of the sector. The Agriculture Research Project is A.I.D.'s primary means for supporting cutting edge scientific inquiry through India's agricultural research system. It includes 14 scientific subprojects important to the creation of a self-sustaining agricultural base in India.

DA 24,000
 ESF 0
 PL480 80,534 (Title II)
 Total 104,534
 % ANE 2.92
 ARDN 6,200
 % ARDN 3.19

INDONESIA

The Indonesia agricultural program includes projects in agricultural research and production, higher education, agriculture, planning, fisheries, irrigation, rural roads, and area development. The most recent new initiative is a \$60 million Agriculture and Rural Sector Support Program which will support policy change relating to agriculture and rural development. The recently developed/approved five-year CDSS, while continuing to focus on crop diversification and increasing public sector resource efficiency, in the ARD sector, will address environmental

degradation and natural resource issues to a much greater extent. A natural resources project is being designed to combine on-going related activities under one project and to give more emphasis to natural resources development.

DA 40,000
ESF 0
PL480 15,606 (Title I 10,000; Title II 5,606)
Total 55,606
% ANE 1.55
ARDN 16,382
% ARDN 8.44

JORDAN

In the past, the primary focus of A.I.D.'s support to Jordan's agricultural growth was the development of the Jordan Valley. A.I.D.'s investment has paid off in a 25% increase in Jordan Valley fruit and vegetable production in the past 10 years, 35% of which is now exported to the Gulf Region. The agricultural program scope has now expanded to include the upland and rainfed regions of the country under the Jordan National Agriculture Development Project (formerly the Jordan Highlands Agriculture Development Project). Under this project, U.S. advisors from Washington State University are assisting the Ministry of Agriculture to increase agricultural productivity and crop diversification on a national basis, through the introduction of new technologies and improvements in on-farm research and extension methodologies. Finally, in September, 1988, the Mission will begin implementation of the Jordan Agriculture Marketing Development Project, which is designed to improve Jordan's capability to analyze and compete in foreign agricultural produce (fruit and vegetable) markets.

DA 0
ESF 11,000 (7,000 for West Bank/Gaza)
PL480 0
Total 18,000
% ANE 0.50

MOROCCO

A.I.D. is combining Development Assistance, PL-480 Title I and Economic Support Fund resources to bring about increased food supply principally through greater domestic production of cereals in dryland regions. Two projects, the Agronomic Institute and the Dryland Agriculture Applied Research Project, are directed at strengthening the agricultural education, research, and technology base in order to provide improved production technologies to farmers. In addition, A.I.D. is designing a supplementary irrigation project to complement Morocco's dryland agriculture strategy.

DA 12,500
ESF 20,000
PL480 52,284 (Title I 40,000; Title II 12,284)
Total 84,784
% ANE 2.37
ARDN 7,500
% ARDN 3.86

NEPAL

The A.I.D. agriculture sector program directly addresses Nepal's fundamental needs to increase agricultural production and income, and manage the country's natural resources for sustained, augmented productivity. This program supports policy change, research and technology delivery, human resource development, community participation, and private sector involvement. The Irrigation Management Project will direct training, research, and on-farm activities towards encouraging farmer/water-user associations to assume more active and influential roles in managing public sector irrigation systems. The Rapti Development Project is expanding the availability of technologies to increase agricultural, livestock, and forestry production in the five districts of the Rapti Zone. It is implemented through a decentralized and highly participatory approach involving local government entities, farmers, and private entrepreneurs. Approximately 20 Peace Corps Volunteers will assist project implementation in more remote areas of the Zone.

DA	0
ESF	12,000
PL480	0
Total	12,000
% ANE	0.33

OMAN

The Water Resource Development Project addresses Oman's need to ensure a safe and reliable supply of water to meet the needs of the people and the planned development of the country. In addition, under the Fisheries Development Project, A.I.D. is assisting Oman to manage its significant maritime fishery resources.

DA	0
ESF	13,000
PL480	0
Total	13,000
% ANE	0.36

PAKISTAN

The agriculture and rural development program in Pakistan is the largest in the region. The A.I.D. goal of increasing agricultural productivity is bolstered by a strategy that includes policy dialogue backed by commodity imports and sector grants to deregulate prices and markets (Agricultural Commodities and Equipment); technical assistance and infrastructure to improve water management and availability (Irrigation Systems Management Project); and training and institution building to integrate and improve agricultural extension, education and research (Management of Agriculture Research and Technology and Transformation and Integration of the Provincial Agriculture Network Projects).

DA	50,000
ESF	220,000
PL480	80,000 (Title I)

Total 350,000
% ANE 9.77
ARDN 33,500
% ARDN 17.26

PHILIPPINES

The major goal is to accelerate rural economic recovery by increasing farm and off-farm income and productivity. In pursuit of this goal, A.I.D.'s agriculture and rural development programs have the following objectives: (1) encouragement of agricultural structural reforms; (2) investment in technologies and rural infrastructure; (3) identification of off-farm rural enterprises; and (4) improvement in the management capacity of local governments. Existing ARD projects have been redesigned to allow more direct benefits to a greater number of the rural poor. New projects/programs are being designed to address rural poverty issues directly (Rural Impact Fund), to address social justice issues (Agrarian Reform Program) and, finally, to address institutional needs leading to improved agricultural performance and enhanced rural development activities (Higher Agriculture Education Development Project).

DA 40,000
ESF 189,000
PL480 40,530 (Title I 30,000; Title II 10,530)
Total 269,530
% ANE 7.52
ARDN 28,350
% ARDN 14.60

SOUTH PACIFIC

Assistance is being provided to the University of the South Pacific (USP) to train agriculturalists for the region, undertake foodcrop research, and strengthen national extension services. This Title XII collaborative assistance grant for the South Pacific Regional Agricultural Development Project is with the USP, the University of Hawaii and Cornell. The project, started in FY 1988, will upgrade USP's School of Agriculture. A new regional fisheries project was obligated late in FY'86. Negotiations among the U.S., the involved S. Pacific countries and the American Tuna Association for a fisheries treaty have been completed and ratified by Congress.

DA 4,000
ESF 10,000
PL480 0
Total 14,000
% ANE 0.39
ARDN 2,200
% ARDN 1.13

200

DA 0
ESF 10,000
PL480 5,000 (Title I)
Total 15,000
% ANE 0.42

YEMEN

A.I.D.'s agricultural program in Yemen over the past ten years has been implemented through a single, very large, Title XII program---the Agricultural Development Support Project. This project includes sectoral planning and management, development and dissemination of agricultural technologies, improvements of the supply and distribution of inputs, and the development of key institutional and human resources. Subprojects have included Horticultural Improvement and Training, Poultry Extension and Training, Secondary Agricultural Education and Sana'a University Faculty of Agriculture. In accordance with the current CDSS emphasis on production and productivity, the Mission is now developing a new project that will have a more applied research and outreach focus, to be called Farming Practices and Productivity. This will include, inter alia, work on irrigated farming practices and fertilizer use. With the initiation of the new project, the Agriculture Development Support Project will be limited to a more specifically institutional-development orientation.

DA 20,725
ESF 0
PL480 5,000 (Title I)
Total 25,725
ARDN 11,040
% ARDN 0.72

REGIONAL PROJECTS

- (1) ASEAN - The ASEAN-A.I.D. program purpose of promoting regional cooperation emphasizes three principal objectives: strengthening regional institutional capabilities; facilitating technical exchange; and enhancing the private sector's role in development of the region. These objectives are embodied in projects that seek to improve the Region's agriculture and natural resources (both upland and coastal), energy, health and small/medium scale business sectors. Training is a key element in these projects as is information exchange and dissemination.
- (2) Cooperative Arid Lands Research Project (CALAR) - This activity promotes and supports cooperative Israeli-Egyptian research in arid lands agriculture, demonstration of research methods, and application of results. Research topics include irrigation with saline water, fodder production, genetic improvement of small ruminants, and trials of new industrial crops. The overall research program and, especially, Israeli-Egyptian personal interactions have been somewhat hampered by the on-going disturbances in the occupied territories. The program is moving ahead; a major evaluation scheduled for late CY 1988.

SRI LANKA

The A.I.D. strategy calls for programs directed at improving rural incomes through greater productivity and at increasing the private sector's role in development. The major projects involve agricultural diversification, irrigation development and management, and agricultural planning. This assistance is focused either broadly on the low and intermediate rainfall zones or specifically on the irrigation resettlement schemes of the Mahaweli Program. The Rehabilitation Assistance Project will rehabilitate the agricultural economy, reconstruct housing and revitalize commercial business enterprise in northern and eastern areas affected by ethnic violence.

DA 26,800

ESF 0

PL480 16,575 (Title I 16,000; Title II 575)

Total 43,375

% ANE 1.21

ARDN 22,800

% ARDN 11.74

THAILAND

The Agency has adopted a "middle income" strategy for Thailand over the coming years. Traditional agricultural research, irrigation and area development projects will be phased out. Specific agricultural concerns will continue to be addressed, but through the approved strategy areas of science and technology, rural industrialization, and policy-related studies. The major new ARD project now under implementation is the Environmental Management/Natural Resource Conservation Project. Another area for involvement is irrigation water management.

DA 15,300

ESF 5,000

PL480 0

Total 20,300

% ANE 0.57

ARDN 14,000

% ARDN 7.21

TUNISIA

The Agricultural Policy Implementation Project supports the Government of Tunisia (GOT)/IBRD Structural Adjustment Program to provide the GOT decision-makers with economic data and analyses needed to support policy reform in the agricultural sector. The Improved Water Resources Management Project will support GOT's agricultural priorities of policy reform and increased food production, through promoting increased efficiency of water usage in the irrigation sector. An important element of A.I.D.'s strategy is to assist the GOT in acquiring technology that will contribute to a renewed and modern economy. The Agricultural Technology Transfer Project provides graduate and post-graduate training for Tunisia's agricultural managers and scientists in order to form the technical base necessary for further development of the agricultural sector.

- (3) **Agricultural Technology Exchange and Cooperation Project (TATEC--USDA)** - This activity promotes and supports cooperative Israeli-Egyptian research, demonstration of research methods, and application of results in a range of agricultural technologies. Research activities include intensification of field crop production, economic evaluation of integrated cropping and water use systems, dairy production, medicinal uses of desert plants, solarization of soils for disease, weed and pest control, and evaluation of technology exchange methods in agriculture.
- (4) **Cooperative Marine Technology Project** - This activity promotes and supports cooperative research between Israeli and Egyptian scientists in the marine sciences. Non-conventional fish production technologies, mariculture, seafood toxins, and lakes management comprise the areas of research in this phase (the third) of the activity. Valuable research and increasingly frequent and substantive collaboration between Israeli and Egyptian scientists is taking place. A new four year phase of this project is scheduled to begin in FY 1988.
- (5) **ISPAN Irrigation Support Project for Asia and the Near East** - The objective of the project is to assist ANE Missions improve the efficiency, reliability and equity of irrigation water delivery and use. ISPAN provides rapid response, multidisciplinary assistance in the technical, social, institutional and economic aspects of irrigation management; undertakes applied studies to assist project planning and to explore irrigation problems, issues and policies on a regional basis; and through irrigation support institutions in the ANE region, supports training and networking activities for irrigation professionals. The project is managed by the ISPAN Technical Support Center in Rosslyn Virginia, which assists in defining tasks, mobilizes technical assistance teams, commissions studies and analyses, and promotes networking and technical exchange.

DA 23,063
 ESF 7,000
 PL480 0
 Total 30,063
 % ANE 0.84
 ARDN 8,868
 % ARDN 4.56

AFGHANISTAN

Assistance to the Ag. Sector in Afghanistan is geared toward reestablishing agricultural productivity in traditionally surplus areas so that refugees and displaced persons can return to their homelands. The program also seeks to strengthen economic and commercial ties between Pakistan and Afghanistan. The absence of a majority elected government has contributed to the innovative nature of the program in that the commodities are distributed entirely through the private sector.

DA 22,500
 ESF 22,500
 PL480 5,000 (Tittle II)
 Total 50,000
 % ANE 1.66
 ARDN 5,000
 % ARDN 2.58

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON DC 20523

February 1, 1989

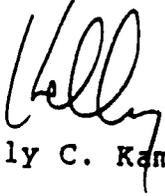
NOTE FOR: AA/PPC, Richard Bissell
SUBJECT: Hamilton Task Force Report

Rich,

Attached is the final report of the Hamilton Task Force on the FAA Rewrite. The conclusions and recommendations contained in the Report will be described to the full HFAC by Congressman Hamilton in a closed briefing at 1:30 p.m. today. The report will be released to the public following the briefing.

A public briefing is scheduled for 2:00 p.m. Friday, February 3, 1989, in room 2172 Rayburn.

Attachment: a/s


Kelly C. Kammerer

cc: ES, Molly Hageboeck

PRESENTATION OF THE TASK FORCE ON FOREIGN ASSISTANCE
TO
THE HOUSE FOREIGN AFFAIRS COMMITTEE

Table of Contents

I. Overview of Foreign Assistance	
A. The Current Program	page 1
B. Organization	3
II. Trends in U.S. Foreign Assistance	
A. Total Assistance	5
B. Composition by Program	8
C. Regional Composition	12
D. Composition of Bilateral Development Aid and Major Recipients	17
E. Composition of Food Aid and Major Recipients	20
F. Composition of the Economic Support Fund and Major Recipients	21
G. Composition of Military Assistance and Major Recipients	23
III. Principle Findings of the Task Force Review	25
IV. Recommendations	
A. Economic Assistance	31
B. Military Assistance	40 -

Summary of Findings and Recommendations

During the second session of the 100th Congress, Chairman Dante Fascell established a task force to conduct a review of U.S. foreign assistance programs and activities. The task force was chaired by Reps. Hamilton and Gilman, with all Members of the Committee invited to participate in the review, which included extensive meetings with executive branch officials and non-governmental experts. The process also included a review of pertinent studies and reports and written submissions requested by the task force.

The following is a summary of the principal findings and recommendations of the task force:

Findings:

The task force concluded that foreign assistance is vital to promoting U.S. foreign policy and domestic interests, but that the program is hamstrung by too many conflicting objectives, legislative conditions, earmarks, and bureaucratic red tape.

Recommendations:

Economic Assistance:

The Committee should consider the:

- enactment of a new international economic cooperation act to replace the existing Foreign Assistance Act and sundry amendments thereto;
- creation of a restructured foreign aid implementing agency to replace AID;
- identification of four principal objectives (economic growth, environmental sustainability, poverty alleviation, and democratic and economic pluralism);
- provision of greater flexibility in the implementation of assistance programs;
- provision of more effective accountability focused on results rather than on allocations alone;
- improving coordination with other U.S. international economic policies, with other donors, and within country programs.

Security Assistance:

The Committee should consider the:

- separation of the grant and concessional military assistance from cash sales authorities;
- creation of a new defense trade and export control act to replace the Arms Export control Act;
- establishment of one military assistance account;
- provision of more effective accountability, again focused on results;
- phasing out over a five year period of military assistance as a quid pro quo for base access rights.

DRAFT

PRESENTATION OF THE TASKFORCE ON FOREIGN ASSISTANCE
TO
THE FOREIGN AFFAIRS COMMITTEE

I. OVERVIEW OF FOREIGN ASSISTANCE

A. The Current Program

For Fiscal Year 1989, total U.S. economic and military aid is about \$15 billion. The major components are:

-- Development Assistance, (DA) accounting for 15.9% of the total. The aim of DA is to promote long term economic development through programs that help a host country use its resources more effectively. Currently, the Agency for International Development (A.I.D.) administers over 2000 projects in the fields of: Agriculture; Rural Development and Nutrition; Population; Health; Child Survival; AIDS Prevention and Control; Education and Human Resources Development; and Private Sector, Environment and Energy.

-- Economic Support Fund, (ESF) accounting for 23.9% of foreign assistance. It is allocated according to special economic, political and security needs. It is programmed in three ways: as cash transfers to provide balance of payments and budget support to countries facing urgent foreign exchange requirements; as commodity import programs to fund imports from the U.S; and as project assistance, supporting development projects.

The ESF program is currently focused on the promotion of economic stability and political security in the Middle East and Central America.

-- Food Aid, accounting for 9.9% of foreign assistance. Under Public Law 480, surplus American agricultural goods are transferred to needy countries through low interest loans and direct donations. The bulk of food aid is provided under Title I, as concessional sales in exchange for specific self-help development activities. Under Title II, food is donated for humanitarian purposes, including child nutrition and emergency disaster relief. Since 1954, the Food for Peace program has delivered 303 million metric tons of food to more than 1.8 billion people in over 100 countries.

-- Military Aid, accounting for 35.8% of total assistance. It comprises grants and some concessional rate loans for equipment, and military training, provided to friendly nations.

-- Multilateral Assistance, accounting for 9.9% of all assistance. It includes contributions to multilateral development banks, such as the World Bank, and Inter-American Development Bank, and contributions to economic and development programs of international organizations, such as specialized U.N. agencies working in health, food, agriculture, and the environment.

-- Other aid flows include International Disaster Assistance, funding for the Peace Corps, the Trade and Development Program, Migration and Refuge Assistance, the Inter-American Foundation, the African Development Foundation, and the American Schools and Hospitals Abroad program.

The real dollar amounts for these programs during the most recent three years are shown in Table 1.

Table 1

U.S. Foreign Assistance, 1987-1989, by Major Program

	FY 1987	FY 1988	FY 1989	FY 1990
	(billions of constant 1989 dollars) *			
Development Assistance	\$ 2.4	\$ 2.5	\$ 2.4	\$2.3
Economic Support Fund	4.2	3.2	3.6	3.2
Food Aid	1.6	1.5	1.5	1.4
Military Aid	5.5	5.5	5.4	5.7
Multilateral Assistance	1.6	1.5	1.5	1.8
Other Economic Aid	.7	.6	.7	.9
TOTAL	\$ 16.0	\$14.8	\$15.1	15.3

* requested.

229

B. Organization

The Agency for International Development is the principal U.S. bilateral aid agency. It is responsible for the implementation of most Development Assistance and Economic Support Fund programs. The geographical allocation of ESF is decided by the State Department in conjunction with A.I.D. The geographic allocation of development assistance is proposed by A.I.D., with State Department concurrence.

A.I.D. was established in 1961 as a relatively autonomous agency under the State Department. The A.I.D. Administrator has the rank of Under Secretary of State. Currently 90 countries host A.I.D. economic assistance programs of over \$1 million. There are A.I.D. missions in 46 countries, representational offices in 23, and 13 regional development offices abroad. In 1988 A.I.D. had 4,700 employees, down from 6,000 in 1980 and 17,500 in 1968 at the height of A.I.D. activity in South East Asia. About 52% of AID employees are stationed overseas, of which slightly less than half are foreign nationals. In carrying out its projects, A.I.D. also employs about 7,700 contractor personnel and detailees from other federal agencies.

The Department of Defense is responsible for most military assistance. Within DOD, the Defense Security Assistance Agency administers the Foreign Military Sales and Credit Programs and the Military Assistance Program. Other branches of DOD participate in planning and oversight of military aid, and in training and peacekeeping activities. The State Department approves military sales proposals to friendly countries, and is in charge of assistance for anti-terrorism and peacekeeping operations, which come under military aid.

Responsibility for Food Aid is shared by A.I.D., the Department of Agriculture, the Department of State, and the Department of the Treasury. USDA has principal responsibility for determining quantities, selection, procurement, and shipping. A.I.D. is responsible for administering the program in the field, including negotiating food aid agreements and allocating grants. The Department of State plays a major role in country allocation. The Treasury Department oversees credit arrangements. Food aid is coordinated through an inter-agency committee, the Development Coordinating Committee subcommittee on food aid, which operates on a consensus basis.

Responsibility for Multilateral Assistance is shared. The Treasury Department shapes U.S. policy toward multilateral development banks, including nominating and supervising the U.S. executive directors. The State Department leads in policy-making and budget determination concerning the United Nations and other international organizations. In addition, A.I.D. is involved in the developmental and technical assistance activities of the U.N. specialized agencies. Other U.S. agencies are involved in the work of appropriate multilateral agencies. For example, USDA participates in the work of the Food and Agriculture Organization, and the Environmental Protection Agency in the activities of the U.N.

Environmental Program.

Many of the programs counted under Other Economic Aid, such as the Inter-American Foundation, Peace Corps, and the Trade and Development Program are autonomous or semi-autonomous. International narcotics programs are the responsibility of the Department of State, and the Drug Enforcement Agency. Refugee assistance programs are handled by the Department of State.

The following table shows the number of countries receiving U.S. assistance in 1987 and 1988:

Table 2

Number of Countries Receiving U.S. Assistance in FY 1987 and 1988

	----Economic Assistance----			Net total Economic	Military Assist.	Total All Programs
	DA & ESF	PL 480	Peace Corps & Narcotics			
FY 1987	77	71	58	99	97	116
FY 1988	77	69	57	97	100	117

Note: In columns including two types of assistance, each country only counts once even if it receives both types of assistance.

II. TRENDS IN U.S. FOREIGN ASSISTANCE

A. Total Assistance

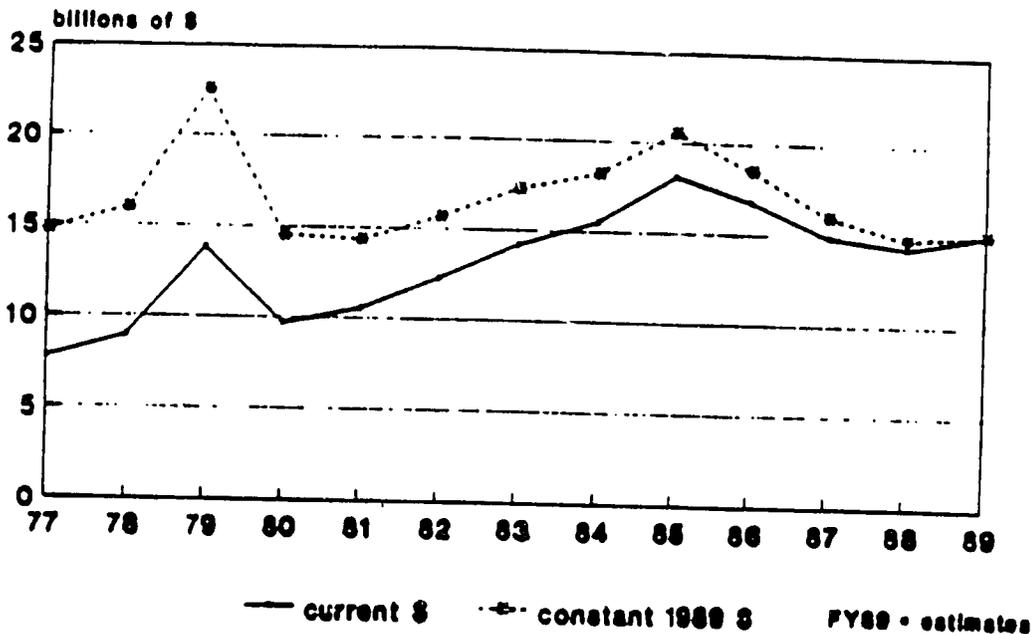
The level of total U.S. foreign assistance has fluctuated considerably over the past 13 years. In constant 1989 dollars, the program shrank from \$22.6 billion in FY 1979 to \$14.6 billion in 1980. It then rose again to \$20.6 billion in FY 1985 before declining to the current level of about \$15.1 billion in FY 1989.

(Note: all figures used will be in constant 1989 dollars, unless otherwise noted and amounts represent obligations of U.S. assistance except for FY 1989, which are estimates.)

Figure 1 depicts levels of total foreign assistance, in nominal and real terms for the period FY 1977 to FY 1989.

Figure 1

Total U.S. Assistance FY 1977 - FY 1989



Special circumstances in the two peak years, 1979 and 1985, are worth noting.

-- The \$22.6 billion for 1979 includes a \$4.8 billion supplemental in additional security assistance, provided to Israel and Egypt under the Camp David Peace Accords.

-- The \$20.6 billion in 1985 reflects the growth of overall funding during the early 1980s, but also includes large (economic) supplementals for Israel, Egypt and Jordan, to deal with short-term debt problems, and emergency food and relief for famine-stricken countries in Africa.

Severe budget constraints have influenced the decline in aid levels in the last four years, bringing the total available for 1989 back down to the level of aid provided in 1977.

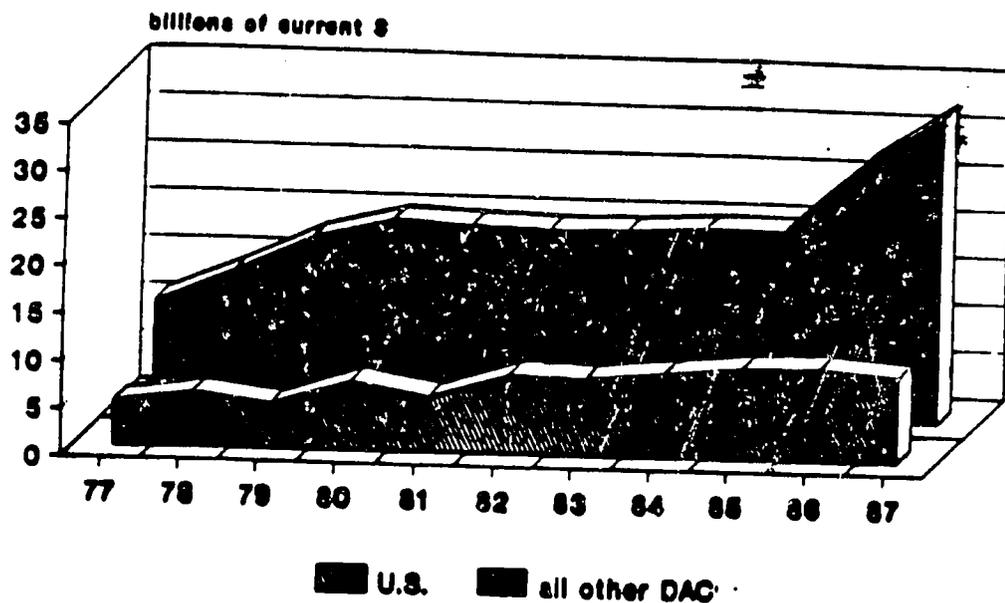
As a percentage of Gross National Product U.S. foreign assistance has declined steadily from between 2 and 3 percent of GNP in the late 1940s, to 1 percent in the late 1950s, down to less than three tenths of one percent today. Within the last 13 years, aid levels as a percentage of GNP follow a similar trend to that of dollar levels: peaking in 1979 and 1985, and steadily decreasing since 1985. The percentage figure for 1989 will be an all-time low.

A comparison with other donors reveals that the U.S. has been the world's leading donor of economic assistance, in terms of dollar amounts of Official Development Assistance (as defined by OECD). However, as aid from other donors rises, the U.S. contribution as a percentage of all ODA (Official Development Assistance) is falling.

Figure 2 compares U.S. aid levels with the combined total of the other 16 Western nations of the OECD DAC (Development Assistance Committee). During the period 1977-1987, American ODA accounted for 36% of assistance from all DAC members. In 1987 it accounted for 23.7% of all ODA. It is estimated that in 1989 Japan will surpass the U.S. as the world's leading ODA contributor.

Figure 2

Major Donor Economic Assistance 1977 - 1987



In terms of aid as a percentage of GNP, the U.S. ranks lowest among DAC members. Table 3 gives the 1986-7 levels of ODA in dollars and as a share of GNP for all DAC members. The table also shows that U.S. ODA accounts for a significantly higher share of ODA going to low income countries than of ODA going to lower-middle and upper-middle countries.

Table 3

AID PROFILES OF OECD DEVELOPMENT ASSISTANCE COMMITTEE MEMBERS
Net Disbursements; 1986-87 average

	Total ODA (\$)	ODA as % of GNP	Share of Total DAC ODA (%)	Allocations (%) of ODA to:			
				Multilaterals	LICs*	LMICs**	UMICs***
Australia	3690	.39%	1.8%	24.0%	19.6%	39.7%	10.7%
Austria	3197	.19%	.5%	24.7%	39.5%	9.1%	43.1%
Belgium	3618	.48%	1.6%	21.2%	65.8%	9.4%	5.6%
Canada	31,790	.47%	4.6%	33.4%	58.0%	11.1%	3.3%
Denmark	3777	.88%	2.0%	40.9%	65.8%	10.2%	3.3%
Finland	3373	.48%	.9%	39.6%	64.2%	7.9%	3.8%
France	35,815	.73%	14.9%	11.5%	36.6%	11.9%	37.3%
Germany	34,112	.41%	10.5%	18.4%	54.9%	16.2%	14.8%
Ireland	357	.24%	.1%	24.8%	38.7%	8.5%	5.5%
Italy	32,309	.37%	6.4%	23.7%	71.6%	10.2%	5.8%
Japan	36,544	.30%	16.7%	30.5%	64.6%	16.0%	8.5%
Netherlands	31,917	.99%	4.9%	24.4%	64.4%	10.5%	9.7%
New Zealand	381	.27%	.2%	21.6%	29.6%	28.0%	11.1%
Norway	3844	1.13%	2.2%	40.4%	63.4%	8.0%	3.0%
Sweden	31,234	.67%	3.2%	32.1%	61.2%	8.2%	3.1%
Switzerland	3488	.38%	1.2%	26.5%	61.3%	7.9%	4.7%
United Kingdom	31,801	.39%	4.6%	24.9%	63.1%	8.0%	9.3%
United States	39,255	.21%	23.7%	21.1%	43.6%	16.7%	19.9%
TOTAL DAC	339,097	.33%	100.0%	23.4%	53.9%	13.7%	15.3%

* LICs = Low Income Countries with per capita income in 1983 of below \$700.
Includes imputed multilateral ODA.

** LMICs = Lower Middle-income Countries with per capita income in 1983 between \$700 and \$1,300.

*** UMICs = Upper Middle-income Countries with per capita income in 1983 of more than \$1,300.

SOURCE: OECD Development Cooperation Report, 1988.

234

B. Composition by Program

Table 4 shows dollar levels of major components of U.S. aid since 1977.

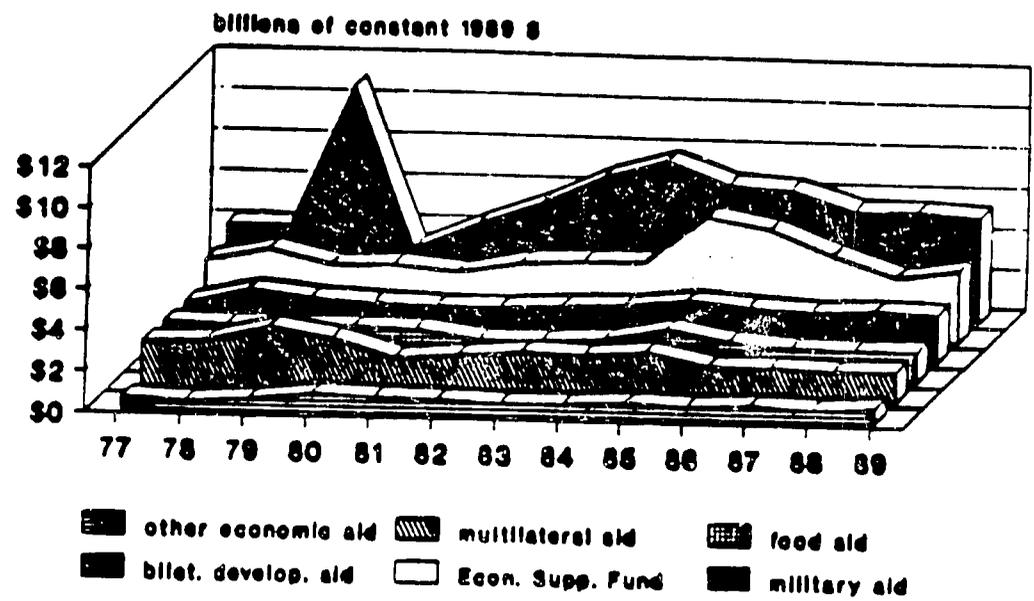
Table 4

U.S. Foreign Aid, 1977-1990, by Major Programs
(in billions of constant 1989 dollars)

Year	Development Assistance	Food Aid	Other Economic	Multi lateral Asst.	Economic Support Fund	Military Aid	Total
1977	\$2.2	\$2.3	\$.5	\$2.3	\$3.3	\$4.1	\$14.7
1978	2.9	2.2	.4	2.4	3.9	4.2	16.0
1979	2.6	2.1	.6	3.1	3.2	11.0	22.6
1980	2.4	2.2	.9	2.6	3.3	3.2	14.6
1981	2.3	2.1	.8	1.7	3.0	4.6	14.5
1982	2.3	1.7	.7	1.9	3.5	5.5	15.6
1983	2.4	1.7	.6	2.1	3.6	6.9	17.3
1984	2.5	1.8	.6	2.0	3.7	7.7	18.3
1985	2.8	2.3	.7	2.2	6.0	6.6	20.6
1986	2.6	1.8	.6	1.6	5.4	6.4	18.4
1987	2.4	1.6	.7	1.6	4.2	5.5	16.0
1988	2.5	1.5	.6	1.5	3.2	5.5	14.8
1989(est)	2.4	1.5	.7	1.5	3.6	5.4	15.1
1990(req)	2.3	1.4	.9	1.8	3.2	5.7	15.3

These shares and trends are portrayed in Figure 3.

Figure 3 **Program Composition of U.S. Aid
FY 1977 - FY 1989**



FY89 - estimates

Figure 3 highlights the sharp fluctuations in military aid, and, more recently, in ESF, compared to fairly steady levels of other programs. Military aid rose from just over \$4 billion in FY 1977 to a high of \$7.7 billion in FY 1984 -- a real increase of 85%. Amounts have fallen since to about \$5.4 billion for FY 1989, leaving military aid with a real increase of 36% over the entire period from 1977.

ESF money is now only slightly higher than in FY 1977, but this follows a rapid increase of 78% between 1977 and 1985.

Funding for bilateral development assistance has remained fairly steady over this period. But like other programs, funding has been reduced since FY 1985.

Two programs -- food assistance and contributions to multilateral institutions -- have declined in real terms since 1977. Food aid has declined steadily each year, except for a brief period in the mid-1980s when the U.S. responded to the African famine with large quantities of emergency agricultural supplies. Funding for 1989 will be one third below the 1977 level.

Trends in multilateral assistance are more difficult to assess because funds are allocated irregularly, depending on the schedule and outcome of international bank replenishment negotiations. In general, however, funds obligated for multilateral contribution have fallen from an earlier annual average of around \$2.2 billion to around \$1.5 billion during the past 4 years.

Program Shares

The share of the total foreign assistance budget going to development-related programs (development, food and multilateral development bank support) has decreased from nearly 50% in the late 1970s to less than 40% today. Military assistance, which previously took 25% to 30% of the budget, increased to over 40% in the mid-1980s, and has been running at 36% of the budgets during the past three years. ESF obligations have ranged between 20% and 25% of the budget.

Figure 4 (over) portrays the changing composition of the foreign aid program over a broader 43-year period. Some interesting developments can be seen.

Food aid emerged as an important aid mechanism in the mid-1950s, peaking during 1962-66. The subsequent decline in the volume of food transferred was even more dramatic than is apparent from the chart because grain prices were increasing sharply at the time.

Multilateral aid emerged in the early 1960s in conjunction with the "development for development's sake" view, but has never become a dominant feature in American aid.

ESF and its precursor programs were substantial in the mid-1950s, then declined during the 1960s and early 1970s. ESF began to re-emerge in the late 1970s as one of the few programs that could provide flexible and timely aid in support of national security goals.

U.S. FOREIGN AID, 1946-89, BY MAJOR PROGRAM

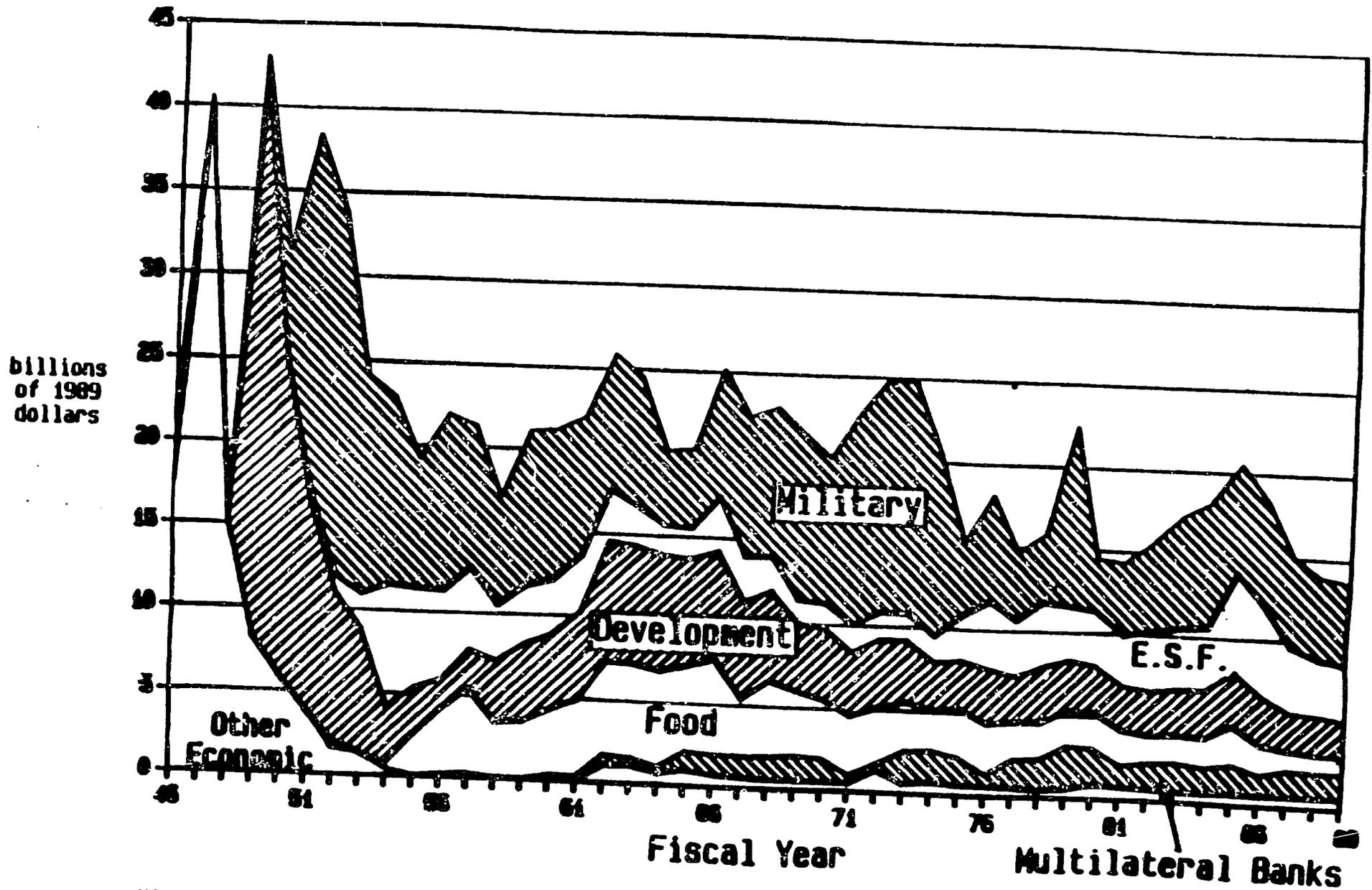


Figure 4

NOTE: The Development category includes U.S. voluntary contributions to international development organizations and programs.

101

227

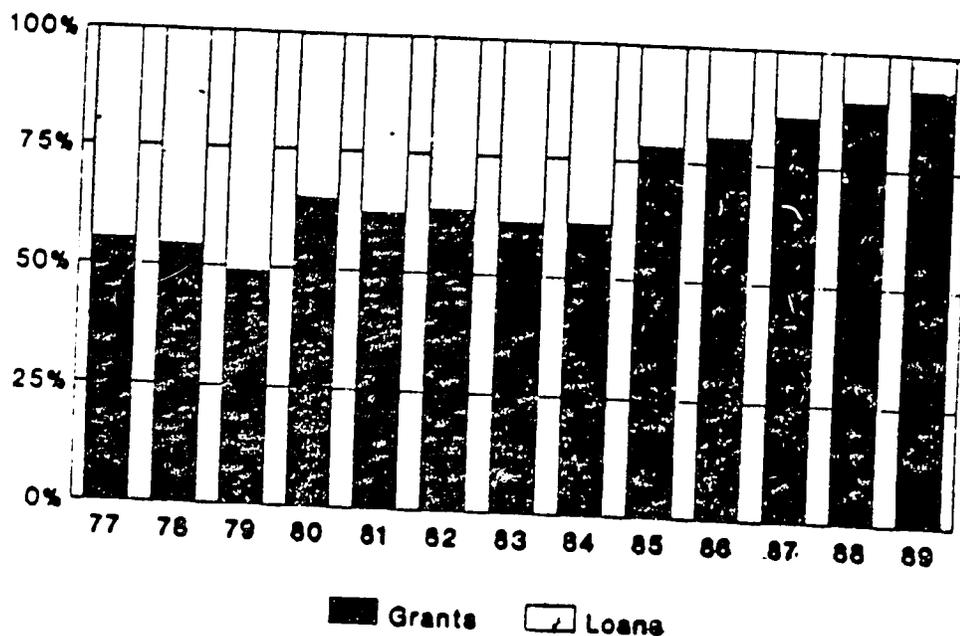
Finally, military aid has been the largest aid category during much of the post-war period. Peaks appear in the early 1950s because of Greece, Taiwan, and Korea, again in the early 1970s because of Vietnam, and the most recent peak occurred in 1985.

Grants versus loans

In the 1970s, approximately one half of the total U.S. assistance program comprised grants, and the other half loans. Today, over 90% of the program is grant, largely in recognition of the growing world debt crisis. In particular, military aid has switched from being mostly loans in the 1970s to nearly all grants today. Figure 5 illustrates this trend since 1977.

Figure 5

Grant/Loan Composition of U.S. Aid FY 1977 - 1989



FY89 - estimates

W

C. Regional Composition

Figure 6 shows the regional composition of U.S. aid.

The Middle East has dominated U.S. regional allocations during the past 13 years, as Figure 6 shows. U.S. assistance to the region ranged between \$5 billion and \$6.5 billion annually, excluding the Camp David-related support in 1979 and special supplemental in 1985/6. In most years, the Middle East received over half of all U.S. bilateral aid.

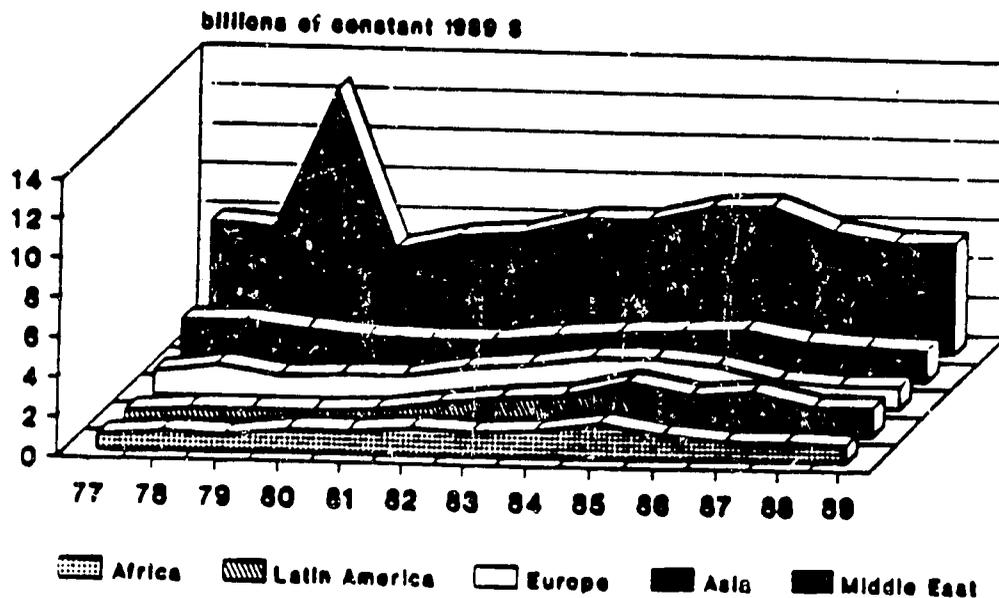
Asia and Europe have received the next two largest shares of U.S. aid during this period. Aid to Asia was a little over \$2 billion a year up to 1987. With the graduation of South Korea as an aid recipient, along with the general decline in budget levels, the region will receive only about \$1.6 billion in fiscal year 1989.

Aid to Europe, where most U.S. assistance supports military base agreements, grew from about \$1.2 billion in FY 1977 to a peak in the mid-1980s of \$2.3 billion. Since then, it has declined to just over \$1 billion, largely due to the graduation of Spain as an aid recipient.

Latin America had been the smallest recipient at the beginning of the period, with less than \$1 billion a year. But in FY 1982, aid to El Salvador and others in Central America began to grow. By 1985, total aid to the region averaged over \$2 billion. Budget pressures have forced amounts back down to about \$1.4 billion in FY 1989.

Sub-Saharan Africa has received between \$800 million and \$1.4 billion in U.S. assistance annually since 1977. Famine relief in 1985 pushed the total up to nearly \$2 billion for that year, but it fell down to about \$900 million by FY 1989.

**Figure 6 Regional Composition of U.S. Aid
FY 1977 - FY 1989**



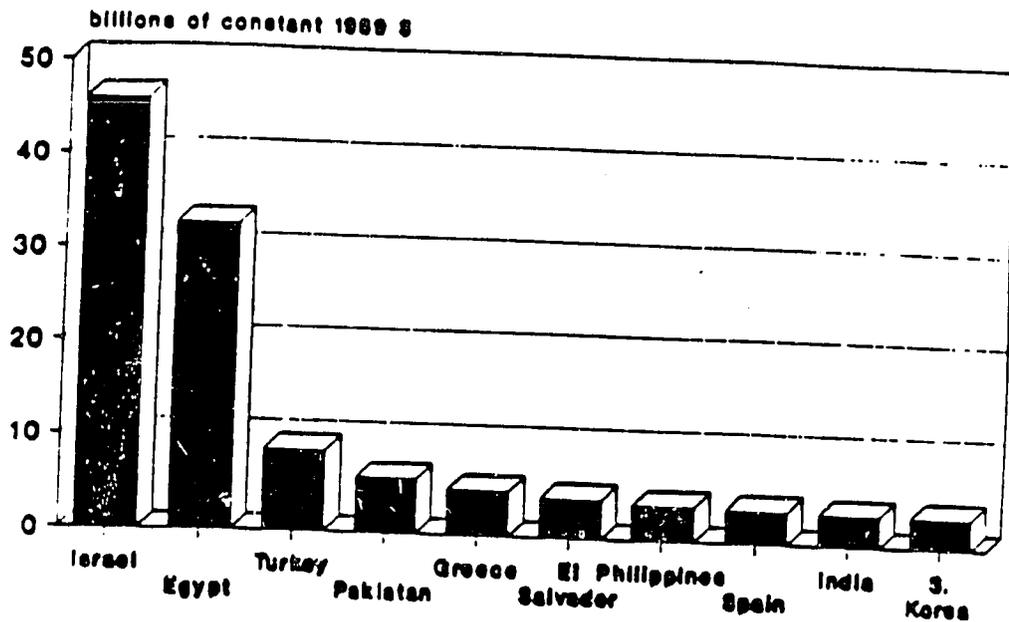
FY89 • estimate

231

The ten individual countries receiving the largest amounts of aid since 1977 can be seen in Figure 7. Israel and Egypt have been by far the leading recipients, accounting for 47% of all bilateral assistance over the period. Together, the ten countries have received about 70% of all American bilateral aid since 1979. With the exception of India, all have a strong security relationship with the United States. In the cases of Turkey, Greece, Spain and the Philippines, this includes military base agreements.

Figure 7

Major Recipients of U.S. Aid FY 1977 - FY 1989



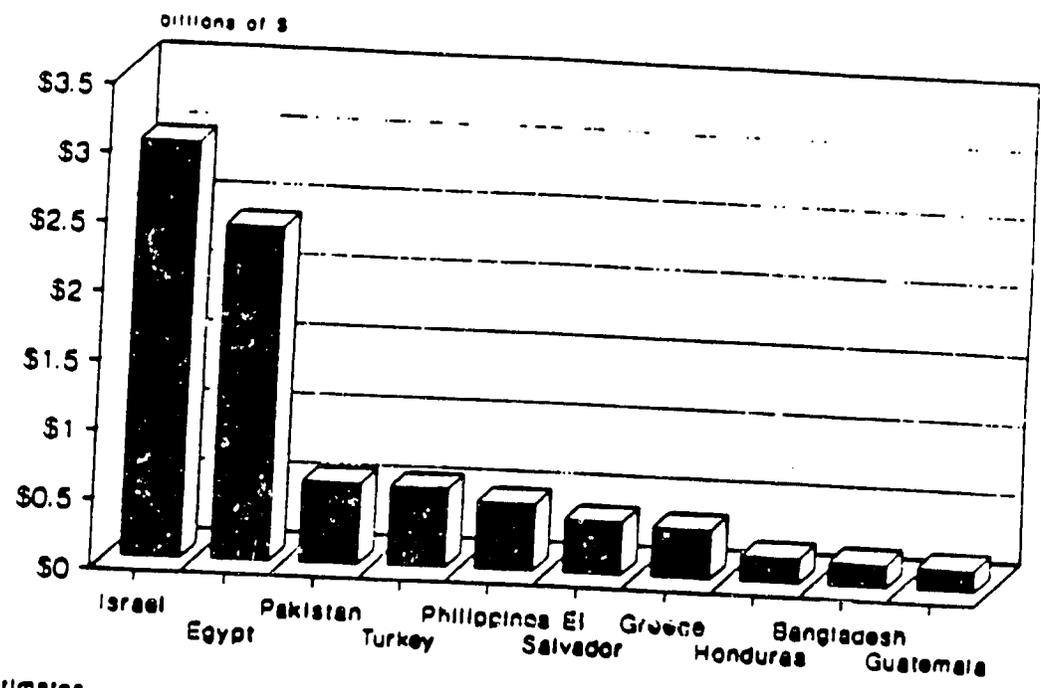
FY88 - estimate

240

Table 8 shows the current major recipients. Israel and Egypt feature even more strongly, while Spain and South Korea are no longer aid recipients, and India receives relatively little aid now.

Figure 8

Major Recipients of U.S. Aid FY 1989



estimates

Figure 9 (over) shows the changing regional composition of U.S. post-war assistance.

The early focus on Europe is evident. In 1989 dollar equivalents, aid to Europe peaked at around \$28 billion per year in 1950 and 1951. The emphasis on Greece and Turkey increased in the 1950s, as it did again in the 1980s.

Asia was the major recipient in the 1954-75 period. Aid peaked in the early 1970s, then fell off abruptly after Vietnam.

The Middle East was a modest recipient until 1972-73, but has been the largest recipient since 1976-77. Since the 1978 Camp David Accords aid to Israel and Egypt has been a major factor in the U.S. aid program.

Figure 9 also clearly shows the marginal roles of Africa and Latin America as aid recipients, although aid to Latin America grew during 1962-67 under the Alliance for Progress, and during the 1980s with the re-emergence of aid to Central America.

An analysis of the real value of total aid over 44 years shows three major periods that roughly correspond to the shifts in regional emphasis. In 1989 dollars, total annual assistance:

-- averaged about \$32 billion between 1946 and 1952 when Europe was the major recipient;

-- averaged about \$22 billion between 1953 and 1974, when aid was focused on Asia;

-- averaged about \$17 billion since 1974, while the Middle East, primarily Israel and Egypt, have been the primary recipients.

Currently, the focus on the Middle East continues, but budget pressures have pushed the annual budget down to \$15 billion since 1986.

U.S. FOREIGN AID, 1946-89. BY REGION

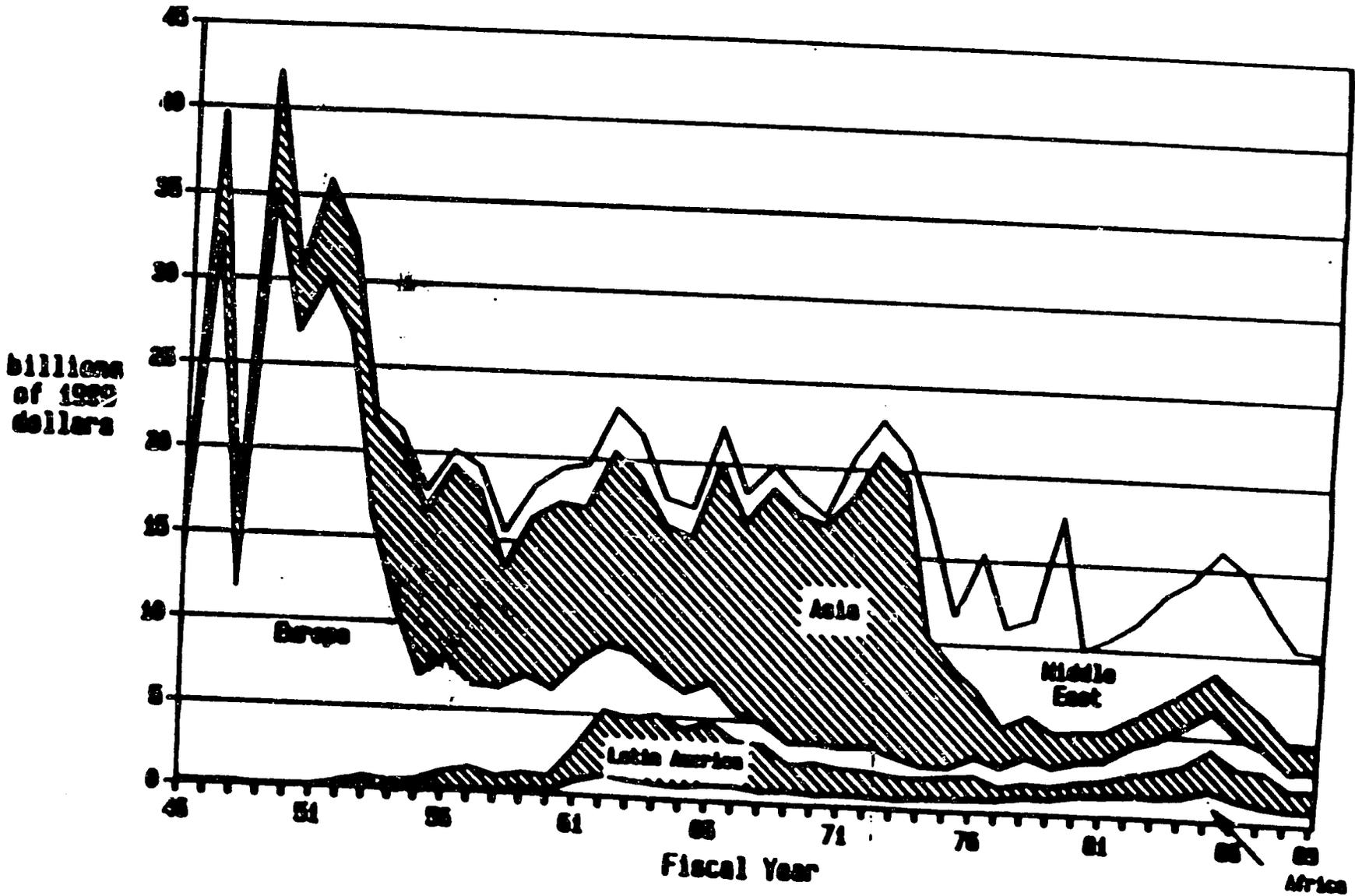


Figure 9

-91-

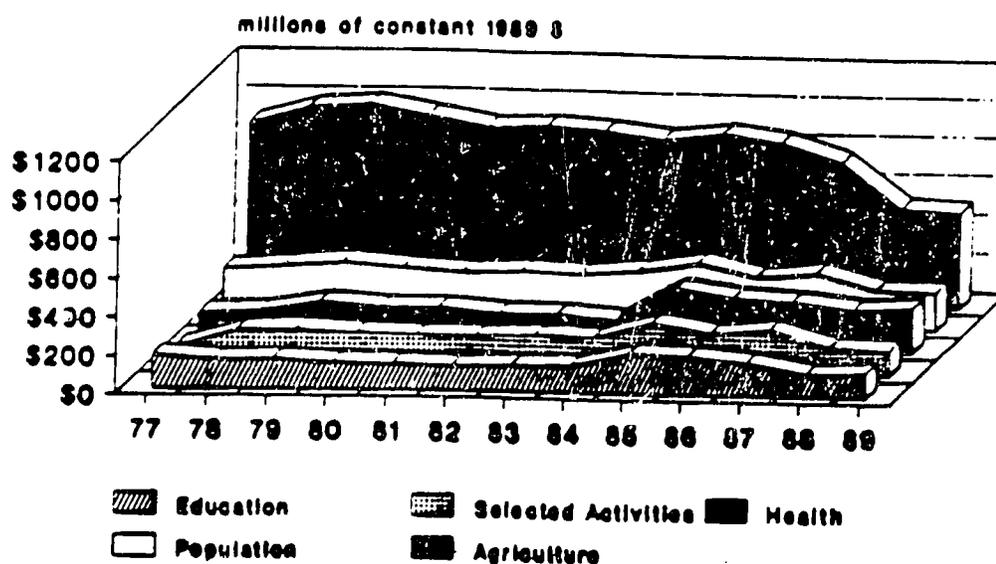
4/8/6

D. Composition of Bilateral Development Aid and Major Recipients

Most U.S. bilateral development assistance is channelled through five functional accounts: agriculture, population, health, education, and selected activities (projects that cut across the other four accounts, such as science and technology). Funding for these five accounts is shown in Figure 10.

Figure 10

Program Composition of Bilateral Development Aid, FY 1977 - FY 1989



FY88 - estimates

Notes: 1. Funding for Child Survival Activities (since FY 1985) and AIDS programs (since FY 1988) are included in health account levels shown.

2. Amounts illustrated for FY 1988 and 1989 do not include spending for the DFA (Development Fund for Africa), and therefore are not comparable with earlier years.

Agriculture has been the largest program, totalling about \$700 million annually -- over 50% of total development spending. More recently, as emphasis on other programs has increased, agriculture's share has fallen to around 40%.

Population programs has been the second largest account for most of the period. Family planning and other population-related activities have been steadily funded in the range of \$200 to \$250 million.

Health-related programs have received increasing support. In FY 1984 Congress created an additional functional account for Child Survival Activities. In FY 1985 funding for the two accounts was

double the health budget in FY 1977, and overtook funding for population programs in FY 1986. Another health account was created in FY 1988 to assist international AIDS research.

The Selected Development Activities account has also been the focus of greater attention, especially programs promoting the private sector in developing countries.

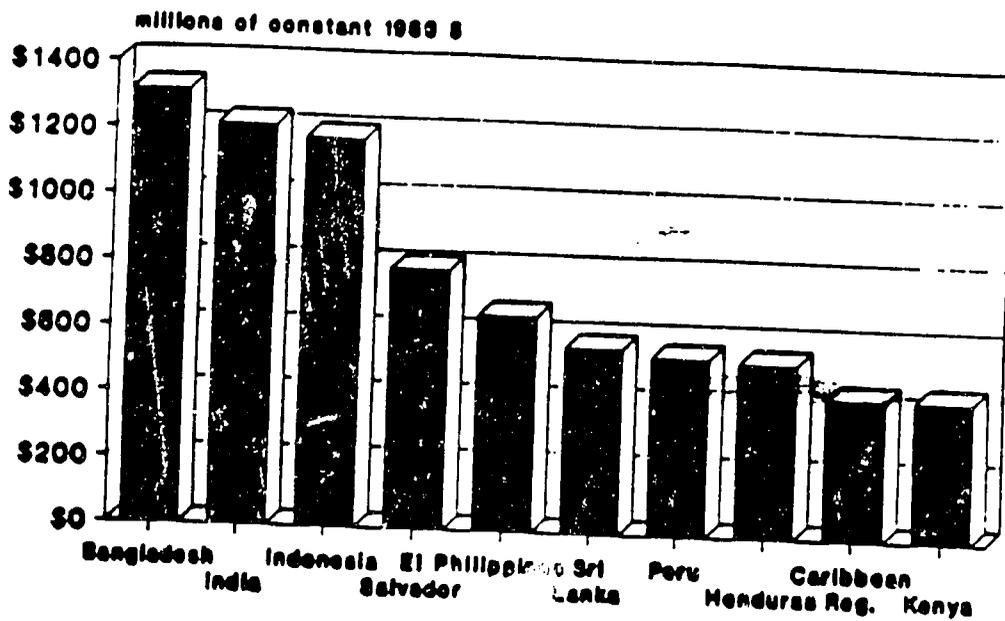
Education and human resources programs have received between \$130 and \$160 million annually, except in the case of a few years.

Programs that are not channelled through these five accounts include Peace Corps, and, since FY 1988, the Development Fund for Africa through which all economic assistance for Africa is channelled.

Major recipients of U.S. bilateral development assistance since 1977 have been Bangladesh, India, and Indonesia, although currently only Bangladesh continues as a major recipient. The ten major recipients during this period are shown in Figure 11. In the 1980s development assistance has increasingly focused on Central America, particularly El Salvador and Honduras, as can be seen in Figure 12, showing FY 1989 recipients.

Figure 11

Major Recipients of Bilateral Development Aid, FY 1977 - FY 1989

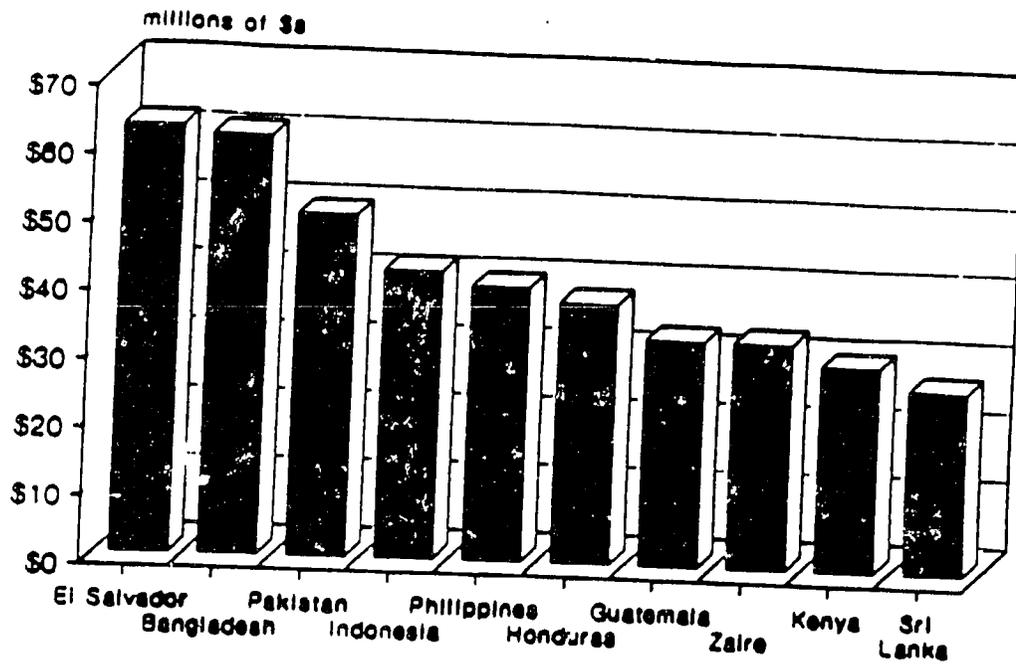


FY89 - estimates

245

Figure 12

Major Recipients of Development Aid FY 1989



estimates

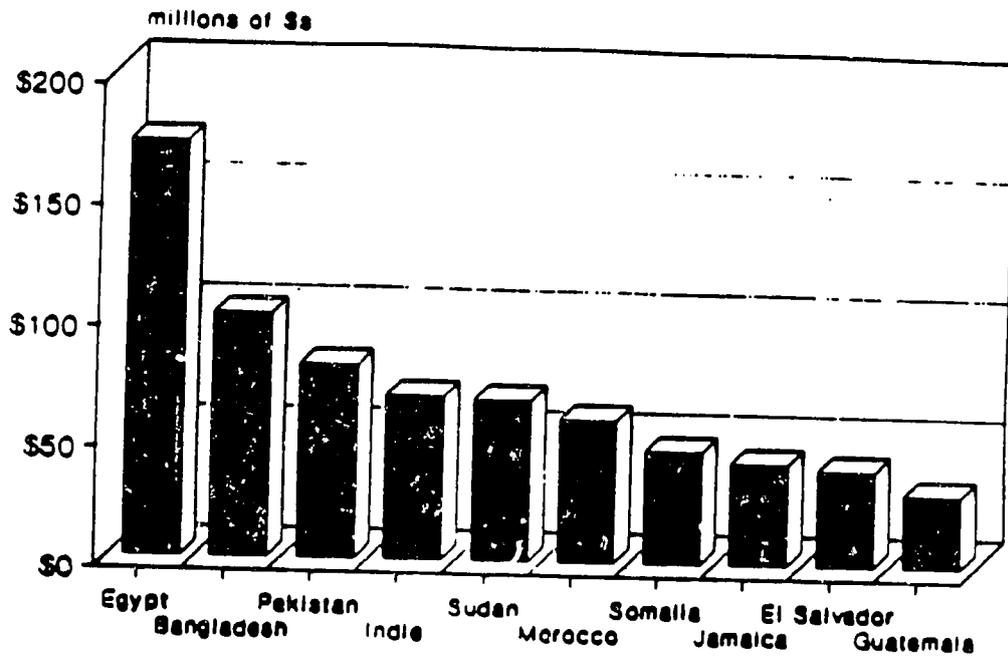
E. Composition of Food Aid and Major Recipients

The share of food aid channelled as loans fell from about 60 per cent of the total in 1977 to just over 50 per cent by 1985, as grants increased in response to emergency drought and famine conditions. In recent years, as emergency situations subsided in some parts of Africa, loans once again neared 60 per cent of the program.

The major recipient of food aid has been Egypt, during the period FY 1977 to 1989. Egypt's \$4 billion share accounts for 19% of total food transfers since 1977, and is nearly as much as that for all of sub-Saharan Africa combined (\$4.3 billion). South Asia has also been a focus of U.S. food assistance, where India, Bangladesh and Pakistan have received the second, third and fourth largest shares. Other countries in the top ten recipients are Sudan, Morocco, Somalia, Sri Lanka, and the Philippines. Among the current, FY 1989 recipients shown in Figure 13, Somalia, El Salvador, Guatemala and Jamaica have replaced Indonesia, Peru, Sri Lanka and the Philippines.

Figure 13

Major Recipients of Food Aid FY 1989



estimates

F. Composition of the Economic Support Fund and Major Recipients

The size, scope and accountability of ESF has been a continuing matter of debate in recent years, because of its flexible nature and potential for responding to multiple policy objectives. In particular, Congress has been concerned over accountability of the cash transfer portion of ESF.

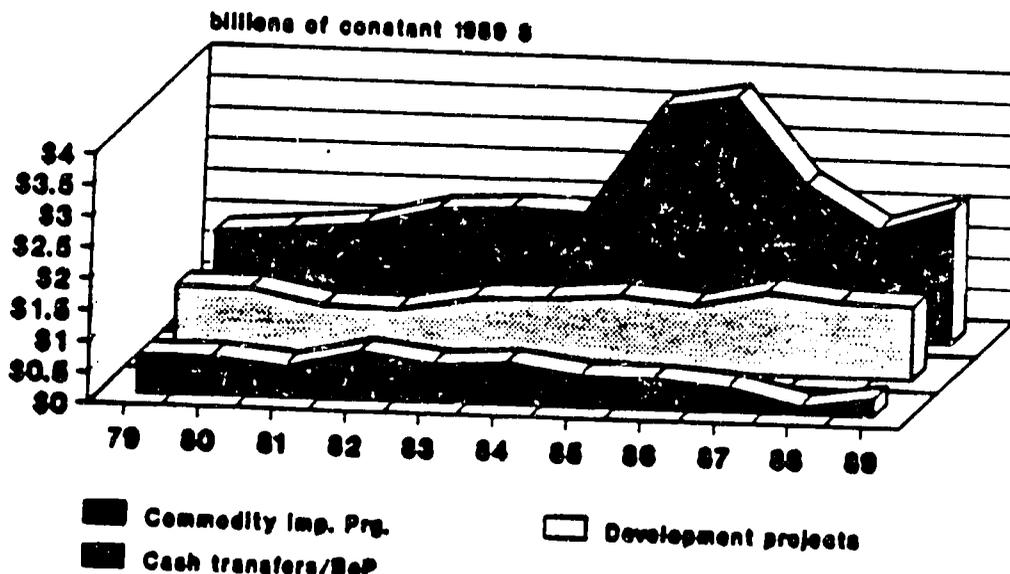
Figure 14 shows the division of ESF funds according to use: cash transfers for balance of payments support, commodity import programs, and development project aid. It shows a growing emphasis on the cash transfer component since FY 1979 (the first year for which accurate data are available). The share of ESF programmed as cash transfers increased from 45% of the total to about 60% by the late 1980's. (The even larger share in FY 1985 and 1986 include the special supplemental for Israel, Egypt and Jordan).

The share of ESF going to development projects has remained at between \$1 and \$1.1 billion annually, in terms of real dollars, but its share of the total program has declined from 35% to about 32%.

Commodity Import Programs, which used to account for about 20% of ESF, have declined sharply and now represent less than 4% of the overall program.

Figure 14

Composition of Economic Support Fund FY 1979 - FY 1989



FY89 - estimate

200

Major recipients of ESF since 1977 are shown in Figure 15. During this period, ESF has been highly concentrated in Egypt and Israel. Combined, they have received over \$31 billion, or 64% of total ESF transfers. The other major, but far less significant, recipients, are those with which the U.S. shares a strong security relationship. Today, as figure 16 shows, Israel and Egypt remain the largest recipients, although the shares of the Philippines, Pakistan and El Salvador have increased.

Figure 15

Major Recipients-Economic Support Fund FY 1977 - FY 1989

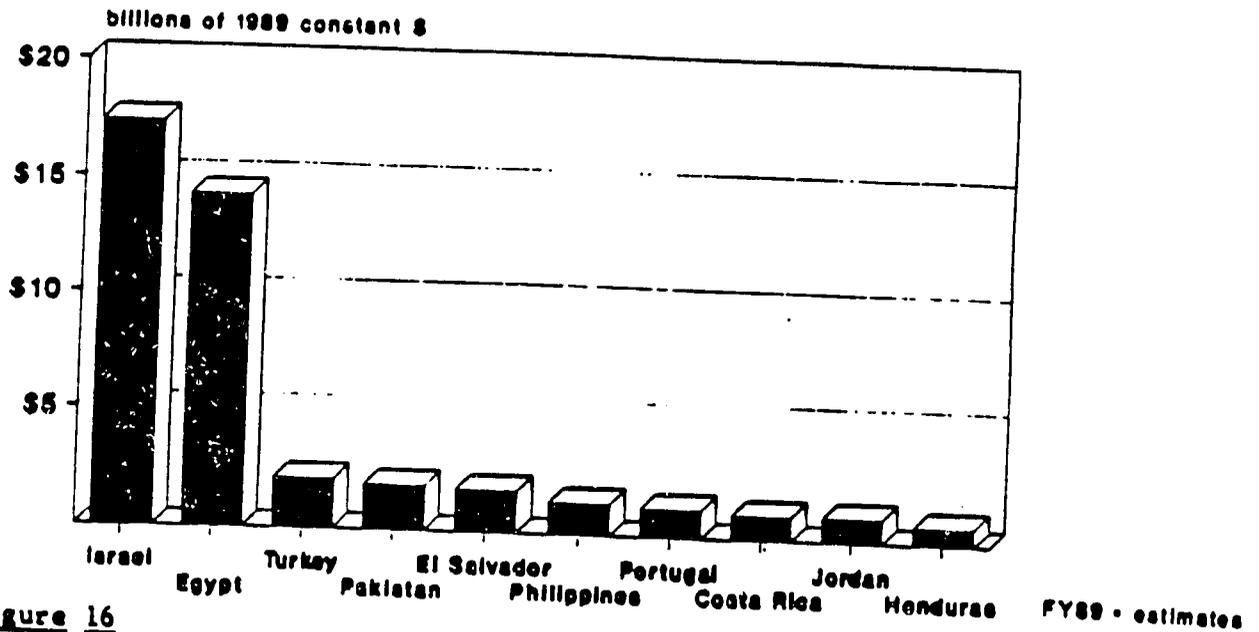
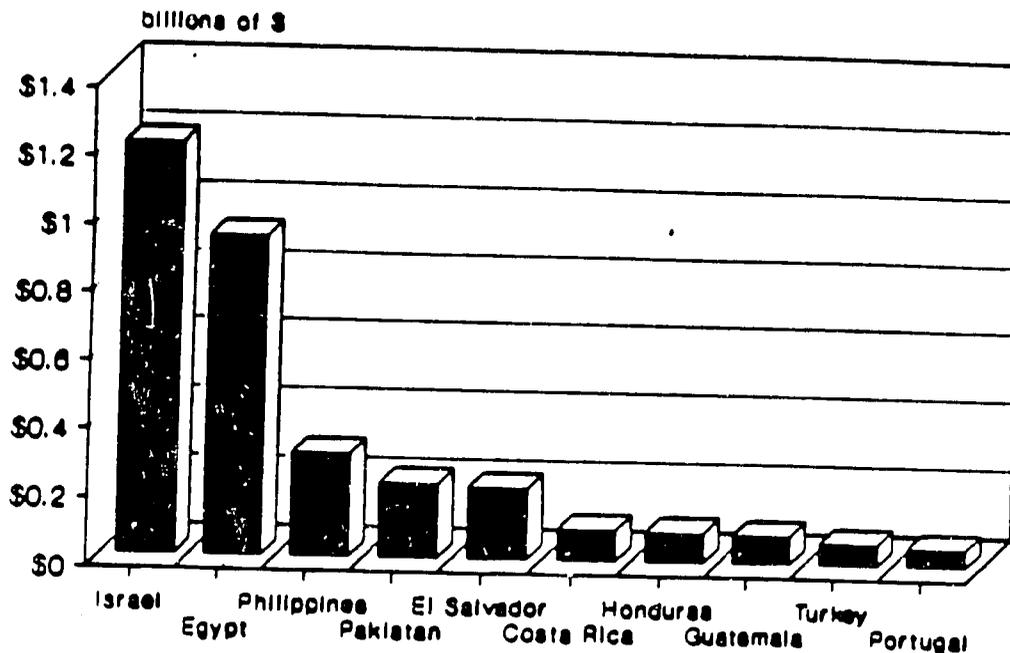


Figure 16

Major Recipients of the Economic Support Fund -- FY 1989



249

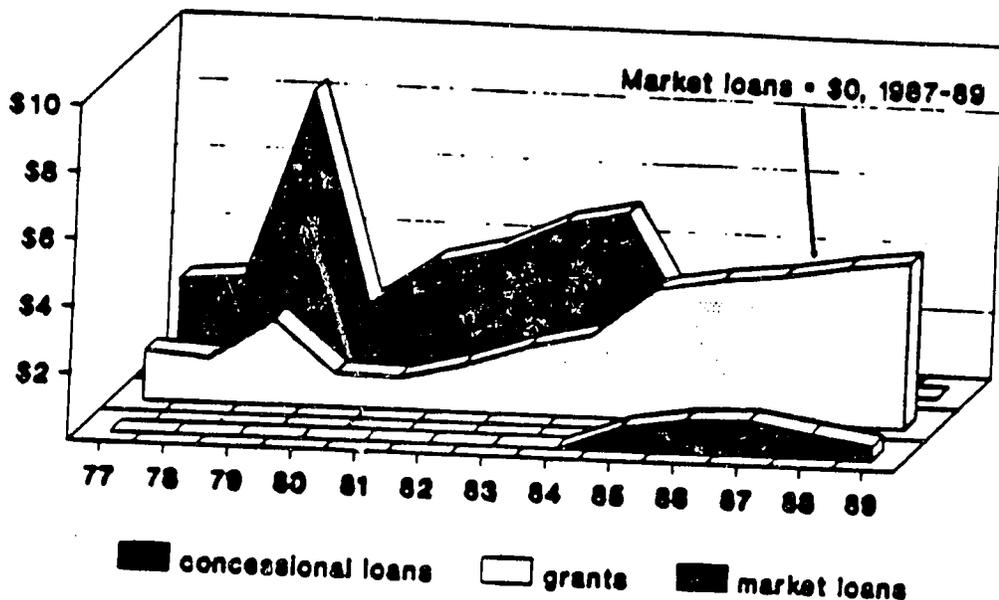
G. Composition of Military Assistance and Major Recipients

Most military assistance has been programmed in three ways: as loans bearing market interest rates; as concessional loans at about 5% interest (since 1984 only); and as grants. Figure 17 illustrates the division of funds between these three components since 1977.

In the early part of the period, the grant portion was small, comprising less than 25% of the total in FY 1981. Market loans, with interest rates up to 13% made up the rest. Harder loans were preferred by some policymakers, to discourage the growing demand for military transfers. In 1981, as the debt servicing problems of many military recipients increased, the grant portion began to grow quickly. When all military aid to Israel and Egypt was converted to grants in FY 1985, and a concessional loan program began, the share taken by market loans fell even more. By FY 1987 market loans had been eliminated entirely. For FY 1989, the Administration requested a grant-only military program, but Congress continued to insist that at least a small portion remain as concessional loans. Currently, grants make up 92% of the program.

Figure 17

Composition of Military Assistance FY 1977 - FY 1989



FY89 - estimates

The major recipient of military assistance has been Israel. During the period FY 1977 to FY 1989, Israel has received \$28.5 billion, or 39% of the total. Egypt has received the second largest amount, although half that of Israel. The remaining major recipients since 1977 have been largely those with which the U.S. maintains military base agreements — Turkey, Greece, Spain, Portugal and the Philippines. Major recipients of military assistance over the past 13 years are shown in Figure 18. Of these, Spain and South Korea no longer receive assistance. As can be seen in Figure 19, showing FY 1989 recipients, El Salvador, Morocco and Honduras have joined the list.

Figure 18

Major Recipients of Military Assistance FY 1977 - FY 1989

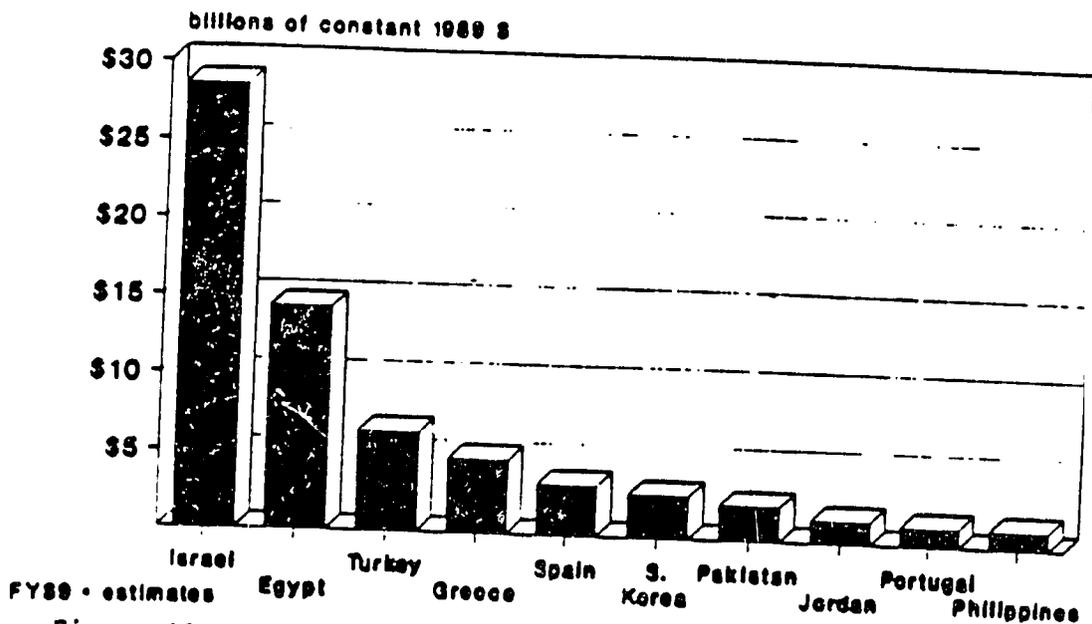
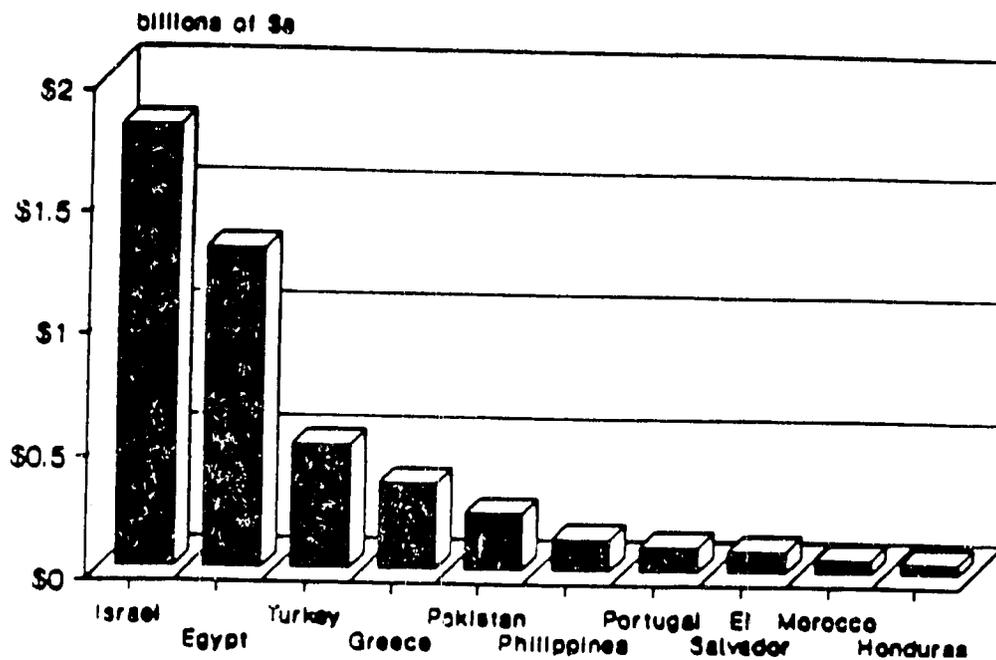


Figure 19

Major Recipients of Military Aid FY 1989



III. PRINCIPAL FINDINGS OF THE TASKFORCE REVIEW

1. U.S. FOREIGN ASSISTANCE IS IMPORTANT

The U.S. foreign assistance program is an important element of U.S. foreign policy. It serves U.S. foreign policy objectives by promoting the political and economic stability of nations important to U.S. interests. It supports U.S. national security by helping allies maintain adequate defense capabilities and stable economies. It serves U.S. economic interests by stimulating economic reform and growth overseas. It promotes U.S. long-term national interest by sustaining partnerships with other countries and enhancing their capacity to cooperate on issues of global importance. It responds to U.S. humanitarian concerns by helping alleviate suffering from disasters and poverty and by helping to promote more equitable and just societies.

U.S. leadership, expertise, and experience are of great value. Even with limited resources, the program still achieves significant results and contributes much to U.S. development interests and to U.S. relationships with recipient countries. The U.S. foreign assistance program has a positive record of accomplishment, management, and expertise in development. A.I.D.'s overseas missions are a unique asset.

2. THE FOREIGN AID PROGRAM OPERATES IN A CHANGING WORLD

* The United States is, and will continue to be affected by development, or lack of it, in other countries. Environmental degradation, deforestation, depletion of the ozone layer, trade deficits, drugs, international debt, immigration, over-population, AIDS, mediterranean fruit fly ... all affect the well-being of the United States. These problems pose a challenge to U.S. national interests, and must be addressed.

* Global tensions have changed. The lessening of tensions between the superpowers and the possibilities for settlement of some regional conflicts create new challenges and opportunities for peace and development.

* Economic issues increasingly dominate the international agenda. The budget and trade deficits are priorities for the United States. Non-market economies are focusing on economic reform and efficiency. Developing countries are striving to deal with external debt while promoting domestic growth. The international economic system is being revolutionized by rapidly changing technology, massive international capital flows, and instant communication.

* The developing world has become increasingly divergent. For most of Africa, and much of Latin America and the Caribbean, the 1980s has been the "lost decade". Countries in Asia and the Near East have made significant progress. Meanwhile, newly industrialized countries -- Taiwan, Korea, Brazil, Singapore -- have gained affluence and

become world economic actors.

* Increasing institutional and technical capacity in Third World countries facilitates collaborative programs among U.S. and developing country institutions. Even where GNP per capita remains low, institutional growth enables developing countries to be partners in development cooperation, rather than recipients of aid transfers. A.I.D. is beginning to develop collaborative programs in public policy, science, technology and enterprise development. However, A.I.D. procedures and management systems do not encourage collaborative efforts.

* Urbanization in developing countries is accelerating. During the next twenty five years, urban populations will increase by 1.2 billion in countries currently eligible for U.S. economic assistance. This growth will have greatest impact in low income countries. By 2000, a majority of the world's poor will be in urban areas. For example, Kenya, with a current urban population of 4.5 million, can expect an additional 38 million urban dwellers by the year 2025. This growth creates both opportunities for more diversified patterns of growth, as well as enormous problems of shelter, sanitation, and transportation. Unmanaged urbanization in the developing world has serious consequences for the global environment, international health, and political stability.

* Aid is only one part of complex relations with developing countries. Other economic issues are increasingly important. For example:

-- The major obstacle to development at present is the external debt burden of much of the Third World. The resources that are siphoned away from domestic investment into debt payments far outweigh aid flows. Their transfer inhibits development and economic growth, and therefore is beginning to threaten political stability and receptivity to market-oriented policies.

-- Trade and investment are increasingly important in relationships between the United States and developing countries.

-- The objectives driving military sales have evolved over time so that they are now an element of export promotion.

-- Policies on trade, debt, investment, and other issues sometime conflict with, rather than complement, the objectives of the U.S. aid program.

* U.S. foreign assistance is a declining world resource. The United States is no longer the major donor country -- Japan is surpassing us as the largest donor of bilateral economic aid. Total foreign assistance has declined from 3% of GNP at the height of the Marshall Plan, to 1% in the late 1950s, to less than three tenths of one percent of GNP today* -- the lowest level of any OECD member.

* Two tenths of one percent of GNP based on DAC figures, which exclude military assistance.

* U.S. institutional and technical resources are highly relevant to current development issues. U.S. strength lies in private enterprise, education, science and technology, and in non-governmental organizations. For developing countries, access to U.S. markets is critical to economic growth. The United States is still the country of choice for students seeking advanced education in science, medicine, and management. Collaborative ventures in science and industry between the United States and developing countries are of mutual benefit, and are necessary to tackle current problems.

* The world is increasingly receptive to market-oriented policies. The economic policies being promoted by donor organizations and being adopted by developing countries have become increasingly market-oriented over the last decade, even in non-market economies. This trend widens opportunities for U.S. economic relations and influence.

3. THE ROLE OF THE U.S. AID PROGRAM HAS CHANGED

* The theory behind the program has evolved. The program began with an emphasis on large resource transfers during the Marshall Plan, shifted toward technical assistance during Point Four, to infrastructure during the 1960s, to basic human needs during the 1970s, and finally to the role of markets and policy reform during the 1980s. Clearly there is no one path to development. U.S. assistance should focus on those types of assistance which the U.S. can provide most effectively, and which meet the existing development needs of a country.

* U.S. foreign assistance is highly concentrated on a few strategically important countries. The major strategic recipients, Israel, Egypt, Pakistan, Turkey, the Philippines, El Salvador, and Greece receive 72% of the \$11 billion provided to countries, military, food, and development assistance. Israel and Egypt alone receive 50% of this total.

* The focus of foreign assistance has changed. Over the past decade, the balance has shifted towards the Middle East, to military assistance, to grants rather than loans, and to bilateral rather than multilateral assistance. ESF is increasingly favored by the Executive branch because of its greater flexibility and faster disbursement.

4. THE DOMESTIC CONTEXT OF THE AID PROGRAM HAS CHANGED.

* Budget constraints conflict with increasing demands on the aid program. In FY 1990, the budget deficit must be reduced by \$35 billion. Yet there are increasing demands on the foreign assistance program: there is the prospect of major new commitments in Afghanistan, Namibia, Philippines, the Middle East, to U.N. peacekeeping forces, and payment of arrears to the U.N. and MDBs. As the pie shrinks, Members of Congress, interest groups, departments and agencies will each fight to protect their particular interest. In sum, the United States will have to do more with available resources.

* The program does not enjoy broad public support. U.S. public support for helping poor people remains strong, but the public does not view the aid program as doing this effectively. The public has very little concept of the aid program as an instrument of foreign policy, used to advance U.S. interests. There is evidence that the public would support development programs focused on key problems affecting the well-being of the United States.

5. **CURRENT AID LEGISLATION AND ADMINISTRATION IMPEDE EFFECTIVENESS.**

* There are too many objectives. Scattered through the Foreign Assistance Act are 33 objectives. An A.I.D. document lists 75 priorities for economic assistance. Most, if not all, of these objectives are probably worthy, but they are so numerous that they cannot provide meaningful direction or be effectively implemented. In the field of military assistance, while there are relatively few stated objectives, those objectives are overly politicized, leading us to expect too much in foreign policy terms from what is being provided or sold. Mixing security, military, development, and humanitarian objectives makes evaluation and Congressional oversight difficult.

* The program is hampered by numerous reporting requirements, earmarks and restrictions:

-- Foreign aid legislation contains 288 individual reporting requirements to advise Congress of both one-time and continuing activities. GAO reports that AID's reporting requirements on the \$5 billion program it manages is second only to the Defense Department with over \$300 billion. These could be substantially reduced, by consolidating similar reports, repealing unnecessary or low-interest requirements, and removing fulfilled or out-of-date provisions.

-- Earmarks, mostly in the form of specified country allocations in legislation, have increased to unprecedented levels. For FY 1989, 92% of military aid, 98% of ESF, and 49% of development assistance is earmarked. In recent years, the protection of high priority recipients through legislative earmarks has considerably diminished executive branch agencies' discretionary authority over foreign aid allocations. This problem is likely to get worse as budget pressures tighten.

-- Congress receives over 700 notifications of project changes each year. This level of notifications focuses Congressional attention on project changes, which are inevitable, rather than on policies and programs.

-- In addition, there are numerous directives, restrictions, conditions, and prohibitions in the foreign aid legislation, and in committee and conference reports, that must be adhered to by implementing agencies and recipients of U.S. aid. The result is an aid program that is driven by process rather than by content and substance.

What all this means is that accountability of U.S. foreign assistance is extensive but ineffective. Accountability is focused on anticipating how assistance will be used, rather than on how effectively it is and has been used. It can take two-and-a-half years to plan and approve a project, by which time conditions have changed, and plans need to be revised. The burden of excessive Congressional and A.I.D./Washington accountability keeps mission staff at their desks rather than in the field, creates a complex bureaucratic process that prevents flexible programming, and turns attention away from the important task of program evaluation. It leaves both Congress and A.I.D. staff focussing on plans not results.

Military assistance also suffers from accountability problems. Accountability has been divested to various services of the military, resulting in recurring problems in accounting for cash sales and monitoring equipment sold to foreign countries.

* The aid program is spread too thin. Military assistance has followed a recurring pattern in which a number of small programs are proposed, then eliminated or drastically reduced due largely to earmarking after the budget cycle is complete, creating raised expectations and ineffective implementation. A.I.D. has 2000 projects in 90 countries. In addition to programs in developing countries, A.I.D. manages programs in Northern Ireland, Poland, Portugal, Cyprus, Italy, and Oman; it manages American Schools and Hospitals Abroad, and special tasks such as humanitarian aid to the Nicaraguan Contras. With 16 disaster relief operations in October and November of 1988, disaster relief alone is a major responsibility. The wide range of foreign operations undertaken by A.I.D. diverts attention from development objectives. In essence, the aid program tries to achieve too much.

* There is little coordination of U.S. economic, security, and development policies. As a result, many foreign policy decisions, for example, on tariffs and trade, defense cooperation, debt, environmental protection, science and technology, public health, and immigration, do not take developmental and security considerations into account. The Development Coordination Committee (DCC) seldom meets at a high level, and then principally only for ceremonial purposes. The International Development Cooperation Administration (IDCA) exists in name only. Coordination of policy for economic and military assistance is insufficient. At the field level, the rising coincidence of U.S. international economic interests with development goals requires greater program integration and coordination.

* The contribution of non-governmental organizations is important. PVOs (Private Voluntary Organization), universities, cooperatives, research institutions, and other non-governmental organizations have much to contribute to U.S. economic assistance policies and programs. Their expertise, field experience, ability to reach certain target populations, and the diversity of their capabilities and operating modes complement the resources of A.I.D. Some 15% of development assistance and projectized ESF is channeled through PVO's. The research capabilities and developmental and

technical expertise of U.S. universities are valuable resources that need to be utilized to deal effectively with today's development issues. The participation of businesses from both host and donor country in development programs can be effective and mutually beneficial. Effective means are needed to ensure that these organizations can be heard by policy makers.

IV. RECOMMENDATIONS

A. ECONOMIC ASSISTANCE

- 1. REPEAL THE FOREIGN ASSISTANCE ACT OF 1961 AS AMENDED.
ENACT A NEW INTERNATIONAL ECONOMIC COOPERATION ACT OF 1989.**

Changes in the international environment and the position of the United States, the emergence of global challenges to U.S. well-being, domestic budgetary pressures ... and the loss of public and Congressional support for the aid program all demand major changes in foreign aid legislation. U.S. foreign assistance needs a new premise, a new framework, and a new purpose to meet the challenges of today. It is time to start anew.

A fresh start is unlikely if Congress simply revises and adds yet more amendments to an already cluttered act. The current 500 pages of foreign assistance legislation, developed over the past 28 years, are strewn with obsolete, ambiguous and contradictory policies, restrictions and conditions.

For example;

- inconsistency -- There is no consistency in the way the Act deals with other foreign policy concerns which affect foreign assistance, such as human rights, terrorism or narcotics. Procedures vary for different concerns and different regions, as do procedures for Presidential waivers and Congressional reviews of those waivers.

- ambiguous -- Section 531 of the Act provides authority to the President to promote "economic or political stability." However, section 531(e) prohibits the President from using funds for military or paramilitary purposes. It is not clear whether nations receiving support under this section are prevented from using those funds to repay United States loans for purchase of military hardware.

- obsolete -- Section 614(b) authorizes the President to use ESF funds for Germany, including West Berlin. This section may have been relevant before Germany became a major foreign assistance donor.

The numerous inconsistencies have increased with each new foreign assistance bill. The difficult task of bringing some coherence to legislation and creating a targeted and effective aid program, that enjoys wide support, requires a new International Economic Cooperation Act.

- 2. THE NEW INTERNATIONAL ECONOMIC COOPERATION ACT WOULD SPECIFY FOUR MAIN FOREIGN ECONOMIC POLICY OBJECTIVES**

- (i) GROWTH -- encouragement of broad based economic growth.
- (ii) ENVIRONMENTAL SUSTAINABILITY -- improved environmental, natural resource, and agricultural management.

(iii) POVERTY ALLEVIATION -- human resource development aimed at improving the well-being of the poor and their capacity to become productive citizens.

(iv) PLURALISM -- promotion of political, social and economic pluralism.

These four objectives would focus U.S. foreign assistance on four discrete but flexible priorities, which serve the interests of both the United States and recipient countries. They would clarify the purpose of the program. Experience and understanding of the new challenges indicate that these priorities will maximize the benefit to be gained by recipient and donor.

GROWTH: Economic growth and development in other countries serves U.S. interests by promoting political stability as well as expansion of trade and investment opportunities. Growth is necessary to improve the living standards of the poorest and to enable the developing world to progress out of today's debt, environmental and population problems. Growth must be broad-based to reach the poor; narrow, unbalanced growth is politically and economically unstable. Growth must be subject to the efficiencies imposed by open markets. U.S. policy can encourage the creation of more efficient, more participatory, and more open economic systems.

ENVIRONMENTAL SUSTAINABILITY: Global environmental and natural resource problems have become too obvious and too urgent to ignore. In the developing world, deforestation, pollution, and soil erosion ceaselessly diminish the capacity for sustainable agricultural production. Deforestation and desertification are depleting the ozone layer and threatening the entire world with global warming. The rapid depletion of energy resources will affect the availability and price of future energy worldwide. These are pressing problems which will require international cooperation. The U.S. can assist in the development and implementation of improved policies, technologies, and management systems necessary for more efficient and sustainable systems of agriculture and resource management. Environmental concerns should be integrated into every program. Environmental and other policies must be finely tuned to balance the needs of growth with the sustainability of the resource base.

POVERTY ALLEVIATION: Although much progress has been made in reducing the worst conditions of poverty through improved public health, better food production and distribution systems, and expanded literacy and family planning programs, the fact remains that a staggering 2 billion people still live in poverty, increasingly in urban areas. Thirty years of development experience tell us that people can rise from poverty if they are healthy and educated and have the opportunity to participate in the economy. Such investment in human capacity requires careful targeting and long term commitment. It can result in personal well-being, a more productive economy, and a more pluralistic and stable polity. These benefits, along with the additional consequences in terms of better public health, more stable population, and expanded international markets, all promote the

interests of the United States.

PLURALISM: The United States stands for political and economic freedom. U.S. foreign assistance promotes these values both explicitly and implicitly. This can be achieved through many institutional forms. The advancement and protection of these freedoms require responsive local government, and a well-informed and active citizenry. Internationally-oriented American PVOs and citizens' groups in the Third World increasingly are pursuing the expansion of choice and participation to those traditionally least involved. It should be U.S. policy to encourage the growth of both non-governmental capacity and of effective national and local government.

These four objectives are interrelated and mutually reinforcing. In pursuing them the United States can be true to U.S. values and interests, without imposing preconceived solutions on others. The key to progress in meeting these objectives is to recognize that they will require time, flexibility, and a system of problem solving based on genuine cooperation and reciprocity of benefits between nations. Foreign assistance must be coordinated with other policies in pursuing these goals and encouraging others to pursue them.

Identifying these four basic objectives for U.S. foreign economic assistance does not mean that the 33 objectives currently in the Foreign Assistance Act are to be rejected. Many of them are subsumed under these four priorities; for example, biological diversity is one principle of improved environmental policies. Others indicate the preferred modes of operation and manner in which these ultimate objectives are pursued; for example, concern for the role of women in development becomes an integral part of all development programs. A.I.D.'s reporting of program results would include explanations of how biological diversity was affected, and why or why not women participated and benefited.

3. THE NEW ACT WOULD DRAW CLEAR DISTINCTIONS AMONG VARIOUS TYPES OF ECONOMIC ASSISTANCE

The lack of a clear distinction between development assistance and ESF causes a confusion of objectives and responsibilities and makes evaluation more difficult. In keeping with the aim of clarifying the purpose and key objectives of the economic assistance program, the new act would provide a clear distinction between development assistance and ESF. Where currently one type of assistance is used for the purpose of the other, the funds would be transferred into the other account.

ESF would be allocated to countries to support immediate U.S. political, economic, and security interests. After initial allocation decisions are made, ESF should be programmed so as to support the four objectives of economic assistance.

The allocation of development assistance would be justified in terms of the four policy objectives, reflecting the increased importance of these objectives in supporting U.S. national interests.

DA should be made a more flexible instrument.

4. THE ACT WOULD ALLOW MAXIMUM FLEXIBILITY IN DEVELOPING STRATEGIES AND PROGRAMS FOR PURSUING THE FOUR OBJECTIVES

The new act would set down operational and policy parameters for U.S. economic assistance programs and policies. It would avoid most of the conditions, restrictions, directives, and earmarks of the current act.

- Congressional notifications would be required for changes in country levels but not for project changes.
- Reporting requirements would be kept to a minimum.
- Appropriation of DA funds would not be divided into functional accounts.
- Funds would be appropriated on a no-year basis, thereby removing pressure to obligate funds hurriedly at the end of the fiscal year.

The agency would inform the Congress about specific country programs and strategies it proposes, and demonstrate to the satisfaction of the responsible committees why those strategies have been selected.

It is probably unrealistic to expect to eliminate all restrictions, conditions, and directives from the bilateral aid program. However, the present system is unworkable and increasingly irrelevant. If every worthy condition and directive that is proposed is accepted, as in the past, the result is confusion, ambiguity and bureaucratic gridlock. The cumulative impact is a program that simply does not work.

The present system results in a program that focuses on process, on meeting legislative and administrative deadlines and filing forms and reports, not on the substance of activities. Currently, administrators must find a distribution of development assistance funds that fits in with country, functional, and special program earmarks, and still bears some relation to the needs and circumstances of each particular country. ESF is earmarked almost completely on a country basis. Earmarks deny the flexibility needed to respond to changing needs during the fiscal year. They reduce U.S. policy leverage because recipients know that funds will eventually be forthcoming. With extensive earmarking, A.I.D.'s experienced and committed personnel do not have responsibility for the program, and cannot utilize their talent and creativity. In contrast, given today's new challenges, the premium should be on ideas, leverage, and long-term problem-solving. This requires flexibility, better use of talent, and concentration on central, long term, issues.

5. THE ACT WOULD REQUIRE AN ACCOUNTABILITY SYSTEM BASED ON THE MEASUREMENT AND EVALUATION OF PROGRESS TOWARDS THE ACHIEVEMENT OF THE LEGISLATIVE MANDATE

Accountability would be based on careful Congressional oversight and Executive evaluation of the impact and result of U.S. foreign

assistance rather than on compliance with a multitude of restrictions, directives, and earmarks.

The present Congressional and bureaucratic system focuses on how much, where, and how, the executive branch plans to spend economic assistance dollars. Just as the requirements are too extensive to give effective direction to A.I.D, so the reports are too voluminous to be read by Congress. The accountability burden turns attention away from what has and has not been achieved. In spite of 1300 pages of Congressional presentation, over 700 Congressional notifications annually, and innumerable reports, Congress does not know what actual progress is being made towards the solution of serious global problems. Congress must be freed from dealing with near-term operating activities, in order to focus on critical issues of national priority, program balance, and post-appraisal of results.

- There are three elements to a new system of accountability.
- (i) Clear and realistic objectives must be established.
 - (ii) Reporting must be results-oriented and appropriate for assessing policies and programs.
 - (iii) Both Congress and the Executive branch must know who is responsible.

This will require the administering agency to give greater priority to evaluation of projects and programs. In addition to ongoing evaluation by A.I.D. and GAO, a full country review could be undertaken periodically, (perhaps every five years) by a team composed of agency evaluation personnel and other experts from government agencies (such as GAO (General Accounting Office) and OTA (Office of Technology and Assessment)) and from outside government. Such a review would cover all U.S. assistance activities in a country.

Responsibility should be concentrated at the level of the head of the U.S. mission in a country, the head of particular programs, and the agency administrator.

For its part, Congress must engage in more rigorous oversight. The House Foreign Affairs Committee oversight responsibility could be centered in a Foreign Assistance Oversight Subcommittee or an ad hoc group with a strong staff dedicated solely to the task of oversight. The subcommittee or group would be the key point for oversight of foreign assistance programs and policies, and for legislative changes, working closely with subcommittees of the House Foreign Affairs Committee and with other committees that have authorizing and appropriating responsibilities for the foreign assistance program. It would also consult extensively with the executive branch. The Congressional-Executive consultations over the implementation of the Africa Development Fund offer the beginnings of a model of a more collaborative relationship.

6. THE ACT WOULD ESTABLISH A NEW ECONOMIC COOPERATION AGENCY TO ADMINISTER U.S. ECONOMIC COOPERATION PROGRAMS

The most effective way to remove the bureaucratic cobwebs and

take up the new mandate is to create a new entity to allocate and administer economic assistance. The more precise and flexible mandate of the International Economic Cooperation Act requires an appropriate structure -- an Economic Cooperation Agency (ECA), as the successor to A.I.D.

There is no one ideal structure that will resolve the numerous organizational and administrative issues. Various organizational models have been proposed. These should be discussed during committee deliberations and in extensive discussions with the executive branch.

There are, however, key requirements which should guide the design of a new structure:

- (i) operational flexibility and decentralization of responsibility to encourage innovative, responsive programs that seek long term progress on development priorities.
- (ii) authority and flexibility to allocate and implement assistance in order to maximize achievement of the four objectives of economic assistance.
- (iii) credible and strategically focused evaluation systems to assess, analyze, and communicate progress toward the four objectives to the Agency and the Congress.
- (iv) the need to attract talented personnel into the aid program, both as permanent staff and in short-term positions.
- (v) greater opportunities for collaboration in working toward resolution of global problems. For example, technical institutes could be set up, each focusing on a major issue such as resource management, and comprising experts from relevant government and private entities in the U.S. and developing countries. They would deal with global issues, in tandem with the field missions' country-specific strategies. This would bring in the technical capability necessary to problem-solving, and encourage the cooperation and support of individuals and organizations outside the government. They would also support selected long-range research programs.
- (vi) recognition of the important role of PVO's, universities, cooperatives, and other non-governmental organizations in the U.S. economic cooperation program. Officials responsible for economic assistance should have regular and easy access to the expertise and experience of such organizations, and be able to draw on their capabilities in implementing programs.
- (vii) administration of a portion of the U.S. cooperation program through regional foundations such as the Inter-American Foundation and the African Development Foundation, which focus on grassroots community development.

7. THE ACT WILL REQUIRE GREATER COORDINATION

Coordination is required at three levels:

(i) **International Coordination:** U.S. assistance should be coordinated with programs of other international donors. This becomes increasingly important as the internationalization of development problems continues, and as other donors expand their assistance programs. The U.S. share of worldwide economic assistance is large enough to be important to efforts to coordinate international programs. U.S. development experience is a valuable asset for collaboration with newer donor countries, such as Japan and Korea.

(ii) **Policy Coordination:** U.S. assistance should be coordinated with other aspects of U.S. policy. Given the increasing complexity and inter-relation of international problems, coordination of policies on aid, trade, Third World debt, drugs, the environment, international financial stability, and fiscal and monetary policy are essential. None of these issues can be dealt with in isolation.

The most commonly proposed solution is to locate responsibility for coordination in the White House. The various proposals include: a special Presidential Advisor with a small staff; a Deputy National Security Advisor; reestablishment of the Council on International Economic Policy; a Presidential advisor who chairs an International Development Cooperation Council with oversight over all agencies and programs involved in foreign economic cooperation.

Alternatively, coordination could occur at the cabinet level, through a cabinet committee, or by giving one cabinet department overall responsibility. Or, a new foreign economic cooperation administering agency could be given the role. Whatever the new structure, the Administrator of the ECA would be closely involved in coordination.

There have been many failed experiments at coordination. The important issue is not how, but that coordination occur. Success will ultimately depend on the commitment of the Executive branch and the officials involved. The new coordination structure must be formulated jointly by Congress and the Administration, and mesh with the organizational structure of the new Administration and the ECA. The new legislation must identify a clear coordination authority which can be held accountable by the Congress and the President.

(iii) **Field Coordination:** U.S. programs and policies should be coordinated at the field mission level. For example, coordination could be improved between A.I.D. private sector programs, the Foreign Commercial Service, the Trade and Development Program, and the Overseas Private Investment Corp, and between A.I.D. agricultural programs, P.L. 480 assistance, and the work of the agricultural attache.

8. THE ACT WOULD REQUIRE A SIMPLER PROCUREMENT REGIME FOR THE ECONOMIC ASSISTANCE PROGRAM.

U.S. economic assistance programs are covered by federal acquisition regulations. These regulations are designed for agencies which operate in the United States, not overseas. Exemption for particular procurement is possible but only through a time-consuming paperwork process. The cumbersome procurement process discourages some individuals from participating in U.S. development assistance programs and makes it more difficult for A.I.D. to work jointly with other donors and institutions.

A simpler, more flexible system, designed for an agency which operates overseas, would enable a more timely response to existing needs and conditions, thereby increasing the effectiveness of the foreign assistance program.

9. THE ACT WOULD REQUIRE MODES OF OPERATION THAT MAXIMIZE AID EFFECTIVENESS IN TACKLING TODAY'S PROBLEMS

Key principles in increasing the effectiveness of the economic assistance program are:

(i) Focus on global problem-solving -- dealing with problems common to many countries. It is in the primary interests of the United States to focus on easing problems which affect many nations, such as environmental degradation, AIDS, rapid urbanization, arid agricultural production, and barriers to market forces. Therefore, while much foreign assistance would continue to be carried out on a bilateral basis, the program would aim to deal with constraints to the achievement of key objectives. This approach rests on cooperation and reciprocity of benefits, rather than one-way transfers of aid.

(ii) Utilize U.S. comparative advantage. The impact of U.S. assistance is maximized by drawing on those areas in which the United States has most to offer: education and training, research, public and private management expertise, technical assistance, agricultural development and food aid, and private enterprise.

(iii) Emphasize project sustainability. Too often development projects stop the day that foreign donor funding and participation end -- or before. To maximize U.S. impact on development problems, the act would require A.I.D. to focus on program and project sustainability, particularly by seeking the broadest participation appropriate, in both design and implementation. To further encourage sustainable projects, the new organizational structure must provide the necessary degree of flexibility for projects to adapt to local conditions.

(iv) Use economic assistance, both development assistance and ESP, to promote sound economic policies. To ensure that U.S. assistance is used effectively to mutual benefit, the Act would

require that it be programed to promote appropriate economic policies at all levels. Economic assistance should serve as a vehicle for joint policy dialogue, and as a means of improving the technical and administrative capacity of governments to devise and implement suitable policies.

In addition, the act would require that the ability and willingness of the recipient to use assistance efficiently be taken into account in deciding where and how funds should be programmed. Countries willing to adopt necessary policies should be supported. This requires the establishment of specific criteria to measure country performance, as under the Fund for Africa.

U.S. assistance is used wastefully, siphoned off by corruption, or used to support bad and inefficient policies, it cannot achieve the purposes for which it was intended. This is more likely to hinder economic growth and to be economically and politically destabilizing, and therefore be antithetical to U.S. economic and political interests and objectives.

(v) Adapt the foreign assistance program to the debt situation. Success in pursuing the four objectives of U.S. economic assistance depends on the resolution of the debt crisis. The debt burden has stymied economic growth and brought considerable economic and social adjustment and suffering. Continued economic stagnation and adjustment threatens not just economic stability but also political stability, particularly in countries with nascent democratic institutions.

There is no single solution, but foreign assistance can contribute towards easing the problems caused by the debt burden. U.S. assistance should be provided on a grant basis, as has been the case in the last several years. In keeping with this policy, reflows from previous foreign assistance loans should be allowed to be redirected into development activities in the debtor country, rather than returned to the U.S. Treasury. Such use of reflows should be used to reward countries which implement necessary domestic policy reforms.

Authority should also be given for the use of U.S. economic assistance funds to purchase debt at discount, with the local currencies then used for development projects which require local expenditures.

U.S. government officials should be encouraged to work with host country officials, other donors, international organizations, U.S. commercial banks, and with various non-governmental organizations that are seeking innovative mechanisms to reduce the debt burden of developing countries.

9. **THE ACT WOULD AUTHORIZE COOPERATIVE DEVELOPMENT RELATIONSHIPS WITH ADVANCED DEVELOPING COUNTRIES (ADCs)**

Advanced developing countries, such as India, Morocco, Jordan, and Costa Rica, are approaching the point where they may no longer require concessional assistance. Others, such as Taiwan, Korea, Brazil, and Argentina have already "graduated" from the U.S. aid program. However, many have important development problems and their participation is important in solving global problems. For example, deforestation cannot be dealt with without the cooperation of Brazil; the U.S. cannot seek regional cooperation on drugs and immigration without working with Mexico. Continued cooperation with potential aid graduates, such as India and Thailand may lead to breakthroughs in health and agricultural science.

It does not serve U.S. interests to spend 20 to 30 years building up development relationships with a country, and then to suddenly drop them when concessional assistance is no longer required. This means cutting those links just when the other country is most able to contribute to the partnership, and when U.S. benefits from governmental, university, and private sector are increasing.

The Economic Cooperation Agency would be authorized to develop new ways to sustain and nurture those well-developed relationships. This could be done through bilateral commissions, science and technology foundations, or joint working groups focused on key development issues. The development of relations with ADCs is an important part of the shift that the United States must make from "foreign aid" to cooperation with developing countries.

B. MILITARY ASSISTANCE

1. CONSOLIDATE MILITARY ASSISTANCE INTO ONE FUNDING SOURCE.

Consideration of military assistance will be more focused if the Foreign Military Sales (FMS) Financing and the grant Military Assistance Program (MAP) share the same funding source. At present, cash arms sales and FMS financing are contained in the Arms Export Control Act (AECA). The grant MAP program comes under the Foreign Assistance Act.

There is no compelling operational or political need for two separate military assistance accounts, particularly as both are now almost completely grant programs. One funding source would allow clearer analysis of the aid request and the conditions attached to military aid for each country. Putting FMS with MAP would separate sales that use assistance dollars from cash arms sales. Under the merged account, terms, conditionality, and eligibility for credit and grant countries would be clearly established. Standards would be set based on economic conditions and ability to repay. The single account would better enable Congress to separate countries that need grants from those that only need credits.

2. REPLACE THE ARMS EXPORT CONTROL ACT WITH A NEW DEFENSE TRADE AND EXPORT CONTROL ACT

A new Defense Trade and Export Control Act would complement the consolidation of assistance funding. Creation of a new act recognizes that cash arms sales which are consistent with foreign policy and national security objectives should be removed from the political linkages attached to military assistance and should be part of an overall export promotion and control effort. This approach would be more appropriate to expanding trade and defense cooperation activities with our NATO allies and other friendly nations. The new act would remove unnecessary restrictions and simplify the licensing procedures under the International Traffic in Arms Regulations, so as to reduce export delays.

This approach would not take the lid off arms sales. The act would retain all the appropriate arms export control aspects of the AECA, as well as requirements to give prior notification of arms sales to Congress. In addition to the current purpose of restraining arms races, the new act would focus on military objectives, including close cooperation with our allies in arms research, development and production. It would clarify U.S. policy for providing defense equipment to friendly countries consistent with national interests.

3. CLARIFY THE GOALS OF THE MILITARY AID PROGRAM

The military assistance program should meet political and strategic objectives but it should also promote military goals, such as enhanced training and equipment utilization, pre-positioning of

U.S. stocks for use in crises, and joint research and development of defense systems. Military assistance and sales are frequently oversold on political grounds. What is needed is judgements about how military assistance and sales programs fulfill military objectives.

Focusing program goals and Congressional oversight on narrower military objectives would help provide a basis for improved accountability on the uses of military assistance. Clearly the political and foreign policy goals of the military assistance and sales programs cannot and should not be entirely eliminated, but Congressional oversight has often focused on unrealistic political linkages, particularly when the amount of assistance is small, or recipients are attempting to buy arms for cash. A return to traditional oversight of how money is being spent, and whether military objectives are being advanced would increase the effectiveness of the program.

4. IMPROVE ACCOUNTABILITY FOR THE USE OF MILITARY ASSISTANCE

Past experience and current practices suggest that accountability needs to be improved dramatically. The Defense Department is unable to account for hundreds of millions of dollars in cash sales in its multiple service-based accounting systems. There is inadequate tracking of third-country transfers arising out of licensing and co-production agreements. Action is seldom taken even when illicit transfers are discovered. Corruption is endemic in dealing with agents and firms designated by Third World countries to transact arms sales.

Reform of the system should include:

- (i) Establishment of a genuinely centralized accounting system within DOD for military sales. Full accounting of all expenditures requires a system that accesses data from all three accounting systems in the military services and that serves as a authoritative data source for accounting and information on military sales.
- (ii) Greater monitoring of military assistance and sales assets in foreign countries. In recent years, military advisory groups have increasingly focused on providing information on U.S. produced systems and promoting other military objectives, but program monitoring has suffered. In some instances this has resulted in illicit third-country transfers of U.S.-supplied equipment.
- (iii) Establishment of appropriate sanctions for illicit third-country transfers by recipients of military assistance and sales, and participants in weapons co-production agreements. The detection of such transfers requires improved controls, management, and intelligence. Effective sanctions are necessary to deal with violations, as diplomatic protests have often been ineffective. These sanctions should include suspension of co-production agreements or other pending arms sales.

(iv) Prohibition of the use of military assistance funds for direct or indirect offsets, and negotiation of bilateral or multilateral agreements concerning the range of permissible direct and indirect offsets involving military assistance and sales. Trade offsets, a problem for many years, are only likely to increase, given that they are a major reason for many countries' purchase of American-made defense articles. While commercial offsets may in many instances be a fact of life, U.S. government funds should not be used to promote the business interests of one company over that of another.

(v) Tighter controls on the selection and use of private individuals and companies receiving military assistance funds designated for foreign governments. When foreign governments designate their own freight forwarders and purchasing agents for military assistance transactions, more stringent eligibility standards, and fiscal and accounting controls are necessary.

(vi) Requirements that American companies use Federal Acquisition Regulations (FAR) regarding price, profit, quality assurance, and payment, if their commercial arms sales involve FMS credits. Currently, commercial contracts financed with FMS credits are not governed by the FAR, as government to government FMS sales are, and controls over these sales need to be improved.

5. REDUCE, IF NOT ELIMINATE EARMARKING

Currently, 98% of the FMS account and two thirds of the MAP account are earmarked. The inflexibility created by earmarking hampers the program in several ways: first, it limits the ability to meet contingencies and to implement programs smoothly. Secondly, it undermines attempts to influence recipients through military assistance, as they are assured of the level of aid they will receive. Therefore, as a means for Congress to secure some political leverage, it is ultimately self-defeating. Thirdly, the inflexibility created by earmarks, along with general budget pressures, results in the expectations of smaller recipients being raised and then dashed, because their programs are squeezed out by the big earmarks. Removing earmarks would enable more effective Congressional oversight, because Congress could focus on program results rather than relying on earmarks and associated prohibitions, conditions and reporting requirements.

Limiting earmarking requires discussions among legislative and executive branch leadership, to establish an informal understanding that politically inevitable earmarks will go forward, in exchange for holding the line on other earmarks. Along the lines of the bipartisan budget agreement, Congress should meet early on with the new administration to reach a foreign policy leadership agreement to resist earmarking.

6. REPLACE SMALL MILITARY AID PROGRAMS IN INDIVIDUAL COUNTRIES WITH AN UN earmarked REGIONAL CONTINGENCY FUND

Operational requirements in less vital countries could be met from a flexible regional contingency fund. This would create the flexibility necessary to fund specific needs in regions such as Africa or Latin America, while avoiding spreading funds and across many small countries. Small case-by-case requests could be met without establishing a country program. This would be far preferable to the present situation in which small programs are cut altogether due to earmarking for large recipients and overall budget cuts. A contingency fund would provide the Executive branch with flexibility to meet the needs of smaller countries, while still ensuring fiscal discipline through the authorization and appropriation of such contingency funds, and through prior notification to Congress of the use of such funds. The needs of smaller countries could be met without sacrificing fiscal and policy oversight by the Congress.

7. ESTABLISH A SEPARATE BASE RIGHTS ACCOUNT

A base rights line item in the military aid budget could fund existing commitments on a one-time multi-year basis, of say, five years, while making it clear that such military assistance would end after that period. This type of agreement was established with Spain and appears to be satisfactory.

Congress has confronted growing shortfalls in military aid appropriations for base rights countries. A number of base rights agreements in the early 1980s resulted in a doubling and tripling of this aid.

After the five year funding period, the ending of assistance given specifically for base rights could be eased through other forms of non-appropriated assistance, such as a revolving fund using cash sales receipts, the use of the Special Defense Acquisition Funds (SDAF), grants of excess DOD stocks, or increased ESP. Military assistance programs not linked to base rights could be continued.

The United States should also consider establishing a multilateral base rights fund with NATO for bases in Europe, and with Japan for bases in the Philippines. The relationship with NATO should be considered in the light of the larger alliance-wide regional security framework, with base rights access being a legitimate element of burden-sharing.

A separate account with clear funding limits is an important step in the U.S. strategy for securing base rights access. The U.S. must, over time, develop defense relationships that are not based on economic or military assistance, or "rent", but on mutual security concerns.

8. CREATE A SEPARATE LINE ITEM FOR POLICE TRAINING

A separate line item for police training would enable the legislative and executive branches to establish appropriate objectives and guidelines for police training.

Separate funding would segregate military training for police forces from civilian training, leaving the latter to agencies other than DOD and State. Currently, the prohibition on the use of assistance for police training (Section 660 of the Foreign Assistance Act) is accompanied by numerous exceptions. Such an approach is misleading, and hinders effective legislative oversight as to what type of support for police training is appropriate and under what circumstances.

9. ENCOURAGE AID GRADUATION

Military assistance concessional sales and credit programs should permit and encourage graduation to a fully cash sales relationship.

For this to occur, it is essential that a credit component remain in the authorization process, so that countries near the graduation point in economic development can make a gradual transition to cash arms sales. Portugal, Greece, and Turkey are currently approaching this point, and Spain and Korea recently graduated.

In addition, military assistance funds should be used for licensing and co-production agreements, including offshore procurement of low and medium technologies. This would enable recipients to establish a rudimentary defense industrial base, while protecting and controlling more sophisticated technology.

10. EXAMINE ALTERNATIVE FINANCING

The establishment of an alternative system for financing military assistance should be considered, although the evidence of the efficiency of such financing is mixed and the political obstacles are significant. As with the economic assistance program, the likelihood of shrinking funds requires creative uses of alternative financing to stretch available resources.

There are many possible alternatives that can be explored. For example, the prohibition in the Arms Export Control Act on the use of Ex-Im-Bank financing for military sales is outdated and does not appear to be serving any apparent "fiscal watchdog" function. In addition, the use of private credit markets has already begun. The Foreign Assistance appropriations law for fiscal year 1988 authorizes the blending of government and commercial credit to refinance past FMS credit. We should explore this option of blending credit for future FMS financing. Finally, some in the Executive branch have advocated a return to the use of government-guaranteed loans to finance military sales.

11. COORDINATE MILITARY ASSISTANCE WITH OTHER FOREIGN POLICY

Military assistance should be included within the new structure

designed to coordinate foreign policies, mentioned under recommendations on economic assistance. At present, the military assistance program is not adequately coordinated with other aspects of U.S. policy towards recipient countries. U.S. embassies and military advisory groups do not coordinate. The Departments of Defense, State and A.I.D. do not formulate a comprehensive coordinated strategy that integrates economic and military assistance.

Food and Agriculture
Goals, Directions, and Operations for the 1990s
U.S. Agency for International Development

draft, January 23, 1989

Table of Contents

	Page
Executive Summary	i
Introduction	1
LDCs and the U.S.: Mutuality of Interest	2
Goals	4
Directions	7
Operational Areas for Major Agency Investment	8
Resources and Their Allocation.	10
Personnel	12
Working Relationships with U.S. Agriculture and Natural Resources Interest	14
Recommendations	16
General Program and Organization	16
Food Aid	20
Mission and AID/W Operations	21
Personnel	23
Operating Effectiveness	24
Communication with External Groups	25

274

Executive Summary

This statement outlines goals, directions, and priority areas of investment for the Agency's food and agriculture programs and recommended steps for implementation and achievement. Preparation involved Agency and Washington staff, especially Deputy Assistant Administrators and their key bureau staff, developing country professionals and leaders, U.S. industry and interest group leaders, and development specialists and economists from outside the Agency.

Program goals elucidated in a "focus statement" have been utilized by the Agency over the past two years. That statement,

"To increase the income of the poor majority, and expand the availability and consumption of food, while maintaining and enhancing the natural resource base,"

remains valid for the 1990s.

Increased real family income is the Agency's primary goal. Because agriculture creates real income and involves a high proportion of LDC workers, it will continue to receive major Agency attention and investment.

Expanded food availability meets humanitarian needs, enhancing the nutrition and health required for increased human productivity. Increased farm production volume stimulates agribusiness and leads to other industrial and non-industrial growth, creating more employment.

Maintaining and enhancing the natural resource base is essential for sustained food production and income.

Food aid can be an important contributor to income and human capital growth, especially among countries in the early stages of development. It can also relieve pressure on fragile natural resources while technology, institutions, and policies are developed to increase agricultural production without resource degradation.

The Agency's development objectives can be achieved while U. S. economic interests are also served. Food self-reliance (in contrast to production self-sufficiency) in developing countries, along with increased income, provide potential for expansion of U. S. export markets. Agency support to agricultural research worldwide helps preserve genetic material and develop technology that can be helpful to U. S. agriculture. Conservation of natural resources worldwide is a priority of U. S. citizens in general.

In the 1990s, increased income and food consumption through production and availability of basic food crops will continue to be the Agency's focus in many countries. In countries that have advanced, and as other countries advance in income, Agency programs will move toward animal agriculture, aquaculture, and horticulture; food processing, packaging and distribution; consumption and nutrition enhancement; agricultural business; private sector research and technology initiatives; and international trade.

To meet the goals and accommodate the directions outlined above, the Agency will invest talent and money in helping strengthen country policies, institutions, technology, and the private sector.

The statement lists a series of recommendations which would help the Agency achieve the goals and use human and financial resources most efficiently.

Among major Agency-wide and general recommendations are that the Agency balance its strong geographic structure with an equally strong and credible functional (subject matter/product) structure. Specifically, it is recommended that there be a single central unit to coordinate and lead food and agricultural programs.

Among other general recommendations: enhanced coordination of food aid and agricultural program functions in missions, linkage of food for peace regional staff with agriculture and related staff in regional bureaus, placing science and technology units of agriculture, rural development, natural resources and nutrition within a common organizational unit headed by a DAA or Agency Director, continued strong Agency support to international agricultural research centers, and enhanced linkage of private voluntary organization food and agriculture work with food and agriculture offices in missions and AID/W.

It is urged that food aid be given special recognition as an Agency resource, that the appropriate food aid volume for development be newly determined, that the administrator lead the Development Coordinating Committee in refining responsibilities and functions of the Food Aid Subcommittee and working groups, and that simplification of food aid legislation be sought.

In mission and AID/W operations, recommendations include enhanced communication and coordination with other donors and lending agencies, enhanced effort in the private sector, more continuity and persistence toward objectives in mission programs and projects, more communication with contractors, use of a U.S. industry or extension-type person on project review teams, and, partly because of rapid turnover of mission staff, use of panels of country specialists to assist with country program guidance and continuity.

The statement referenced a recent ANE study of Agency food and agriculture personnel, which reported a significant shortage of upper middle level technical persons and other problems. These were partially addressed by the recommendation for a single food and agriculture unit, such a unit to provide both a management and personnel advancement cone. In addition, recommendations are included for review of promotion criteria and guidelines, backstop (personnel category) consolidation, and recruitment.

A sharp increase in travel funds for technical staff was recommended because of the consistent strong feeling by technical staff that they just aren't able to get their job done in backstopping and supporting field programs and staff with current travel budgets. This recommended increase is not predicated on increased appropriations; fund shifts, even within the food and agriculture area, can be considered.

Necessity of computer, phone, and telefax linkages to all Agency offices and personnel, plus support staff and copying facilities, are mentioned.

Though earlier recommendations address some aspects of communication with U.S. interest groups, other recommendations include to designating a staff member to link with major groups, continued allocation of Biden-Pell development education funds to natural resources and agricultural audiences, publication of fact sheets to document project impacts, and speeches to and meetings with interest groups by Agency leaders and staff.

Food and Agriculture
Goals, Directions, and Operations for the 1990s
U.S. Agency for International Development

This statement responds to charges by Administrator Alan Woods to outline a "single, fully coordinated set of policies and programmatic directions" in food and agriculture, steps for developing a strong working relationship with the U.S. agribusiness community and with groups that are concerned with international food issues, and, once programmatic directions were outlined, implementation steps the Agency should take, especially in food aid/agricultural program linkages and in science and technology/field program linkages.

The Agency handles food and agriculture development programs in about 70 Third World countries (usually referred to as Less-Developed Countries, LDCs).

Introduction

The Agency's central mission is to carry out legislative provisions for LDC development, to help LDCs achieve broad-based, sustainable economic growth and self reliance, to raise household income, and improve the human condition --- the nutrition, health, education, and physical and mental productivity of men, women and children. The Agency thereby contributes to world stability and advances U.S. foreign policy. U.S. citizen concern for human welfare, for poverty alleviation, for free world trade, and for the world's environment and natural resources are foundations for this central mission.

The food and agriculture program is critical to fulfilling that mission. And there is urgency --- rapidly increasing population pressure on fragile natural resources, worldwide, but especially in Africa --- during a time when U.S. budget resources are limited.

The statement is based on the Agency's experience in helping countries develop, U.S. budget realities, and the principle that U.S. investments in LDCs should be based on mutual interests.

Both direct and indirect input has been provided by Agency mission and Washington staff, especially DAAs and key bureau staff they chose, respected economists, development

professionals inside and outside the Agency, LDC professionals and leaders, and U.S. industry and interest group leaders.

This statement is consistent with existing Agency policy and strategy documents. For food and agriculture programs, it outlines Agency goals, the preference for food self-reliance over self-sufficiency, where investment pays off, the directions programs should move, and what the Agency needs to do to move in the needed direction and to have most positive development impact.

LDCs and the U.S.: Mutual Interests

Self-sufficiency in food production for LDCs is not in the maximum economic interest of most LDCs. Nor is it in the interest of the U.S.

Food self-reliance for LDCs --- food security achieved from production and/or imports, the ratio depending on comparative advantage --- is in the economic interest of both LDCs and the U.S.

Maintenance and enhancement of the world's environment and the natural resource base are in the interest of both LDCs and the U.S.

Where significant economic growth has occurred in LDCs, agricultural development has generally been the key first step. In many countries, food aid has contributed to the process, providing calories and nutrients for human survival and productivity until and while agricultural development occurs.

Where significant economic growth has occurred in LDCs, demand for food --- more and higher quality --- has increased sharply.

Fifty to 80 percent of the workers in most LDCs are farmers. When their productivity goes up, the total country economy benefits. Caloric and critical nutrient intake go up and both physical and mental well-being and productivity are enhanced.

Farmers are generally the largest sector of employment; increased productivity here has most impact on the total country economy.

When the farm family produces extra food, it is sold or bartered to obtain both inputs and consumer goods, and thereby generates employment. That food enhances village and urban nutrition; human productivity there is increased. Both the nutritional and economic impacts spread, to the towns and cities, and stimulate the growth and productivity of agribusiness, processing, manufacturing, and services.

Such agriculturally led development commonly results in 3 to 7 percent annual growth in GNP and consumer demand in advancing LDCs. Rarely though, does LDC food production grow more than 2.5 percent per year. Continued population and family income growth in such advancing LDCs usually combine to demand more food than their agricultural systems can provide.

That is why LDCs are the growth market for U.S. agriculture! And more growth potential lies ahead.

The U.S. enjoys a strong reputation in food and agriculture. Productive soil, temperate climate, a good research and education system, infrastructure, and strong private enterprise have made the U.S. agriculture system, as a whole, the envy of the world. The Agency and its predecessors have effectively used some of this system's output, especially its capable men and women, universities and food surpluses to help the LDCs.

In food and agriculture development efforts, the Agency has had positive impact. The food calories and nutrients, plus the genetic materials, technology, training, credit systems, design of infrastructure, and policy support, have helped many LDCs achieve economic growth. Real family incomes have gone up.

In short, in food and agriculture as a whole, the U.S. enjoys a comparative advantage. It has a reservoir of talent and experience that LDCs need.

This mutuality of interest, the nutritional needs and food demand growth potential of the LDCs matched with the market growth needs and production capacity of U.S. agriculture dictate that U.S. efforts to achieve economic growth in LDCs place a high priority on food and agriculture programs and resultant U.S. food and agriculture exports.

There is a second form of mutual interest in the agriculture arena --- the two-way movement of genetic material and technology. In the early years of the Agency's agricultural development, emphasis was on movement and adaptation of U.S. technology and genetic materials to the LDCs.

In more recent years, with recognition of the narrow genetic base of many U.S. crops and the diversity of germ plasm in LDCs, many of them the original home of U.S.-grown crops, increased attention has focused on preserving that diverse material and its availability to U.S. agriculture.

Also, the growing agricultural research capacity around the world - - - 15 or more international agricultural research centers, national agricultural research systems in both the developed and advancing developing countries, and the growing number of intercountry commodity or topic research networks - suggest the U.S. is no longer the uncontested leader or

self-sufficient in agricultural technology. U.S. agriculture must have world-wide linkages to that technology; the Agency's programs can help foster those linkages.

Intensity of world competition in agriculture and dependence of U.S. agriculture on exports make it exceedingly important that U.S. agriculture have access to that diverse genetic material and technology, wherever it may exist or be developed.

There is mutual U.S. and LDC interest in the environment and natural resources. Rapidly expanding populations in the LDCs put intense pressure on the natural resources, in many instances, fragile resources. Intensive cropping and grazing may leave soil denuded much of the year, allowing soil erosion and resultant siltation of streams and reservoirs. Demand for fuelwood has dissipated timber resources.

All the world's residents benefit from maintenance of the natural resources, the diversity of the genetic base, and a clean and healthful environment.

The U.S. also enjoys a comparative advantage in technology and management capability for the natural resources. Its research and educational institutions, its educated and experienced men and women, and its management systems are an envies of the world.

This mutuality of interest - vast needs of LDCs and necessity of sustainable world environment match well the U.S. environmental interests and capacities.

Goals

During the past two years, a "focus statement" for the Agency's ARDN (Agriculture Rural Development and Nutrition) program was devised and has helped guide program development. That brief statement expresses the goals of the Agency's Food and Agriculture Program:

To increase the income of the poor majority,

And expand the availability and consumption of food,

While maintaining and enhancing the natural resource base.

Every program or project in the food and agriculture area is expected to have positive, direct or indirect impact for one or more (usually two or three) of the goals; negative for none.

These goals are central to assessing program success. With some projects and programs, impacts are short-term, direct, and traceable. Where demonstrable impact requires a long time, and this is common in development effort, progress indicators that are credibly related to the goals should be assessed.

Increasing income of the poor majority. Because LDC economic growth is essential in order to finance sustained human progress, and because income is the major determinant of food consumption among low-income people, increased real family income is the primary Agency goal.

The increased family income sought (real income to the households) includes both cash and non-cash, farm and non-farm, rural and urban. Though there is variance among LDCs in family income levels, all need higher family incomes to achieve the GNP that will provide the level and quality of goods and services people seek. At all income levels, income is the major determinant of human choices.

Emphasis is placed on increasing income of the poor majority because it is at the lower family income levels that increasing income has most beneficial impact on human welfare and food consumption. Where per capita income is \$50 to \$400, 50 to 60 cents of each dollar increase in income is usually spent for food. Increased income enhances food security for both the family and the country.

Food aid, whether provided in a school feeding program or maternal/child clinic to enhance nutrition, or used as payment for work, is also an income source. It frees money that can be used for seed, fertilizer, school books, or other items. It also builds human capital, through better health and education, contributing to later income growth.

Agriculture creates real income. It converts sunlight, human labor and the elements to consumable or salable commodities. Strengthening an agriculture system increases real income.

Income and the resultant demand generate employment. Employment generates income. Family income is both a component and a consequence of country economic growth.

Export income is also important to a country. Commodities or products for which a country enjoys competitive advantage can be exported. Exports generate foreign exchange, which finances imports that people want and need, contributing to that self-reliance every country seeks.

Expand Food Availability and Consumption. When caloric intake goes from 1200 per day toward 1500 or 2000 and the diet provides adequate levels of quality protein, iron, Vitamin A and other nutrients, the health, physical productivity, and mental productivity of men, women and children increase.

Food aid to low-income populations, government policies that stimulate and reward food production, agricultural research and education, efforts to preserve soil and water resources, and investments in roads to move both food and production inputs, all help.

Especially as incomes in developing countries increase, nutritional quality, food processing, and other consumption-enhancing technologies and industries warrant attention.

Whereas Vitamin A administration in certain geographic areas provides a temporary cure for night blindness, prevention of night blindness and the more serious consequences of prolonged Vitamin A deficiency will occur only when education, tradition, and vegetable supplies insure diets that are adequate in Vitamin A.

Absolute food self-sufficiency for LDCs is not a U.S. objective. Most countries' comparative advantages do not perfectly parallel their food demands. A country's economic status and progress are usually better served by exporting items for which it has a comparative advantage and importing those where it does not. That helps a country achieve self-reliance in food and other goods.

Food self-sufficiency may be an objective expressed by an LDC country leader. In countries with a history of food shortage, that objective attracts much political support. But U.S. objectives emphasize food self-reliance --- assuring food security by utilizing both in-country production and international trade.

These first two goals point to opportunity for long-term increases in exports of U.S. agricultural commodities.

Maintain and Enhance the Natural Resource Base. That part of the environment that is the foundation for sustainable agriculture -- the soil, water, plant and animal species, essential minerals and other resources -- are under intense population pressure in most LDCs. Food aid can diminish that pressure, at least until technology, training, credit, genetic materials or other advances allow increased production and good policies to stimulate production and trade. Those policies and technologies can and must help preserve topsoil, soil nutrients and structure, rangeland, coastal water and marine resources, and forest land; and keep the water, streams, estuaries and lakes free from adulterants.

Effects on the climate and on the diversity of genetic materials must be positive or neutral, not negative, in both the short-run and the long-run.

The resource base can sometimes be enhanced. Imported phosphorus can be added to the soil; organic matter can be increased by alley cropping or minimum tillage and crop rotation. Fragile soils can be released from food grain production and returned to grass or trees in those geographic areas where technology allows meeting food needs by more intensive production without degradation on the better soils.

Directions

Countries are advancing. Many LDCs have made development progress and will make more.

Continued Agency effort toward increased production of basic food crops is still critical in many countries, but in others much progress has been made, in technology implementation, production systems, and research capability.

Technologies that will contribute most to increasing income and jobs when daily caloric intake is 2500 and per capita income is \$800 (technologies for animal protein production, food processing, packaging, and input agribusiness) will likely be different from those needed most when caloric intake was 1200 and income was \$65 (technologies for rice, root crops or wheat production).

Institutions whose strengthening will most impact income or other goals may be different as countries advance -- perhaps agribusiness organizations, market news and commercial banks, paralleling earlier efforts to strengthen farmer cooperatives or intermediate credit institutions for small farmers. Perhaps a strengthened vegetable or poultry research unit is needed to complement earlier food and feed grain research.

In some advanced LDCs, revised export/import policies may now have most effect on increasing GNP, after farm price policy changes have stimulated production.

In some developing countries (South Korea, Indonesia, Thailand, and Pakistan, for example), there has been real growth in family incomes, per capita food consumption has increased, diets are more diversified, and people now seek and can afford higher quality, more nutritious and increased quantities of processed foods. These food industries mean more employment. Consistent quality of processed food is necessary to attract foreign sales.

There are more opportunities for export and trade. That also can mean more jobs.

To continually have most impact toward the goals, Agency food and agriculture programs must move in the direction of LDC country advancement. Programs should move in these directions:

Toward sustainable agriculture
in all settings,

Toward animal agriculture, aquaculture and horticulture
as consumer incomes and demand rise,

- Toward food processing, packaging and distribution as urbanization proceeds,
- Toward consumption and nutrition enhancement as food supply becomes less of a limiting factor,
- Toward agricultural businesses as specialization increases in the agricultural sector,
- Toward private sector research and technology initiatives as incentives and capacity appear, and
- Toward international trade as comparative advantages become evident.

The Agency's food and agriculture programs must move as the greater opportunity for impact moves in each country. To contribute most toward the goals of income, availability and consumption of food, and status of the natural resource base, talent needed within the Agency will shift.

The directions outlined above do not automatically call for stopping or diminishing other Agency effort in a region or sub-region, or a country. And, unfortunately, some countries are not advancing in income and food availability.

But as development proceeds in each advancing LDC, the Agency must direct its food and agriculture efforts to help the LDCs take the next step (increased production of animal protein, development of agribusinesses and food processing, for example), while that country assumes major responsibility for solidifying achievements in such areas as basic food crop production.

Critical in this issue is timing. The time to shift mission programs in each country or to close out major programs and shift resources to other countries, depends on many factors and the responsibility to assess these factors rests on both mission and AID/W staff, as well as host-country leaders.

Operational Areas for Major Agency Investment

Agency experience, LDC needs, and U.S. interests point toward four operational areas where there have been and where there will be most positive impact toward the three goals of income, food availability and consumption, and status of the national resource base.

Investments in these areas, as countries advance, must be increasingly in the directions outlined in the previous section.

24

The four areas are:

Country policies,
that stimulate economic broad-based growth, food
consumption, and maintenance of natural resources.

Institutions,
that lead, educate and support,

Technology,
both development and transfer to users,

The private sector,
where creativity and motivation yield most economic
progress.

Note that in discussions below for each of the areas,
investments in people are emphasized. It is largely through
advancing human capacity -- nutrition, health, knowledge ---
that countries advance. The United States has a strong
comparative advantage in education and training.

Country policies that stimulate growth. The correct price,
taxation or investment policies stimulate production, private
investment, trade, food consumption, and preservation and
prudent use of timber and other natural resources.

The Agency emphasizes graduate and continuing education in
policy concepts and principles, studies that identify needed
policy change, and dialogue and negotiation with food aid as an
incentive for policy change (coordinated with policy efforts of
the World Bank and other lenders).

Policy change is not easy, and there are risks, but the right
policies have positive ripple impact on the total development
process.

Institutions. This includes government units for data
gathering, policy making, budgeting, market reporting, building
and maintaining roads; farm-level and market level
institutions, indigenous PVOs, and industry and business
organizations; and education and research institutions that a
country can sustain. It includes graduate and continuing
education to enhance the knowledge, skills and productivity of
people who staff these institutions. Benefit is long-term,
perpetuating, and sustainable.

Technology development and transfer. The research and
education institutions mentioned above are central, but this

also includes identifying and accessing technology that is available globally. It includes networking with international centers and other countries' research and education institutions, developing the tradition of investing in technology, rewarding scientists, and developing technology transfer systems that fit the country and its needs.

The Private Sector. Beyond government policies that stimulate growth, private sector credit, contracting, marketing, management and standards of performance can all be strengthened in most LDCs. In many LDCs, government is considered the patron and provider; parastatals, that respond less to market signals, abound. Yet, creativity and motivation reside in people, and the private sector most effectively lets people contribute most to economic growth.

Joint and cooperative efforts with the U.S. Trade and Development Program, the Overseas Private Investment Corporation, and both LDC and U.S. private sector entities must be pursued.

Resources and Their Allocation

Whereas the U.S. invested about 2.5 percent of its GNP during the Marshall Plan years to help economic reconstruction and growth of Western Europe, only about 0.25 percent of U.S. GNP is invested today to help achieve economic growth of LDCs. Reconstruction of Western Europe was then deemed vital to the U.S.' economic future. Today, broad based economic growth of LDCs is vital to the U.S. future.

Increased U.S. investments for LDC development, especially in the food and agriculture sector, are clearly warranted to best serve both U.S. and LDC interests.

It is ironic that U.S. investments that can help develop trading partners in the world's most populous regions with the most consumption growth potential have been declining at a time when the U.S. is suffering prolonged and severe negative trade balance, our traditional agricultural export markets are mature, and U.S. agricultural production and export capacity remain awesome.

There will always be a limit, however, to appropriated dollars, local currency, and food aid as spendable development resources. Such limits dictate focusing Agency food and agriculture effort as outlined on previous pages.

The Agency will leave to multilateral lending agencies, because of their larger resources, the major role in capital investments in infrastructure, such as railroads, major road systems, major processing and manufacturing facilities, and

major irrigation systems. The agency will contribute to policy, management, and related issues where appropriate. It will defer to the private sector in those enterprises where potential reward adequately stimulates investment, such as intensive poultry and swine enterprises in some countries, but it will provide support to these sectors through policy, institutions, and other means. It will depend on other bilateral and multilateral donors for those endeavors for which they may have comparative advantage and available resources.

The Agency will assist infrastructure development in specific ways, such as supporting government investment policies, education and training, and in food for work programs.

Food aid deserves special recognition as a resource. Though there is often high cost to its use --- ocean transport and moving it in-country to target populations, inventory control and auditing its use --- some development experts point to instances where food has especially significant development impact. A Food-for-work project may improve family nutrition, serve as income transfer (money not spent for food can be used for seeds or school books) and build roads or plant trees.

In addition to insuring that family nutrition goes up, it may provide a family labor market (building the road or planting the trees) that would not otherwise exist. Better to achieve a road that will serve community trade and culture than to give the food and have no road.

Food aid can be a disincentive to production. But its use has generally been and should be directed to programs and circumstances where it is not. Research by the International Food Policy Research Institute suggests many circumstances, in fact, where food aid can be sharply increased without disincentive effect.

Food aid can be also be used as a crutch by a receiving government that has not provided adequate policy or financial investment in agriculture.

Dependability and consistency in resources, in both dollars and food aid, are also important. Development is a fragile process; continuity is critical. Each development step builds on the previous step. Interruption --- of either dollars or food aid --- is costly, to both the process and to the LDC leaders and their people. At all levels, confidence that the next step can be taken adds motivation to taking the first step, whether it is building an experiment station, a road, or a government policy. Multi-year food aid agreements (subject, of course, to appropriations and food availability) can enhance that confidence, at least paralleling the confidence that exists in the case of Development Assistance or Economic Support Funds.

Resources also include contractors and grantees --- universities, private voluntary organizations, cooperatives, corporations, associations, and others --- which help the Agency get its job done.

Rapid urbanization in LDCs prompts the question if Agency resources now assigned to the agricultural sector (including rural development, nutrition and natural resources) should not be shifted to the needs of the masses of people in large urban centers, such as health, water, sewers, streets, and education. Large needs certainly exist, but moving resources from the agricultural sector is strongly advised against.

The overriding purpose is development. Investments in urban centers tend to be largely consumptive, with more humanitarian and less development impact. Investments in the agricultural sector focus on the starter engine for economic growth --- food production and availability, the input, processing and support industries, policies that stimulate development and infrastructure that supports development. Some of the money and food is spent, of course, in market towns and urban centers (input and processing ~~and~~ business, credit institutions, policy setting, research and educational institutions, and food aid.)

Another issue is relative allocations to competing countries. It is clear that some countries have less development promise and that in others a given investment will likely yield more in income growth, growth in food consumption, benefit to the natural resources, and advancement in international trading status. Country allocations should be heavily influenced by these factors.

Resource limits dictate that the Agency organize and do business in a way that makes most effective use of those resources and the talents -- well equipped men and women they provide.

There is another very important personnel issue. The perception is strongly held, both internally and externally, that there is far too much dependence by the Agency on external contractors for expertise, gathering and collating data for management, designing strategies, and recommending priorities.

Either the expertise is lacking, is too busy with process, or doesn't have the confidence, continuity, and management structure to effectively carry out these tasks.

Personnel

An Agency-wide analysis of food and agriculture personnel, financed by the ANE bureau and covering about 300 agriculture, natural resources, rural development and food for peace backstops (about 265 FS, 25 GS and 10 AD or IPA), reviewed

their training, experience, promotion rate and other key factors. Among significant findings:

1. There is an experience gap in the upper mid-level ranks. Sixty-nine percent of agriculture officers, for example, have 10 or fewer years of Agency experience; 25 percent can or will retire in the next five years.
2. The proportion of these four backstops (professional categories) to total Agency professionals hasn't changed much during the 1980s.
3. Recruitment has been driven by replacement of those departing rather than by future needs.
4. Though promotion rates of agricultural officers below the senior foreign service level are comparable to those for other categories, promotion of these and other technical specialists into the senior foreign service has been at a lower rate. Beyond that, the perception is that management responsibilities held by agricultural officers, especially in larger missions, "are not given the proper amount of weight when assessed for impact against mission colleagues in other career fields, especially program and project development."
5. The report suggests that agricultural officers may be "viewed as stereotypes with specialized backgrounds and narrow focus" and this "could impact on the assessment -- in the competitive promotion process."

It is relevant to note that agriculture and related staff, and the handling of agriculture and related matters --- policy, technology, food for peace, project review, etc. -- are dispersed through the Agency, and that Backstop 10, 14 and 30 (agriculture, rural development and natural resources) personnel are concentrated in TR (DR in LAC) and S&T and 15 (food for peace) in FVA. It is also noted that very few are in a position of office director or above, that five of the last seven persons named to the top related non-political-appointment positions (Agency Director for Food and Agriculture, Human Resources, and Energy/Natural Resources) were not promotions from within. Though three members of the Food and Agriculture Task Force, largely DAAs chosen because of their senior positions and broad responsibilities in the Agency, have had intensive experiences with food for peace, none of the members have come from any of the related subject matter backstops.

Because there is no Agency-wide organizational focus for food and agriculture, there is no visible advancement cone that readily accepts and utilizes the combination of management skills and sector perspective that develops in capable professionals.

29

The report mentioned above noted that "without the recognition of critical management accomplishments and/or training to broaden their skill base, specialists will continue to move to generalist areas in their quest for promotions and greater recognition and rewards."

Career advancement potential and willingness to stay with the Agency certainly affect the quality, maturity and seniority of professionals.

Another issue here is the perspective brought to Agency decisions and, therefore, the factors that may be considered in decisions. Perspective can be limited by the predominance of subject matter disciplines or orientation among senior Agency staff and decision-makers.

There may be a parallel in the U.S. private sector. In the 1960s, management experts noted MBAs and generalists helped companies succeed. More were needed in private industry to focus on long-term financial and management strategy, weigh competitive investment opportunities, and take tax and other laws into account to maximize return on investment. During the 70s, MBAs had a seller's market.

Today, management experts say the best run companies generally have people in the top spots who know their products, who have come out of sales or technology. Perhaps the pendulum swung too far.

These two issues --- balance and breadth of input to management decisions and perceived opportunity of technical people to impact decisions and to be promoted are critical to personnel strength in the Agency.

Working Relationships with U.S. Agriculture and Natural Resources Interests

To best advance the mutual interests of the U.S. and LDCs, the Agency must have an open and constructive relationship with U.S. interest groups. This is especially important in the case of U.S. agriculture, because food and agriculture are so critical to LDC development, and because U.S. agriculture sorely needs expanded export markets.

A parallel need exists in relationships with U.S. environmental and natural resources interests. U.S. citizens have a high level of sensitivity and concern for the world's environment and stability of the natural resources. They recognize the fragility of the natural resources, especially in most LDCs, and the intense population pressure on these resources.

They are willing to invest time, attention and money to help insure that development efforts foster sustained development, prudently using the natural resources for the current generation, but also preserving and enhancing them for use by succeeding generations.

It is appropriate to review some of the interests of U.S. agriculture and how they mesh with Agency interests and goals.

Grain and soybean producers and handlers want larger export volume in the near term, then in the long term.

Livestock and poultry groups want to export breeding stock semen, embryos, or day-old chicks.

Processors and baggers want a high proportion of exports to be "value-added."

The Agency cannot, of course, fully rationalize differing interests and goals of various groups.

Significant is the fact that individual commodity groups are more concerned about their commodity -- their share of food aid and specific LDC competition with their commodity -- whereas the aggregate agricultural community would be more concerned about the total agricultural export volume. The aggregate community should also show relatively more interest in the long-term volume.

In addition to goals of increased income and consumption, and status of the natural resource base, the Agency's interests are more long-term, with clear emphasis on sustainability.

The interests are generally mutual, but the mutuality is not always apparent. Financial stress in U.S. agriculture and some individual commodity anecdotes in the early 80s suggested sharply conflicting interests (Appendix).

Even specific, apparent conflicts are usually not complete or universal. For example, food processors' interests in "value-added" conflicts with the general Agency objective to move most calories at lowest cost -- raw grain. But many programs, such as for schools or maternal/child health clinics, prescribe cereal/dried skim milk blends, and reports of nutrient deficiencies appearing among long-time residents of refugee camps dictate attention to fortifying emergency rations.

Because agricultural commodity group support for food aid is a good base for expanded interest in and support to all development programs, it is important that regard for the Agency's management of food aid programs by these groups be high. FVA has worked hard to insure a stronger role by the regional bureaus, that proposals be complete and well documented, that most proposals be presented and approved well before the beginning of the fiscal year and to maintain good communication with commodity groups and contractors.

Recommendations

Two premises are self evident: 1) The Agency's structure, staffing, procedures and behavior should serve its mission and help achieve its goals. 2) Staff satisfaction and morale are highest when that occurs.

Recommendations pertain to those items where it is perceived that improvements are needed and changes can be implemented.

General Program and Organization

It is recommended that:

1. The Food and Agriculture goals, directions, and operational areas of investment as outlined in this document be articulated in both internal and external documents, used as a basis for orientation and training of staff, and used as guidance in program design, implementation and evaluation.
2. The Agency establish a single, central unit for food and agriculture, to provide coordinated leadership and support focus for the sector and also a personnel advancement cone for professionals.

The Unit should have sufficient budget for food and agriculture functions of: a) policy, planning and strategy, b) liaison and coordination with other development donors and lenders, including goals, directions, operational areas for investment and food aid, c) project classification and data bank, d) science and technical support projects, e) liaison with International Agricultural Research Centers, f) liaison with U.S. agricultural and natural resource interest groups, g) liaison with BIFAD and with nutrition, food, agriculture, and natural resources units of universities, h) liaison with USDA and the DCC subcommittee on food aid, i) coordination of Agency involvement in the Agricultural Trade and Development Mission program (ATDM), j) support to any inter-bureau food and agriculture sector

(10)

groups or councils, k) liaison with the personnel office and regional bureaus to achieve maximum education and experience for technical staff, l) support to private enterprise functions as well as efforts of the Trade and Development Program and the Overseas Private Investment Corporation (OPIC).

The recommendation includes the provision that appropriate technical staff for the geographic management function be budgeted and administered, as is now the case, in regional bureaus, but that they also be considered "members of the staff" or "courtesy staff members" of the central unit for the purpose of insuring full weight of input to and coordination of the Agency-wide subject matter functions. Regional bureaus and missions should retain budgets and responsibility for in-country projects, regional consulting support and buy-ins to central support projects.

This structure may accommodate the functions now performed by related sector councils. Should continuation of sector councils be deemed appropriate, there should be a single council with membership assuring representation and communication among both bureaus and disciplines, including nutrition. Recognizing that interbureau attention to individual subject areas is needed, such as the natural resources, nutrition, or other, special or ad hoc groups can and should be formed as needed to review projects or coordinate activities.

This recommendation, in addition to rationale implied by functions outlined above, is based on two principles for an organization with responsibility for delivering either services or products over a wide geographic area: 1) A strong geographic management structure is essential to accommodate the unique needs of each target area; 2) A strong subject matter or product oriented management structure is essential to provide leadership in service or product development, research, quality control, and supporting the service or product in the field. It also must relate the service or product to central management, cooperators, funders, and the public.

The Agency has a strong geographic structure; it does not have a strong subject matter or product (food and agriculture program) structure.

3. The Agency bring personnel at all decision-making and budget allocation levels to the point that they fully recognize and consider food aid a development resource paralleling DA or ESF in value. This calls for equivalent coverage in budget planning documents, abandoning the current tendency to use food aid as a "fill in" to replace

294

shortages of DA or ESF, rewarding Agency officers who excel, and providing program management staff in accord with the dollar volume and physical volume of food aid. On a relative basis within the Agency, the food aid function is now understaffed.

4. The Agency identify, in cooperation with USDA, those LDCs with highest odds and potential for following the 23 advancing LDCs that increased imports of agricultural commodities in the 1970s, and identify priority areas for Agency effort --- both food aid and agricultural development programs --- in those identified countries. This is an important issue for the regional bureaus, mission directors and ADOs, and for the outside program panel mentioned in Number 19.

Because progress in those identified countries will certainly involve increased agricultural production and efficiency, the Agency should work with USDA, other research entities, and U.S. industry groups to assess that production potential -- acreage of good soil water and other resources -- relative to consumption potential, and the nature and degree of competition with and benefit to U.S. agriculture that might be anticipated.

5. The Agency continue constructive and productive participation in and follow-through to the agricultural trade and development missions handled in cooperation with USDA and State.
6. In missions, those food aid functions that relate to agriculture and rural development be either consolidated with agriculture and rural development in a single office, perhaps identified as Food and Agriculture, or that there be specific provisions for mutual involvement by food aid, agriculture, nutrition, and natural resources staff in planning development use of food aid, for coordination of related programs and policy efforts, and for utilization of generated local currency.
7. In AID/W, the Food for Peace regional divisions be linked in some way with the agricultural, nutrition, rural development and natural resources divisions of each regional bureau, perhaps incorporated in a Food and Agriculture office in the regional bureaus. This could help simplify and make consistent mission communication with

995

AID/W and would help provide for parallel handling of the development features of food aid projects and those financed by DA or ESF. The budget responsibilities of a regional bureau DP office are recognized, and these would remain with DP, as is true for DA and ESF.

8. Within the science and technology area, whether or not Recommendation 2 is implemented, agriculture, rural development, nutrition and natural resources should be part of a single organizational unit, with appropriate sub-units. This single unit could be headed by a DAA or Agency Director. This would ease communication with regional bureaus and missions, diminish risk of functional or project overlap, and reduce administrative layers.
9. The significant work of private voluntary organizations as implementors of U.S. food aid programs and managers of important agricultural development programs be linked by the Agency with the food and agriculture offices of the missions and AID/W. The structure of this linkage should be developed.
10. The Agency utilize some existing industry group or groups, such as the Agricultural Policy Advisory Committee established by Congress to advise USTR and USDA on formulation of agricultural trade policy or groups that may form for other purposes, as two-way communication links between the Agency and agricultural leaders.

The Agency should similarly utilize existing environmental and natural resources interest groups as two-way communication links between the Agency and interest group leaders.

Through such groups the Agency can receive input to make programs most effective and can inform leaders about goals, directions and impacts.

11. The international agricultural research centers receive continued strong Agency support. These centers are world-wide and multilaterally financed, relatively protected from external pressures that would dilute or divert resources, and sufficiently focused to allow substantive and continuing contribution to LDC needs.

Though there is still world-wide need for more calories, hence continued emphasis on and investment in basic food crops research, there should be increased investments in such centers as ISNAR (to strengthen LDC research and extension institutions) and AVRDC (vegetable research) to help accommodate the needs of advancing LDCs and the food and agriculture program directions listed earlier.

246

The Agency should more fully utilize scientific liaisons and judgements from regional bureaus and missions in its input to Center priorities and program directions. To insure that Agency staff are continually in tune with this system, Agency liaisons to the Centers should provide appropriate mission and AID/W staff timely information on U.S. investments in the Center programs and Center priorities, accomplishments, and program changes. Agency liaisons to the centers should also encourage Center staff to communicate and work closely with in-country Agency staff wherever possible.

Food Aid

It is recommended that:

12. The Agency determine the appropriate volume of food aid that should be sought for economic development (and emergency/disaster) purposes, consistent with development principles and experience, and which can be realistically administered under current law and policies. It should also determine what changes in U.S. laws, policies, or staffing that would be needed to accommodate such use, with increased relative emphasis on achieving and measuring impact.

This recommendation in no way contradicts, and in fact supports, the important market development and other functions of food aid.

13. The Agency Administrator meet at an early opportunity with the Secretary of Agriculture and counterpart members of the Development Coordinating Committee, and that the Committee charge its Food Aid Subcommittee with:
 - a) developing guidelines to be followed by the subordinate working group(s) for food aid allocation criteria, categories of use, and other factors that will encourage and make it easier for the agencies to achieve maximum development impact from food aid. These guidelines should include approval of food aid proposals 60 days before the beginning of the fiscal year.
 - b) Insuring that working group designees by each Agency be senior staff who support the multiple functions prescribed for food aid, and that each member actively function on a continuing basis, not routinely assigning the working group function to subordinate staff.

- c) Defining the coordination and guidance role of the working group(s).
- d) Outlining the roles of USDA and A.I.D. in administering the several programs, clarifying that administration, including communication with field staff, is the role of the two administering agencies.
- e) Sharing with all related publics --- commodity groups, shippers, PVOs, and others --- the guidelines, roles, and modes of operation.

Beyond these general but very important issues, it is recommended that the working group(s) meet a least once and preferably twice each year in a developing country to review as a group on-going food aid programs and their development impacts, and to discuss with host country, USDA and Agency personnel issues related to management and operations of the programs.

This recommendation acknowledges that there are necessary macro-budget and policy coordination roles (in contrast to the administering role) played by all agencies that are members of the DCC and working group(s).

- 14. Continue to handle food aid proposals with sufficient dispatch, consistency, professionalism, and open communication that commodity groups, contractors, and other involved agencies would volunteer, "We may disagree on proposals or the final decision, but A.I.D. is always well prepared. proposals are well presented and documented, communication is complete, and the Agency behavior is as consistent and predictable as could be expected, considering their responsibilities and relationships with recipient countries. We rarely get surprised."
- 15. The Agency seek refinement of PL480 legislation to simplify and articulate in a more clear manner the continuum of food aid programs supported by the American public for humanitarian, economic development, market development, and other functions.

Mission and AID/W Operations

It is recommended that:

- 16. Food and Agriculture staff, both in missions and in AID/W be aggressive in their communications and cooperation --- perhaps meet regularly --- with other donors, with multilateral lending agencies, and with other U.S. economic development efforts. Especially in-country, this is more possible and desirable because of continuing mission presence.

17. Mission agriculture staff be involved and carry some responsibility for initiation, support, and coordination of Agency private enterprise efforts and the work of the Trade and Development Program and the Overseas Private Investment Corporation which are so complementary to the agricultural development function.
18. Guidance to new mission office heads and directors emphasize that program continuity and persistence toward established, reachable objectives is expected and merits high marks in personnel evaluation. Such guidance would complement a 1985 cable to mission directors. It should be institutionalized in Agency documents and be well known throughout the Agency. Such guidance is needed, not only because program continuity is essential for maximum project impact toward goals, but also because of both pressures and temptations to respond to "the latest that is in favor," and because of both internal and external perceptions that high motivation exists in these positions to put each leader's "stamp" on a mission program by replacing an inordinate number of projects.

The recommendation is not intended to inhibit needed change.

19. Missions (in some cases, sub-region mission groups) consider establishing an outside program panel (external to the mission but including some Agency people with in-country experience and perhaps host and private sector country people) to provide guidance and continuity to food and agriculture programs. Membership could be for a term of years, but with some rotation, and would include people who have close familiarity with and dedication to that country's development.

Because Agency operations generally provide three to four year personnel rotations, many to other regions, such assistance could aid continuity, assure program direction response as a country advances, and help provide, through the Agency members, an institutional history of program impact.

This would also allow more complete utilization of Agency staff who have long term familiarity with given countries. It could also add strength and credibility to assessments of agricultural development potential and judgement regarding country resource allocation.

20. The practice be established that most mission, regional or Agency food and agricultural sector program review teams include at least one person who is an elected or employed officer of a national or major state agricultural or

natural resources group, a private sector subject matter specialist, a state agriculture or natural resources commissioner, or a state or area extension specialist.

21. There be increased communication with contractors, by both mission and AID/W personnel, to insure that contractor staff are aware of mission/Agency policies, directions, priorities, and handling of problems. In an LDC and in the U.S. this will enhance the feeling of mutual interest, ability to support the program, and presentation of a coherent posture.

Personnel

It is recommended that:

22. Agency criteria and guidelines on promotion of technical staff to and within the Senior Foreign Service be modified, and experience tracks be provided to allow a reasonable proportion of food and agricultural professionals to qualify for and be moved into senior ranks. In this process, a comparison with guidelines for technical people in other federal units guided by the same law -- State, USDA (both FAS and APHIS), Commerce, and USIS --- would be appropriate.
23. Personnel classification "backstops" 10 (agriculture), 14 (rural development), 30 (natural resources) and 50 (nutrition) be combined and that increased emphasis be placed on the subject matter qualifications at the time of employment and in continuing education of staff. This would be consistent with the Agency decision to not hire new staff in the Backstop 15 (Food aid) but to provide a "certification level" of training for persons of any backstop who have significant food aid responsibilities.

There are now relatively few persons in backstop 50, nutrition. Consolidation of the other three has been recommended by others in order provide more assignment flexibility and promotional opportunity for personnel.

The Agency should recruit new professional staff within these backstops to meet future needs. It sorely needs persons educated and experienced in input agribusinesses, aquaculture, horticulture, animal agriculture, food processing, and international agricultural trade. The Agency must accumulate the skills and talents needed for the food and agriculture programs' goals and directions.

To help meet the latter need, the Agency should also provide more long-term and short-term education of current staff, including graduate study, detached service assignments in international centers and universities; and

experience in policy analysis, agricultural business, natural resources, food processing and international trade. This would be beyond current long-term training practices, would specifically take into account that 21 staff in the four backstops (7 percent) are on complement this fiscal year. Reducing numbers on complement could allow increasing, at any given time, the number gaining needed education and experience.

Operating Effectiveness

It is recommended that:

24. Travel funds available for scientific and technical support personnel be sharply increased, to allow increased technical support to missions, monitoring of contractors, and relating to clientele groups. The increase recommended is from a currently financed travel of about 15 days international and six days domestic total per fiscal year to a level that would provide transportation and per diem for 56 days (40 working days and 16 weekend travel days) of international travel (two weeks per quarter) and 10 days of domestic travel per year.

At present, travel funds and policy limit S&T's and regional bureau's support value to missions, contribute to perceptions (and perhaps reality) that research and technical support priorities are not responsive to mission and regional bureaus needs, necessitate missions using outside consultants and by-passing often preferred Agency help (and miss giving these people the acquaintance with mission programs they ought to have) because operating expense funds are limited and program funds can be used only for outside consultants, and limit contact with leading scientists and thinkers in their disciplines, domestic and university contractors, and U.S. industry and interest groups.

This recommendation applies to technical people in regional bureaus, in S&T, and in missions, whose expertise may be needed for project related work in other missions.

To achieve this, increased appropriations may not be needed. The solution may lie in removing Congressional constraints on using mission program money to bring AID/W staff to the country, changes in Agency policy or allocations, or even reducing personnel to free money for travel.

Where the money is available is a second issue. A significant portion in the missions would insure travel most responsive to mission needs.

25. Every professional work station be equipped with a computer that has direct linkages to mission and AID/W personnel for transmittal of data, correspondence, queries, and messages; a phone with message recording device; and convenient access to copying and telefaxing equipment.

Each professional work group should have secretarial support for the receptionist, meeting arrangement, and other support functions.

The Agency phone book and directory should list for each employee the office, telefax and home phone numbers.

Communication with External Groups

It is recommended that:

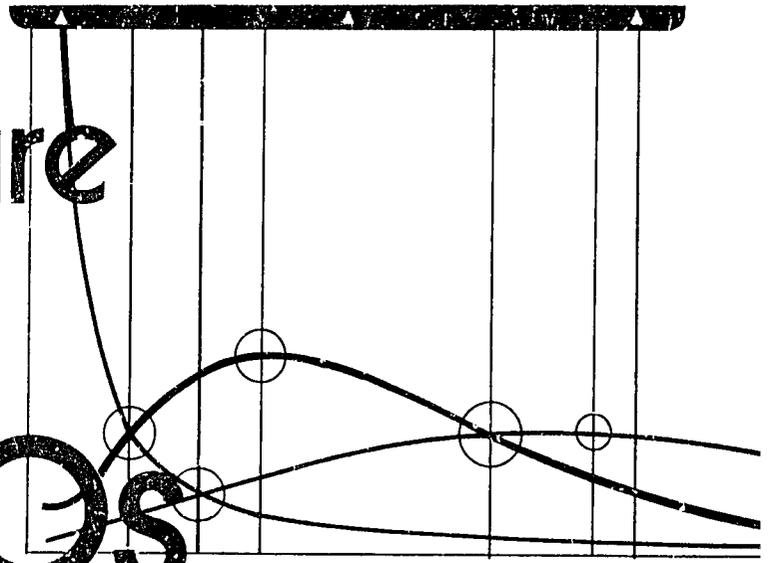
26. The Agency designate one staff (and one alternate) to maintain regular communication with officers of each key U.S. agricultural commodity groups, such as the U.S. Corn Growers, Wheat Growers, U.S. Feed Grains Council, Florida Citrus Commission and National Cattlemen's Association, comparable to existing communication links with the American Soybean Association.

Communication areas would include related development projects, food aid, work at international research centers, advances by LDC national research systems, LDC production trends, LDC sources of genetic materials, and LDC income and food consumption trends.

27. The Agency continue to allocate a significant proportion of Biden-Pell development education funds to agricultural and related food, agribusiness, and natural resources audiences. (A total of \$2.5 to 3 million has been available in each of recent fiscal years.)
28. The Agency, through mission staff and contractors, annually publish a limited number of fact sheets that document the extent to which programs in food and agriculture have directly or indirectly contributed to the goals of increased income, food consumption and status of the natural resource base, and evidence of resultant benefit accruing to the United States.
29. The Agency arrange 40 speeches per year to national, regional and major state groups on the above topics, five or more to be given by the Administrator and 10 or more by AAs and DAAs, to inform groups of programs and relationships and to keep top Agency officers in a position to receive feedback and maintain sensitivity to mutual US/LDC interests.

PN-ABB 848

agriculture in the 1990s



strategic choices for
asia/near east countries

symposium proceedings

HARVARD INSTITUTE FOR INTERNATIONAL DEVELOPMENT
AND
THE AGENCY FOR INTERNATIONAL DEVELOPMENT (ANE/TR/ARD)
ROSSLYN, VIRGINIA
SEPTEMBER 7-9, 1988

ANE AGRICULTURE IN THE 1990s

STRATEGY SYMPOSIUM

Foreword to the Proceedings

The initiation for the Symposium on Agriculture in the 1990s resulted directly from the ANE Bureau's Agriculture and Rural Development Officers Conference held in Bangkok in February 1987. ANE's ARDOs, as well as a growing number of development practitioners and analysts, had been increasingly seized by the fact that the global environment in which they operated had dramatically changed. The changes manifested themselves at every level: huge stocks of grain on the world market, continuing downward pressure on cereals prices, increased protectionist measures by both developed and developing countries, extreme vulnerability of farmers to exchange rate variations, distorted policy frameworks, decreasing official development assistance relative to private capital flows, pressures on faster growing third world economies to diversify their agriculture, incredible advances in information technology, and alarming degradation of the natural resources base.

As a response to these issues, the theme chosen for the 1987 workshop was "Agriculture under Stress: The Future of Agriculture and Rural Development in Asia and the Near East". One of the principal recommendations of this workshop was that ANE/TR/ARD take the lead in developing a regional-specific adaptation of the recently-adopted Focus Statement on Agriculture and Rural Development (increased income, increased access to food, and maintenance and enhancement of the natural resource base). ARDOs requested that the regional statement elaborate on the broad strategic issues of the income, consumption and natural resource management components but should allow for country and Mission-specific articulation of those issues in light of the tremendous diversity represented by ANE Missions.

To proceed with strategy formulation, ANE/TR/ARD contracted with the Harvard Institute for International Development to coordinate the preparation of a set of subsectoral analyses and to organize a symposium to debate the issues associated with those analyses. The subsectors for analysis were selected by a joint AID-HIID working committee composed of two HIID economists and members from AID's own in-house strategy working group (ANE, S&T, and PPC Bureau representatives). Ultimately, twelve papers were commissioned addressing issues of pricing, inputs, agricultural productivity, employment and income distribution, consumption and nutritional intake, irrigation, institutional sustainability, diversification, trade, and natural resources management. In addition to the HIID contributions, authors for the papers included individuals from Stanford's Food Research Institute, the Yale Growth Center, Rutgers, USDA's Economic Research Service, the University of Maryland, Cornell, and the ANE Bureau's Irrigation Support Project (ISPAN). In addition, ANE/TR/ARD prepared a paper analyzing AID's development assistance funding trends in agriculture.

Authors of each of the papers were urged to orient their respective analyses, to the extent available data and expertise allowed, to issues in both Asian and Near East countries, and to be as forward-looking as possible. Because the analyses were designed to provide the framework for an agricultural and rural development strategy, the Strategy Committee also urged authors to move from analysis to prescription. Attempts to be provocative and to identify new opportunities were strongly encouraged. Finally, authors were instructed not to limit their prescriptions to what AID, as a single donor, could do, but to focus more broadly on what should be done, regardless of actor. Rather than make the results of the papers available via a classical presentation mode followed by questions and answers, the organizers of the symposium opted for maximizing small group discussion and interaction. Plenary sessions were designed to share small group conclusions and to identify areas of consensus and divergence.

In addition to serving as the basis for the formulation of an agriculture and rural development strategy, the results of these preliminary analyses contribute to a broader debate on the future of development assistance in the 1990s. One week following the Symposium, the Board for International Food & Agricultural Development (BIFAD) organized a major conference, "Getting Ready for the 1990s".

29th

which examined the role of the Title XII universities in responding to the development challenges of the next decade. In early October 1988, AID's PPC Bureau organized an international conference on the future role of agricultural universities in promoting sustained economic growth and development.

Two task forces organized by the AID Administrator were also direct consumers of the outcomes of the Symposium debates. The first, the November Report Task Force, is drafting recommendations for US development assistance in the 1990s and has followed closely ANE's strategy development process. The second, the Food and Agriculture Task Force, is examining several key issues discussed at the ARD Symposium, including the integration of Food Aid (PL 480 and related programs) with development assistance. The S&T Bureau has indicated its desire to integrate Symposium findings with two recently initiated efforts: a review of AID resources allocated to the Agriculture/Rural Development/Nutrition account and agriculture research priorities for the 1990s. Two initiatives aimed at the broader issues of development assistance to the Third World will also absorb the results of the Symposium. First, the Lee Hamilton Sub-Committee (of the House Foreign Relations Committee) is examining the possibility of re-drafting the legislation for the Foreign Assistance Act. Secondly, Michigan State University has sponsored a series of national-level workshops to determine new modalities and priorities for US development assistance. Symposium organizers have established relationships with both of these efforts and have forwarded the preliminary conclusions for consideration in the final report-outs.

It is clear, then, that the timing of the Symposium has importance beyond the strategy formulation issues confronted by ANE ARDOs. The recommendations produced by the Symposium have been, or will be, factored into a wide range of fora responsible for determining the future directions, modalities, and resources of US development assistance. Since agriculture and rural development have been in the past, and will continue to be in the future, intimately related to sustained economic growth and development, the relevance of ANE Symposium conclusions is applicable at multiple levels. In fact, if Symposium findings are correct, the easy distinctions between rural and urban in the 1990s will blur and become part of an integrated process of economic growth.

James B. Lowenthal
Chief, Division of Agriculture and Rural Development
Office of Technical Resources
Asia/Near East Bureau
October 1988

7305

HIID/USAID SYMPOSIUM ON AGRICULTURE IN THE 1990S AGENDA

Tuesday, 6 September 1988:

7:00 p.m.	Reception	
8:00 p.m.	Overview of Symposium	
	Welcome	R. Goldman
	Overview of symposium and discussion of final products	J. Lowenthal
	Discussion of participant responsibilities	J. Poley

Wednesday, 7 September 1988:

8:30 a.m. - 9:30 a.m.	Opening address	
	Agenda for the day	J. Lowenthal
	Introduction of AA/ANE	J. Lowenthal
	Address: The Challenge of Agriculture and Rural Development in the 1990s	J. Bloch
9:30 a.m. - 10:00 a.m.	Asia/Near East Region Structural Introduction	
	Overview of region in terms of the numbers, the past and the trends	R. Goldman
10:00 a.m. - 10:30 a.m.	Break	
10:30 a.m. - 12:00 noon	Analytical Themes Introduction	
	Diversification/Structural Change	P. Timmer
	Employment/Income Distribution	P. Timmer
12:00 noon - 1:30 p.m.	Lunch	
1:30 p.m. - 3:45 p.m.	Breakout Groups	J. Poley
	Topical theme break-out groups meet on Diversification/ Structural Change analytical theme:	
	1. Technical change;	
	2. Irrigation & water policy;	
	3. Pricing & stabilization policy;	
	4. International trade;	
	5. Natural resource management.	
3:45 p.m. - 4:00 p.m.	Break	
4:00 p.m. - 5:30 p.m.	Cross-cutting Themes	P. Peterson
	Panel moderator	J. Lowenthal
	Facilitating private sector growth	R. Cobb
	Factoring gender into economic development	P. Boyle
	Sustaining institutions as vehicles of change	A. Goldsmith

Thursday, 8 September 1988:

8:30 a.m. - 8:45 a.m.	Agenda for the day	
8:45 a.m. - 10:00 a.m.	Interim Reports and Issues	R. Goldman (chair)
	Topical theme break-out groups give short, interim reports on Diversification/Structural change analytical theme	Rapporteurs
	Synthesis of Diversification/Structural Change Re-direct to Employment/Income Distribution analytical theme	P. Timmer
10:00 a.m. - 10:30 a.m.	Break	
10:30 a.m. - 12:45 p.m.	Breakout Groups	
	Topical theme break-out groups meet on Employment/ Income Distribution	
12:45 p.m. - 2:00 p.m.	Lunch	
2:00 p.m. - 3:45 p.m.	Reports of Topical Theme Break-out Groups	R. Goldman (chair)
	Topical theme break-out groups report back on both Diversification/Structural Change and Employment/ Income Distribution.	Rapporteurs
3:45 p.m. - 4:00 p.m.	Break	
4:00 p.m. - 5:00 p.m.	Proposition Generation	P. Timmer (chair)
5:00 p.m.	Committee on Propositions	
8:00 p.m.	Economists "Get Together"	J. Mellor W. Falcon V. Ruttan R. Evenson

Friday, 9 September 1988:

8:30 a.m. - 8:45 a.m.	Agenda for the day	J. Lowenthal
8:45 a.m. - 10:45 a.m.	Plenary Session	
	Discussion of selected propositions	P. Timmer
10:45 a.m. - 11:15 a.m.	Break	
11:15 a.m. - 12:15 a.m.	Implications for U.S. Development Assistance of a New Strategic Approach to the 1990s	W. Fuller
12:30 p.m.	Close	J. Lowenthal

231

OPENING REMARKS

By Julia Chang Block

Julia Chang Bloch, Assistant Administrator, Asia/Near East Bureau, opened the symposium with a challenging question: how to initiate a new "Green Revolution" in face of declining foreign assistance for agriculture. Arguing that raising rural incomes was the first step in economic development, Bloch suggested that the Green Revolution had played a substantial role in promoting agricultural growth in the past. Official development assistance, including support for foundations and international research centers, had provided the impetus for the generation and dissemination of the Green Revolution. Poverty was still on the rise, however, affecting in particular a substantial part of Asia. She warned that without a new Green Revolution, the problem of rising poverty could not be confronted. Yet it was clear that official assistance for such endeavors might not be readily available in the future.

She emphasized that global economic and political conditions had substantially changed since the launching of the Green Revolution. Growing international trade, integration of international capital markets, and the breakdown of the Bretton Woods fixed exchanged rate system were highlighted as major economic changes. As a result, agriculture had become more strongly linked to macro-policy and more prone to bear the brunt of macro adjustments and changes in the real exchange rate. In addition, the emergence of Japan as a major player in the donor community, increasing levels of US agricultural exports to developing countries (43 percent of US agricultural exports in 1987, compared to only 19 percent in 1971), and the strengthening of local institutional capacity in many developing countries, were also seen as important factors that would shape international policies in the future.

Referring to changes within AID, Bloch characterized the decline in the aid budget for rural development in the ANE region as a major constraint on future policies. In 1976 the allocation to agriculture within the ANE region was approximately 306 million dollars, while in 1988 it had declined to only 194 million dollars. The substantial decline was attributed to political farm lobbies and overall protectionist sentiments that viewed agricultural growth in developing countries as a direct threat to US agricultural exports.

She emphasized that without further development of the rural sector in developing countries, sustained economic growth and increases in real wages would not be feasible. United States political support for assistance to agriculture, however, has been declining rapidly, strongly suggesting that financing a new Green Revolution might not be feasible in the 1990s. The challenge therefore was to convince US policy makers that growing incomes in developing countries would stimulate US agricultural exports in the long run. Contrary to existing beliefs, third world agricultural development was indeed a marketing opportunity for the US, not a competitive threat. She warned, however, that in the fast changing world of today, the US may have already become less important in the process of spurring agricultural growth in developing countries. Global economic changes, in particular private sector trade, may help mobilize forces within and outside the US to promote a new force in agricultural development.

ANALYTICAL THEMES

Peter Timmer of HIID proposed that the symposium participants should consider two analytical themes for the 1990s, the role of agriculture in employment and income distribution and in economic diversification and structural change. Growth strategies which succeed in achieving employment and income distribution objectives involve policies which raise real wages and increase the average caloric intake of the rural population. Over the past two decades some countries in the ANE region have achieved impressive growth in rural incomes, while others have lagged behind. (See table I, below, adapted from Timmer's paper on employment and growth). Comparing economic performance among ANE countries reveals contrasting patterns of structural change and economic diversification. Timmer stressed the need for greater understanding of market-led diversification processes and the development of flexible marketing structures to promote and accommodate these changes. He carefully emphasized, however, the need to establish country-specific policies to promote the role of agriculture in achieving these objectives.

Timmer suggested that the twin goals of generating employment and improving income distribution could best be achieved by focusing on development strategies that raise real wages in the rural sector. This approach, however, requires an understanding of both the supply and demand determinants of wage formation in the rural labor market, and how government policies can affect the demand for

TABLE I
Per Capita GDP, 1985

	National Average	Agricultural Sector	Annual % change in per capita agricultural sector income 1965-1985
Malaysia	2000	1000	-4.7
Thailand	800	192	1.0
Philippines	580	302	3.1
Indonesia	530	223	1.5
Pakistan	380	173	0.7
Sri Lanka	380	194	3.1
India	270	120	-0.1
Bangladesh	150	100	0.7
Tunisia	1190	578	4.4
Turkey	1080	356	1.0
Egypt	610	265	2.1
Morocco	560	219	2.4

labor. The direct impact of agriculture on the demand for labor can occur through technology and crop choice. The indirect impact works through investments in infrastructure, the development of flexible marketing structures, and the influence of changing patterns of consumption and investment as agricultural incomes change.

Infrastructure investment in the form of irrigation works, communications, electricity, and market facilities, provide the base for an efficient rural economy. Without continued investment in these areas, growth of the rural sector and employment generation will be difficult to sustain over the long run. Without major public sector investments Timmer warned that growth in many ANE countries could not be sustained in the 1990s. He urged aid donors to resume their support of large-scale public infrastructure. He suggested that it may be politically more feasible for USAID to invest resources in rural infrastructure as a way of supporting agriculture in the 1990s, rather than support direct commodity-specific investments.

Timmer called attention to the critical impact of macroeconomic policies on agricultural growth and on real wages and the balance of employment between rural and urban areas. He suggested that trade policy, and in particular exchange rate management, plays a pivotal role in promoting agricultural growth in developing countries. He also stressed that wherever the staple food grain remained an important determinant of farm incomes and the real wage, changes in food grain availability have a roundabout influence on employment and income distribution, by altering the level of macroeconomic activity and the competitiveness of labor-intensive exports, including the primary products. In addition, instability in food prices can alter expectations and patterns of investment, with spillover effects on employment and foreign exchange expenditures.

Timmer stated that increasing real wages in the rural sector is the long-term solution to the alleviation of poverty. Appropriate strategies require enhancing the overall competitiveness and efficiency of the agricultural sector in the developing countries. Timmer raised concerns that even in a rapidly growing rural economy, targeted interventions would be necessary in the short run to increase the food intake of a substantial portion of the rural poor. He noted that a successful implementation of targeted intervention required an understanding of the consumption pattern of the poor and careful planning to avoid general food price subsidies. The latter could undermine policies of sustaining long-term agricultural growth. Finally, Timmer stressed that without policies aimed at stabilizing basic food prices, targeted programs would not be successful.

Richard Goldman from HHD made a presentation characterizing the varied economic performance and policy orientation of the countries in the ANE region. His presentation focused on factors influencing food consumption in ANE countries over the past two decades (see Table II, extracted from Goldman's symposium paper). During that period many countries managed to achieve impressive

TABLE II
DEMAND INFLUENCING FACTORS

	Income Elasticity for Calories	1984 Index (1973 = 100) Real per Capita GDP	Staple Food Prices
Bangladesh	.17	104	88
Egypt	.13	140	51
India	.17	122	88
Indonesia	.16	164	69
Pakistan	.16	130	111
Philippines	.17	123	97
Sri Lanka	.16	137	98
Thailand	.14	154	81
Morocco	.13	123	--
Tunisia	.14	151	--

improvements in average per capita calorie consumption. Goldman acknowledged that the distribution of calorie consumption within countries varied substantially but that the available data made the issue a difficult one to treat in a comprehensive manner. Primary influences on national per capita calorie consumption were population and income growth rates. Population growth has slowed in a number of ANE countries, and real per capita income has risen. Nevertheless, these variables alone account for only part of the record on calorie consumption. Pricing policy and the relative and absolute impact of the growth process on rural incomes are also of key importance, and countries varied greatly with regard to pricing and rural strategies.

Looking to the future, Goldman noted that population dynamics would continue to be of importance in determining the pattern of food consumption. It is important, he pointed out, for those working on food policy to develop reasonable projections of rural population growth under varying assumptions regarding national development strategy. Data from a number of ANE countries supported the notion that diversification of diets is underway. Growth in per capita consumption of staple grains is slowing. Over the past decade a large portion of the increment in per capita calorie consumption came from non-grain sources. Although the sources varied considerably from country to country, he singled out vegetable oil consumption as being the most consistent non-grain contributor to incremental food consumption. Goldman also noted that protein consumption, starting from a low base, is growing rapidly. He focused particularly on animal protein, especially chicken meat and eggs, and in some countries milk, as being strategic sources due to the implications on the demand for non-traditional feeds.

Finally, Goldman observed that while diversification was clearly demand-led in ANE countries, the implications for agricultural production varied depending on the pricing and trade policies of a given country. Some countries in ANE had utilized agricultural production increases as tools for import substitution or export expansion, while others relied heavily on domestic production to support impressive increases in per capita consumption. In contrast, some countries achieved substantial improvements in per capita consumption in the face of agricultural stagnation, relying heavily on pricing and trade policies that accommodated large-scale imports.

BREAKOUT GROUP DISCUSSIONS

Following the introductory remarks, participants were organized into small breakout groups, according to their areas of expertise (see Appendix 2 for breakout group composition). There were five breakout groups as follows:

- Pricing and stabilization policy
- International trade
- Natural resource management
- Irrigation
- Technical Change

These groups discussed their topics at length, attempting to identify important issues for the 1990s. These issues were summarized in a series of propositions which were reported back by the breakout group rapporteurs to the other participants for discussion and clarification during the plenary sessions.

I. PRICING AND STABILIZATION POLICY

Rationale for Food Price Stabilization

During the past decade many countries in the region implemented important reforms in marketing and pricing policies. Participants expected staple food price stabilization to remain as an important area of government concern, however. Properly designed and implemented stabilization programs could have important macro implications, as pointed out in the symposium paper on pricing policy.

The benefits of such policies can be felt through stability of employment and foreign exchange at the macro level, through higher rates of investment by rural and urban producers, and through the enhanced security of food intake of poor consumers. Public policy to stabilize wage good prices can be an important offset to the inadequate capital markets and the lack of futures markets and insurance schemes which characterize most developing countries.

Logistics of Food Price Stabilization

The efficient implementation of wage-good stabilization requires a delicate balance between direct public sector intervention and the promotion of private sector involvement. A government logistics agency would need to be in charge of announcing and defending a floor and ceiling price, using international trade as the balance wheel for stock management. Allowing a sufficient spread to induce private sector participation in marketing activities was also deemed essential to the efficient functioning of a stabilization scheme. In principle, a variable levy could well replace the need for a government logistics agency. In practice, however, undertaking an efficient stabilization scheme without a government agency was considered unfeasible.

Costs of Food Price Stabilization

Participants raised concerns, however, about the level of fiscal costs and budgetary instability that arise from implementing a stabilization policy. It was argued that although an efficient stabilization scheme following world price trends could be self-financing in the long run, many governments were unwilling to allow the year-to-year changes in the price level necessary to achieve this. During any specific year or runs of years, a government could sustain substantial losses. As a result, the logistics agency would need to have an open line of credit to ensure the efficient operation of the stabilization scheme. Cost containment and other management objectives could be facilitated if such funds were allocated as a visible and explicit part of the government budget.

Participants recognized that without a stable international market, the management of a national food price stabilization scheme would be difficult. In September of 1974, for example, Indonesia was unable to acquire its import requirement of rice from world markets, despite having the necessary foreign exchange. Facing such conditions, countries revert to using expensive stock policies to buffer their domestic economies from extreme shocks in the world market. Alternately, the notion of an international buffer stock policy was viewed as too costly. Participants agreed that improving policy design and domestic management capacity for price stabilization, and developing more secure access for developing countries to international markets during times of world market stress, were important tasks for the coming decade.

At some point in the development process price stabilization for staple foods becomes a less important issue. Participants suggested that further research be undertaken to identify key country characteristics that might guide policy makers in determining when wage-good price instability ceases to have important effects on the economy.

Input Pricing

On the input side, with special reference to fertilizer, discussion centered on the notion that physical availability and a competitive marketing structure at the farm level are a prerequisite to efficient input use. Pricing policy, with respect to both price level and price margin policies, could also be used to enhance the private sector role needed to achieve this competitive system. In certain circumstances where fertilizer use is substantially below efficient levels because of new technology, attitudes towards risk, or poor capital markets, a fertilizer price subsidy might enhance efficiency. Considerable concern was expressed, however, that government subsidy schemes were often poorly implemented, and as a result fail to benefit the farmer. Nevertheless, participants agreed that in specific situations, a case for fertilizer subsidy to enhance economic efficiency could be made.

II. INTERNATIONAL TRADE

The focus of discussion in the international trade group centered around four broad themes: linkage between trade policy and agricultural diversification, food security, the role of food-aid, and international trade liberalization. Despite the diversity of views expressed and variety of topics covered, the group felt that trade in the coming years would not necessarily play the role of “engine of growth”. Instead, trade was seen more as a by-product of development—the panacea of export-led development was absent from the main thrust of the arguments presented.

Trade Policy and Agricultural Diversification

The group proposed that dynamic comparative advantage should be the guiding principle for resource allocation in a strategy of agricultural diversification. The discussion thus emphasized the importance of allowing diversification to be market-led, recognizing that in larger countries, agricultural diversification was likely to be based on demand shifts in domestic markets through rural-based processing and industry, and not centrally on export opportunities.

Participants in the breakout group considered the idea that an undervalued exchange rate could potentially play a positive role in promoting structural change and diversification in line with dynamic comparative advantage. Some successful countries have followed this course. The logic of this proposal is similar to the familiar “infant industry” rationale for protection, though applied on a more macro level and aimed at institutional capacity. A modestly undervalued exchange rate would generate uniform protection and, by encouraging trade, would promote marketing capacity and flexibility to respond efficiently to changing international market conditions. In addition, an undervalued exchange rate would provide some compensation to the tradeable sector for the uncertainty and risk present in international trade. Ability to increase foreign exchange reserves is an additional benefit of such policies. Concerns were raised, however, that undervalued exchange rates could unduly tax inputs and have other general equilibrium effects that need to be investigated prior to establishing a policy target level for undervaluation.

Food Security and International Trade Liberalization

Food security for developing countries was a recurring theme in various group and plenary discussions. The trade group suggested that it was more cost effective for developing countries to use national and international financial facilities (buffer-funds) rather than physical stocks (buffer-stocks), to achieve national objectives of food security. This approach, however, is predicated on countries having easy access to international financing facilities (e.g., IMF) and on the reliable access of developing countries to physical supplies on the world market during times of world scarcity. Serious doubts were raised about the certainty of these assumptions. Conclusions here reinforce the conclusions of the pricing policy group regarding the need for improved arrangements, both domestically and internationally, to promote domestic price stabilization.

The discussions about the Uruguay Round and international trade liberalization did not lead to any general conclusions regarding their impact on the level or volatility of world prices, and hence on food security in general. It was expected, however, that trade liberalization would have a small impact on world grain prices if supply control instruments were removed in developed countries.

Food Aid

Some participants expected that food aid would increase in the 1990s. The evidence for this was not strong, however. The group felt that food aid could be used as a development resource to enhance food security, stabilization of wage goods, and poverty alleviation. Participants were aware that strategies for using food aid effectively were under review by various committees and study groups. Therefore a relatively small amount of time was allocated to discussing this topic. An aspect that was stressed, however, was the need for more stability and longer term programming of food assistance. The unreliability of food aid availability, particularly when there is world-wide shortage but during normal times as well, was identified as a key factor limiting its effectiveness as a development resource.

III. NATURAL RESOURCE MANAGEMENT

Participants concurred that poverty is the leading cause of environmental degradation in developing countries and that broad-based rural development capable of raising and sustaining real wages was the long-run solution to protecting the resource base. There was agreement that the proper use and management of the natural resource base would enhance the sustainability of agricultural growth itself. (See Figure 1, opposite, from Theo Panayotou's symposium paper).

The group outlined a general agenda for policy analysts working on resource management issues. High on the list of many participants was the need to identify and correct factor and output price distortions that directly affect the stability of the natural resource base. Participants agreed that pricing of resources should be undertaken from an efficiency, or social, point of view. In practice it is often difficult to measure true resource costs and to convince policy makers to reflect them in pricing policy. Participants emphasized, however, that many pricing policies had distorting and environmentally damaging effects that were relatively easy to measure. More work should be done to document these cases and to encouraging policy analysts and decision makers to recognize the implications for policy design and resource utilization. Efforts to enhance programs such as reforestation, terracing, and minimum tillage, were also discussed. Ultimately, however, conditions in the macro economy and the encouragement of policies for generating off-farm employment and out-migration from poor resource regions were identified as being strategic for promoting sustainability of the resource base.

Considerable disagreement was voiced on the role of public management of natural resources. At one level, government intervention was seen as exacerbating the problem in many cases. On the other hand, the public good nature of natural resources, including the presence of various market failures, justified government intervention in market prices to ensure efficient management of the resource base. This dilemma was not resolved, but it was agreed that the analytical capacity to undertake the analysis of such resource management questions needed to be strengthened, both in aid agencies and in developing country institutions. This would enhance the capacity for effective and appropriate public sector interventions in this difficult area of policy management.

The group felt that significant domestic political support could be generated around environmental concerns as a means of promoting agricultural growth. However, there was concern that without additional funds to support the natural resource agenda, governments in developing countries may be reluctant to adopt it as a priority.

IV. IRRIGATION

During the past two decades, expansion of irrigated land has been a strategic source of agricultural growth and a major component of Green Revolution technology. During breakout group discussions, stimulated by the two symposium papers on irrigation, participants voiced a serious concern over the fifty percent drop in the growth of irrigation investment that has occurred in recent years. This apparently reflects a response to lower world grain prices and lower-than-expected returns on donor-funded irrigation investment. Irrigation has been a cornerstone of agricultural growth in the era of Green Revolution technology (see Figure 1). Several group members felt that further serious attention to irrigation investment is required to maintain adequate levels of growth in food grain production and in agriculture in general, and that irrigation investment should be made in terms of long-range food requirements rather than short-run economic conditions.

There was considerable disagreement as to the rate at which new areas should (or could) be brought under irrigation, given the medium- to long-term forecasts of agricultural prices, the rising per-hectare costs for new irrigation investments, and competing demands for water by the urban and rural sectors. A representative from the World Bank stated that the Bank has decreased its levels of irrigation investment because it has obtained low rates of return. This assessment of poor economic performance was vigorously disputed by many symposium participants, who questioned the validity of the premises that led to such conclusions, particularly regarding the limited time horizons used in the analysis. Members of the breakout group felt that substantial gains in crop production could be achieved through improved water management and better operation and maintenance of existing systems. Consensus was achieved by focusing on "effectively irrigated area" which calls for new investment while

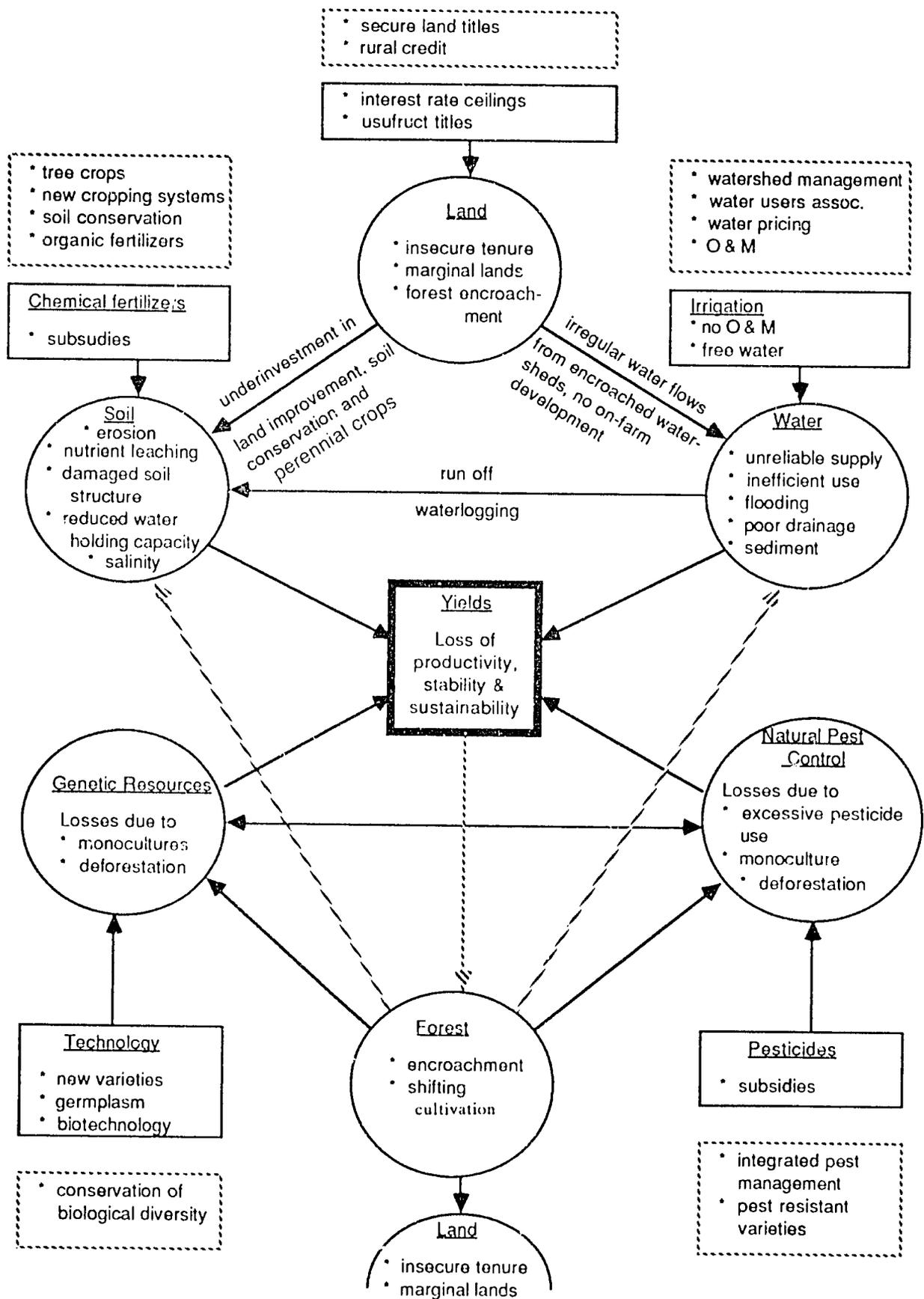


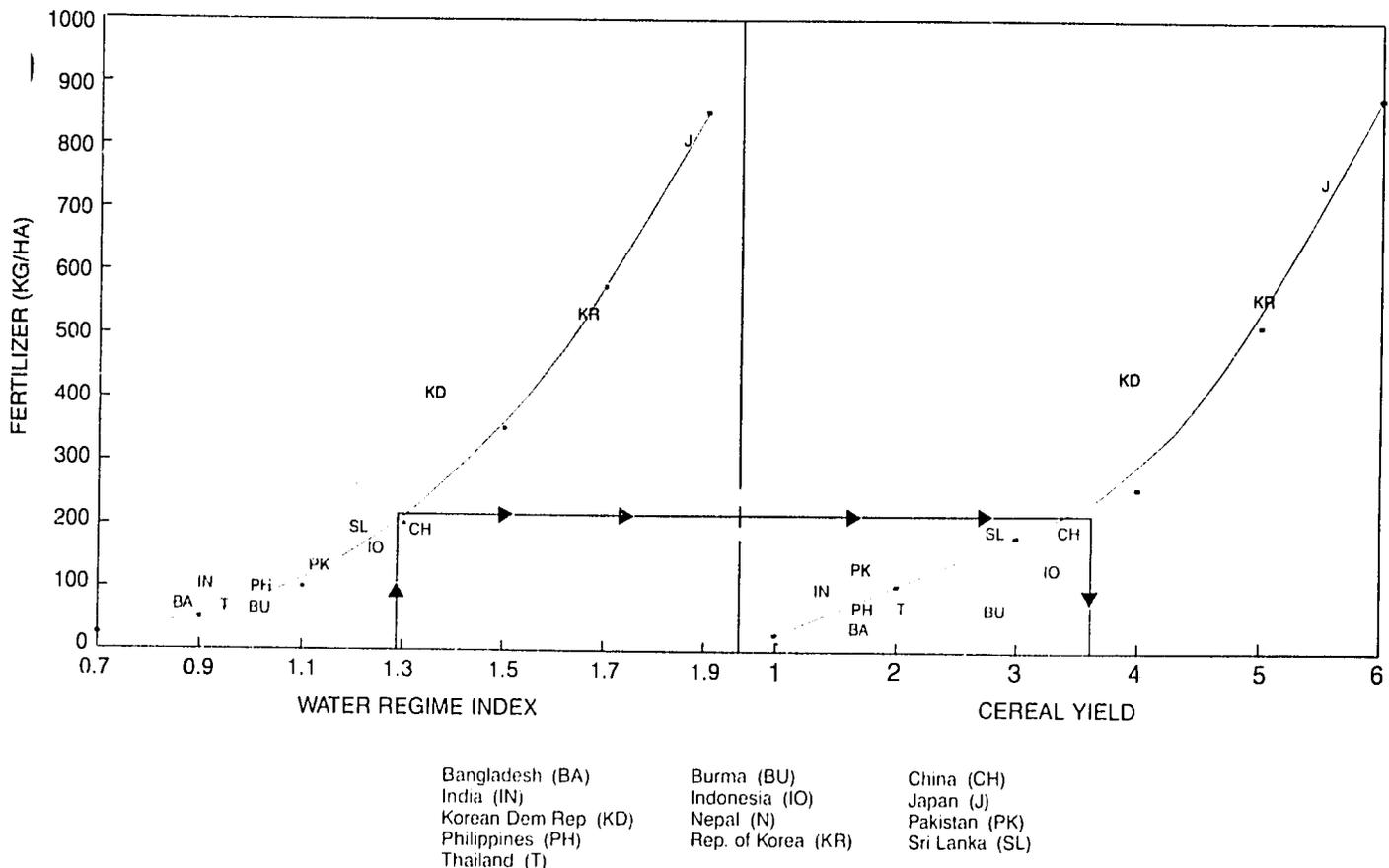
Figure 1: Loss of agricultural growth due to mismanagement of the agricultural resource base. Entries in the solid line rectangles indicate inferior or inadequate management policies. Entries in broken-line rectangles indicate superior or supplementary policies for improved resource management.



Figure 2:

Water Regime & Fertilizer/Ha for Cereals

Fertilizer/Ha & Cereal Yield
1980-85 Cereal Yield



simultaneously stressing improved management of water resources at all levels, tied to the generation of improved irrigation data and improved performance indicators. Clearly, however, this source of agricultural growth, which has been so important to past performance, is becoming increasingly difficult to realize through direct investment in structures supported by AID agencies with construction-oriented programs.

Echoing the arguments presented by other groups, the irrigation breakout group felt that while irrigation investments can make an important contribution to economic diversification, in general this process should be market- or demand-led. Within this context, new investments or improvements in existing irrigation systems should be designed for flexible operations, enhancing the capacity of the rural sector to respond efficiently to the process of diversification and structural change.

V. TECHNICAL CHANGE

There was consensus that the decline in growth rates of Asian rice and wheat yields since 1983 was structural and not a transitory phenomenon. While there may be greater potential for genetic improvements in the minor crops, participants felt that investments in those crops should not be at the expense of the major food staples, whose traditional sources of growth, irrigation and new seed technology were in question for the coming decade. There was remarkable consensus among participants that while biotechnology advances in rice and wheat were possible, it was very unlikely that results as dramatic as those supporting the Green Revolution could be achieved in the 1990s. The sources of improved productivity during the 1990s will come primarily from improved management practices. This, however, may prove to be more difficult and costly to achieve than the past genetic improvements. Participants expressed real concern that cereal production would lag behind the growth in demand in the coming decade.

They agreed that the international centers should continue to play a critical role in the preservation and provision of food grain germ plasm. Maintaining technology-related information systems that link national and international centers was also stressed. In addition, continued investment in human capital formation, particularly at the post-graduate level, was seen as a critical component in improving the long-term performance of the national agricultural research centers.

Improvements in the cereal and minor crop varieties for rain-fed areas were recognized as potential sources for improved equity and natural resource management. However, the return to such investments would depend on the level and quality of rural infrastructure. Continued investment in the latter was also advocated. Finally, participants unanimously agreed that the private sector could play a fundamental role, both in generating and disseminating technical knowledge, with particular emphasis on the latter.

VI. CROSS-CUTTING THEMES

During the breakout group and plenary sessions, a number of issues were discussed that were not on the original agenda. Three of these issues arose repeatedly, and appeared to constitute important cross-cutting themes. They are: the necessity for enhanced rural infrastructure; the need for sophisticated analysis of resource allocation issues at the micro and macro levels; and the high pay-off on investments in human resources.

Rural Infrastructure

Although the topic was not the primary theme of any breakout group, the strategic impact of investments in rural infrastructure (other than irrigation, which is covered above) and the need for more donor support in this area was an issue that came up frequently during the symposium and was highlighted in some of the papers. Comparative analysis of ANE countries shows the important role of rural infrastructure, particularly marketing and transport investments, in promoting rural economic growth, enhancing the diffusion of technology, and generating off-farm employment. Particular attention was focused on the contribution of rural infrastructure to lowering marketing costs and facilitating the process of rural diversification. While participants recognized the need, they also expressed concern about the cost and the availability of sufficient donor funds.

Need for Analysis

Agricultural growth in ANE countries has been supported by breakthroughs in agricultural technology and large, donor-supported investments which will be more difficult to secure in the coming decade. In addition, many countries in the region have introduced policy reforms which promote increasing integration with the world economy and a more sophisticated relationship between government and the private sector in the marketplace. These changes place new burdens on and introduce new dimensions to policy management and the management of agricultural services such as irrigation and research. In this context, there is a high premium placed on improved problem identification, and on the measurement of alternative patterns of resource allocation. In order to respond effectively, substantial analytical and managerial capacity is required on both the donor and countryside. Countries in the ANE region can now draw on three or four decades of recent experience with development policies and programs. There is a need for clearer understanding of the results of these policies, with an aim toward developing a more sophisticated approach to dealing with the new challenges of the coming decade.

Human Resources

AID has a long record of investment in human resources. The need to sustain these past investments and to continue building such capacity was identified often by symposium participants in the various breakout groups and plenary sessions. The United States has a strong comparative advantage in supporting this capacity building process.

CLOSING REMARKS

By William Fuller

William Fuller, Deputy Assistant Administrator of the ANE Bureau, provided the closing address to the conference. In introducing his comments and reactions to the agenda proposed by the plenary session, Fuller reflected on the lessons of the development experience in the region. Attempts by countries to achieve self-sufficiency in food production, liberalize their trade regimes, and invest in agricultural research capacity were highlighted as important features of recent development efforts. However, concern was voiced that parts of the region may not have benefitted from the development process, and that the future was uncertain given that many countries reach technology limits or yields, and that knowledge as to how to promote off-farm employment was still relatively undeveloped.

Looking to the future, Fuller was encouraged that past efforts had generated a better understanding about the role of agriculture in the development process. Improved knowledge of markets, in general, and the role of the state and its influence, in particular, could lead to more successful agricultural development in the future. The importance of food security issues and assisting countries in cushioning price instability were also highlighted as important lessons as AID plans its future work in agriculture.

Fuller argued that global economic forces and the macro trade and financial policies of individual countries would continue to have a strong effect on the rate and structure of agricultural growth in ANE countries. Given strong linkages with other sectors of the economy, the boundaries of agricultural policy have become blurred. Indeed, the solution to the problems of agriculture, with generation of employment as a top priority, may be addressed more efficiently by policies affecting other sectors of the economy. Finally, in assessing past development efforts, Fuller expressed regret at the propensity of donors to back out of institutions prematurely. The withdrawal of support for agricultural universities or agricultural research institutions by USAID was highlighted as an example of this trend.

In discussing the future role of USAID, Fuller presented a sobering picture of the economic and political constraints likely to prevail in the next decade. The existing national trade and fiscal deficits, national security concerns, other congressional interests, and limited constituencies are critical factors limiting the support for foreign development assistance. Within AID itself, a lack of critical skills in some areas and the inflexibility of bureaucratic regulation were identified as important constraints. Fuller was optimistic that the current examination of the Foreign Assistance Act, the possibility that resource demands of the national security agenda might lessen as regional conflicts are resolved, and global concerns for economic growth, the environment, and international trade could provide the backdrop for AID's development agenda in the 1990s. However, this would require that USAID establish a clear set of priorities, provide a compelling story for its constituencies, and improve its own analytical capacity.

Responding to the propositions generated by the symposium, Fuller was quick to rule out future funding of infrastructure development or large new investment in irrigation, except in those few countries such as Egypt and Pakistan with unusually large infrastructure programs. However, support and maintenance of existing infrastructure systems was deemed feasible. He emphasized AID's continued interest in and capacity for strengthening technical assistance and development of policy research and management capacity, in developing countries as well as within AID. Arguing that policy reforms often break down at the implementation stage, Fuller hoped that AID could contribute to the promotion of innovative methods of policy implementation. He cited the Indonesian tax reform as an example of USAID success in implementation of a policy package. In this context, Fuller suggested that the challenge of the 1990s would be to promote a healthy policy dialogue and a sense of collegiality between USAID and its counterparts in developing countries as they worked toward identification and implementation of the policy reform agenda. In concluding, Fuller suggested that USAID might explore the development of better capital and commodity markets to promote the efficient structural transformation of agriculture.



SOME CHALLENGES FROM THE ANE SYMPOSIUM ON AGRICULTURE IN THE 1990S

The aim of the symposium was to identify strategy issues facing ANE countries in the relationship between their agricultural sectors and the economic growth process in the 1990s. The challenge to AID now is to forge a program which enhances resources and resource utilization while staying within the resource constraints, both human and financial, facing AID itself.

Symposium participants identified a number of themes that would characterize the 1990s:

1. The increasing importance of farm and sector level resource management relative to technical change as a source of agricultural productivity;
2. A continued need for selective investment in irrigation infrastructure/facilities;
3. The requirement for substantial investment in rural infrastructure, particularly in transportation, communication, and marketing facilities;
4. The need for agricultural and economic policies which are consistent with environmental sustainability;
5. An increasing concern for managing price stabilization policies as market liberalization and alignment of domestic and world price levels proceeds;
6. A need for human capital formation to support sustained development, including a broad range of activities from economic policy management to research resource allocation to private sector involvement in the economic development process.

Perhaps the most striking feature of the symposium discussions was the widely-expressed concern about a slowdown in growth of staple grain production in a post-Green Revolution 1990s, and the continued need for large investment in rural infrastructure.

The ANE countries are not homogeneous, and together they represent a variety of economic growth paths and policy configurations. The relative importance of the six key issues will vary among countries. Thus, moving from broad statements about strategy to country-specific programs requires detailed country-level analysis. In addition, comparing the experience of countries within the region may provide a better understanding of the policy formulation process and the impact of alternative policy configurations on overall economic growth, the capacity for employment absorption, and the process of economic diversification. With such understanding, AID may improve its capacity to encourage and facilitate improved policy management in ANE countries.

Participants at the symposium expressed concern about the need to focus AID resources. In part, this was a recognition of diminished resources and AID's lack of comparative advantage in heavy resource using activities, such as electrical power and transportation infrastructure investments. In addition, the concern reflected a skepticism about the proliferation of AID's cross-cutting themes and the tendency for these themes to draw scarce resources out of more traditional, but nevertheless strategic, AID programs.

With increasing scarcity of developmental assistance resources it is important to distinguish between activities which represent commodity aid transfers and those which enhance resource productivity primarily through strengthening human capital formation. Although the relative need will vary among countries, in general AID would seem to have a comparative advantage in developing and supporting programs which enhance resource productivity. This notion would suggest an AID program focused on:

1. Promoting human capital formation in areas relating to resource management and development in the agricultural sector;

2. Enhancing the capacity—in the United States and in the ANE region—for understanding the management of the macroeconomic and food and agricultural policy;
3. Playing a greater role in donor coordination of country programs and in assisting other donors in the design of development programs.

The symposium participants identified a number of areas where foreign assistance resources will be required. Moving from issues of regional development strategy to the level of an AID program strategy, however, calls for consideration of institutional comparative advantage. The above three program areas which would enhance the strategy areas identified at the symposium, seem to be consistent with this approach.

APPENDIX 1

Economists “Get Together”

On Thursday evening the symposium agenda included an informal after dinner session over coffee and desert. In order to start the ball rolling four participants—Vern Ruttan, Wally Falcon, John Mellor, and Bob Evenson—were invited to present their views on any issue or issues which they wished to share with the group for discussion.

Vern Ruttan raised several concerns about the future of development assistance in general. Airing the regret that development assistance has often been the victim of US-Soviet conflicts, he nevertheless felt that future budgetary allocations would not be hindered by security concerns. Yet he predicted a gradual erosion of assistance in real terms. He also speculated that a “sense of common crisis”, especially with regard to health and the environment, could help to mobilize resources. Along with external assistance, he felt that policies capable of mobilizing local resources for agriculture should be an important priority. Ruttan also emphasized the need to be more concerned with issues of health and quality of life of people in the rural areas and with the effect of development on environment. He concluded by saying that over time AID and foreign assistance activities had lost important constituencies in the United States. Nevertheless, there was a great need for this type of assistance and a great resource base represented by the community of development specialists throughout the university system and elsewhere. He hoped that this symposium could mark the beginning of more frequent interaction between this community and AID in developing the foreign assistance policy agenda for the next decade.

Echoing the concerns raised by Ruttan, Wally Falcon was not shy in raising his list of doubts about the future. Concerned that water resource management was being neglected by donor agencies, he warned that development efforts would leave behind a substantial portion of the poor people in Asia on marginal land. Doubts were raised whether resources were available to improve the well-being of these people, and that even if resources were available, whether these would support the type of projects suitable to address their problems. Secondly, Dr. Falcon was skeptical about the contribution of economics analysis to public policy formulation in a “second-best world.” Finally, the drawbacks of the CGIAR system were elaborated, with doubts raised about whether the system would be capable of addressing the research problems of agriculture in developing countries in the future.

John Mellor addressed the need to increase foreign assistance to promote human capital formation and physical infrastructure. Increasing mass human capital to improve the nutritional, health, and educational status of the rural population, and augmenting general investment to improve the university structure or higher education in developing countries, were equally emphasized. Within physical infrastructure, the need for investment in both higher level “central infrastructure” and mass rural infrastructure was highlighted.

Bob Evenson expressed the concern that donor agencies, AID included, tended to move resources into new theme areas prematurely. His research and observation shows that more traditional investments in agriculture continue to be powerful sources of economic growth. Although equity concerns are important, they are unlikely to be served by a slackening of economic growth. AID's track record on agricultural sector investments is a strong one, he stated. He expressed the hope that AID would continue to build on this experience and place a high priority on growth-producing investments.

In the general discussion that followed many views and concerns were expressed. Some USAID officials regretted that their agency, faced with declining real resources and a diffusion of the AID agenda, lacked a strong sense of purpose and vision. The non-AID participants reflected similar concerns and lamented that capacity in macro-economic and policy analysis, which AID once had, has all but disappeared. There was general agreement that analytical capacity to deal with the macro and sectoral policy issues identified at the symposium needed to be built in-house at AID, in Washington and the field. Creating further links between US academic institutions and USAID was seen as a way to focus on developing the capacity of USAID officials to provide the necessary analytical support for their field-level policy staff. For many participants, even the senior economist, this symposium was the first time in many years that AID had reached out to the development community to solicit views on a broad strategy agenda. Given the upheaval in the economic environment and in the policy agenda of recent years, this was a welcome opportunity. Participants expressed real appreciation and hoped that AID and the community of development policy economists would have more frequent interaction.

APPENDIX 2

Participants by Breakout Group and Affiliation

Irrigation & Water Policy:

Shawi Barghouti	World Bank
Randy Barker	Cornell University
Michael Korin	USAID
Gil Levine	Cornell University
Stan Peabody	USAID
David Seckler	Winrock
Ed Stairs	USAID/Cairo

Natural Resource Management:

George Armstrong	AID/ANE
David Bathrick	AID/S&T
Eric Chetwynd	AID/S&T
Richard Grimshaw	World Bank
Theodore Panayotou	Harvard University
Janet Poley	USDA/AES
Rob Thurston	USAID/Katmandu
Charles Uphaus	AID/ANE

Pricing & Stabilization Policy:

Rais uddin Ahmed	IFPRI
Joan Atherten	AID/PPC
Wally Falcon	Stanford University
Martin Harratty	AID/ANE
Teroyoshi Kamashiro	Japan International Cooperative Agency
Norm Nicholson	AID/ANE
Pat Peterson	USAID/Islamabad
Peter Timmer	Harvard University
Laurian Unneveher	University of Illinois

Technical Change:

Derek Byerlee	CIMMYT
Dick Cobb	AID/ANE
Ralph Cummings	AID/ANE
Bob Evenson	Yale
Bob Herdt	Rockefeller Foundation
Marcus Ingle	University of Maryland
Anamaria Long	AID/ANE
Jim Lowenthal	AID/ANE
Carl Pray	Rutgers University
Vern Ruttan	University of Minnesota

International Trade:

Henry Bruton	Williams College
Richard Goldman	Harvard University
Donald McCKlland	AID/PPC
John Mellor	IFPRI
Scott Pearson	Stanford University
Mathew Shane	USDA/ERS
Don Sillers	AID/ANE
Dick Suttor	AID/ANE

Symposium Staff:

Deborah Fullerton	Symposium Coordinator
Teri McCoy	Logistical Support
Junaid Kamal Ahmed	Recorder
Kirsten Russell	Recorder
Dennis Weller	Recorder
Paul Novick	Recorder
Lucy Winchester	Recorder

APPENDIX 3 Symposium Papers

Agriculture and Structural Change: Policy Implications of Diversification in Asia and the Near East (Carol E. Timmer)	Irrigation in Asia and the Near East in the 1990s: Problems and Prospects (G. Levine, R. Barker, M. Rosegrant, and M. Svendsen)
Agricultural Prices and Stabilization Policy (C. Peter Timmer)	The Role of Irrigation in the Agricultural Development of Asia (David Seckler)
The Role of Agriculture in Employment Generation and Income Distribution in Asia and the Near East (C. Peter Timmer)	Institutional Sustainability and Rural Development: Issues for Asia and the Near East in the 1990s (Arthur A. Goldsmith)
Agriculture and Fertilizer Policy (Junaid Kamal Ahmad and Walter Falcon)	Agriculture and Rural Development in Asia and the Near East: A.I.D. Programs and Strategies (R. Suttor, P. Muscato, L. Winchester, and J. Lee)
Employment and Income Growth in Asia: Some Strategic Issues (Raisuddin Ahmed)	Trade and Development: The Complementarity of Agricultural Trade (Mathew D. Shane)
The Impact of Economic Policy and Structure on Patterns of Food Demand in Asia and the Near East (Richard H. Goldman)	Human Capital and Agricultural Productivity Change (Robert E. Evenson)
Agricultural Research and Technology in the 1990s in Asia and the Near East: Trends and Possible Strategies for Aid (Carl E. Pray)	

APPENDIX 4 Paper Abstracts

Agricultural and Structural Change: Policy Implications of Diversification in Asia and the Near East *Carol E. Timmer and C. Peter Timmer*

In the mid-1980s, the rice-based and wheat-based economies of Asia and the Near East began to face the problem of widespread surpluses, which forced down rice and wheat prices in domestic and international markets. The resulting low incomes for farmers who were not protected from price declines caused these farmers to search for alternatives to rice or wheat cultivation. Countries that kept domestic prices above the low prices in the world market often faced large budgetary costs, and these governments sought to diversify

their farmers out of the basic food staple. Donor agencies, especially the World Bank and the Asian Development Bank, found their agricultural portfolios heavily invested in rice-specific irrigation systems, with very low economic returns being generated when evaluated at world prices. Rural diversification thus became a vehicle for alleviating the distress caused at three levels—farmers, governments, and donors—by the collapse of world wheat and rice prices under the pressure of large supplies in the mid-1980s.

Designing and implementing new policies and investment strategies to foster rural diversification turned out to be a complicated undertaking, however. Two major trade-offs

surfaced very quickly as governments attempted to respond to the “crisis of success.” First, a concern for income distribution—farm incomes were already lower than urban incomes—conflicted fairly directly with efficiency considerations, at least in the short run, and governments found it difficult to choose one or the other or an appropriate balance of the two. Attempts to have more of both created a second important trade-off, between incurring large budgetary costs to stabilize rice or wheat prices and passing on the costs to consumers. The dilemma for these countries, especially the ASEAN-4 countries of Indonesia, Malaysia, the Philippines, and Thailand plus parts of South Asia, is in reconciling their concerns to minimize the adjustment costs to the rural sector of coping with low cereal prices, to keep their budgetary costs under control, and all the while to be sure that future patterns of resource allocation are not badly distorted by the policies and investments initiated to cope with the short-run problem. In principle, the approach in the long run is to let the “pull” factors of higher incomes in the nonagricultural sector attract resources out of agriculture rather than let chronically low prices “push” farmers into urban jobs. Ultimately the process of rural diversification must be consistent with longer-run patterns of structural transformation. Arguably, the most successful countries will find ways to use the diversification process to stimulate this transformation, thus laying the groundwork for more efficient resource allocation and better income distribution.

Agricultural diversification is a much broader process than just finding new crops to grow instead of rice or wheat; it involves the entire rural economy and is a process of broadening and maintaining the sources of incomes of rural households. The process extends from the introduction of new crops into traditional farming systems to the development of off-farm jobs in small-scale rural industries and eventually to the exit of a significant proportion of the rural work force from agriculture as part of the structural transformation of the economy. At this level of generality, rural diversification is a gradual and inevitable process engendering little controversy.

The structural transformation is crucial to sustaining economic growth. Structural change is the ultimate measure of an economy’s development because a society has safely managed the transition from a traditional primary food and extractive economy to one based on technology and knowledge only when the modern industrial and service sectors make up a majority share of economic activity. Only economies based on technology and knowledge can offer sustainable improvements in welfare for a growing population.

Government policy makers in developing countries, however, are faced with a dilemma in managing this transitional process. It is shortsighted to allow farmers to be driven off their land by low prices for agricultural commodities, particularly in response to temporary price declines in world markets. Food security must be maintained and future supplies of the basic food staple guaranteed, whether rice or wheat. Despite the changing patterns of food demand that can be expected in the process of economic development, the large countries of Asia cannot rely on the world market to meet their requirements for the basic food staple; they must grow most of it themselves. Policy makers have to find a balance among the appropriate level of incentives to farmers to grow the basic cereal, policies that encourage some farmers or some agricultural regions to diversify their production and become less dependent on production of a single commodity for their incomes, and policies that encourage resources to flow out of agriculture together.

The first part of this paper describes the process of structural transformation of an economy from an agriculturally based one to a modern industrial and service based economy. The second part looks at structural change in the countries of South and Southeast Asia and the Near East. From this review of the comparative experience of these developing countries, important policy issues emerge. Higher rural incomes do not automatically result from diversifying agricultural production. Many other government policies, both within the agricultural sector and outside, affect the welfare of rural workers. Some countries have ignored their agricultural sectors; others seem to be overwhelmed by the magnitude of the problems of rural poverty, population pressures, and shortages of jobs outside of agriculture. The third part addresses these policy issues in the context of likely trends facing the agricultural sector in the 1990s.

Agricultural Prices and Stabilization Policy

C. Peter Timmer

This paper outlines the analytical underpinnings for the pragmatic approach to agricultural pricing that is so dominant in Asia. In contrast to the free market and structuralist schools of agricultural pricing, this third school of thought is tentatively labeled the “stabilization” school. The main contention of this school is that by following short-run price movements in international markets, an economy incurs significant efficiency losses, but the economy incurs equally significant efficiency losses by *not* following longer-run trends in international opportunity costs (whatever the market processes that determine them). Optimal *efficiency* thus calls for some degree of market intervention to stabilize short-run prices, but there must be sufficient flexibility to allow domestic prices to reflect international price trends. Rent-seeking behavior is constrained, if not eliminated, by using competitive market agents to carry out most marketing activities, but within government-established price bands.

While rejecting the call of free market advocates for no pricing interventions, the stabilization school also rejects the structuralist desire to use agricultural prices primarily as an instrument for redistributing incomes. Further, by encouraging the development of a competitive private marketing sector over time, the role of government price interventions can decline as the role of price stability for the basic foodstuff becomes progressively less important to the economy during the course of economic development. Structuralist- or socialist-inspired stabilization policies that actively seek to displace the private marketing sector have great difficulties when the opportunity (or budgetary need) comes for such a transition.

Neither the underlying analytical foundations nor workable operational procedures have been satisfactorily developed for domestic price stabilization schemes to be implemented and evaluated with any degree of coherence. The fact that nearly all countries in Asia and the Near East attempt to implement such schemes suggests that the rewards to progress on both fronts—analytical and operational—will be very substantial. This paper is primarily concerned with operational issues of analyzing, designing, and implementing price-stabilization schemes. However, the paper lays out the basic logic of the analytical approaches in order to focus the discussion of operational issues on pricing strategies that are consistent with the theoretical rationale for their design and implementation.

The important analytical question for the stabilization school is not to demonstrate that the pervasive market failures in developing countries lead to non-Pareto-optimal

outcomes, but that they are quantitatively significant relative to the cost governments would incur in order to alleviate them. It is already clear that these costs from price instability will not be found in the static, micro-based models that follow the Newbery-Stiglitz tradition. The paper focuses on the impact on investment behavior and on the macro economy as the obvious places to look for more significant benefits from price stabilization, as well as at consumer preferences for price stability in the presence of adjustment costs. No formal model is offered, but the likely ingredients of a model that would capture these effects include the following: displaced investments in physical capital at the farm level, the marketing sector, and the industrial sector; substitution of consumption and leisure for savings and work; biases in investments in human capital for the farm agent and intergenerationally in children; the transactions costs consumers face in reallocating budgets when prices change; the welfare gains from a psychic sense of food security (and voters in rich countries and poor alike place a substantial economic price on this factor); and the feedback from this sense of security to a stable political economy, which reinforces investors' willingness to undertake long-term (and hence risky) commitments.

The benefits from stabilizing the prices of basic foodstuffs or other agricultural commodities with significant macroeconomic linkages, are considerably larger than those reflected in the models that have been used so far to analyze relative costs and benefits of price-stabilization programs. While little is known empirically about the size of the dynamic and macroeconomic benefits of stability, it is difficult to agree that they should be ignored in the evaluation of such programs. The pervasive, indeed universal, tendency of Asian governments to stabilize their domestic rice prices relative to unstable world market prices for rice suggests that the benefits may be very large. The relatively rapid economic growth in many of these Asian countries argues that the impact of efficiency losses and budgetary costs on growth cannot be too large, at least if the price-stabilization program is well designed and implemented. A focus on these operational issues of design and implementation, which are much better understood than the resulting dynamic and macroeconomic benefits, offers some practical guidelines in judging the efficacy of price-stabilization policies. The guidelines are drawn from countries that have been more successful than others in managing the complex tasks of intervening agricultural price formation without incurring unacceptably large budgetary costs or sacrificing long-run efficient resource allocation.

The operational significance of two basic principles identified in the paper—grain price stabilization both costs public resources and destabilizes either the government budget or the credit market—is quite profound. Failure to face them directly is the most common reason for failure of stabilization programs. Planning of stabilization activities can be based on expected values under normal circumstances, and budgets can be drawn up under these assumptions. But actual operations must be conducted as reality unfolds, and reality is likely to hold surprises with respect to the size of the harvest, level of consumer demand, expectations of the private sector and its participation in storage and transportation, world market prices (in dollars), and the country's exchange rate. For a food logistics agency to cope with these surprises, it must be able to arrange for substantial credit lines on very short notice, often no more than a week or two. Many government agencies have difficulty allocating resources so quickly unless they understand in advance the need and can

trust the logistics agency to spend the money, with adequate financial controls, for the intended purposes. It is no wonder that so few countries have been able to carry out this task successfully over a long period of time.

The Role of Agriculture in Employment Generation and Income Distribution in Asia and the Near East *C. Peter Timmer*

Policy makers often put the question of agriculture's role in employment generation in a disarmingly simple way: how fast must the agricultural sector grow in order to absorb the new entrants to the labor force that cannot find jobs in other sectors? The notion that agriculture is the "employer of last resort" stems from conceptions of traditional agriculture rooted in dual economy models and "the moral economy of the peasant." If workers remain "behind" in the agricultural sector until they are needed in the modern industrial or service sectors, the answer is fairly simple—the agricultural sector must grow enough to provide food for the rural population to survive until workers migrate to better paying jobs, but beyond that planners will be concerned only with maximizing growth of industrial output. By raising the question, however, policy makers are, at least implicitly, raising a set of deeper and more complicated issues. The welfare levels of the rural labor force are themselves a significant part of the objective function, and welfare extends well beyond physical quantities of food available in the countryside. The real question being asked is "how fast must the agricultural sector grow to absorb the 'residual' labor at constant or rising standards of living?" That is, what agricultural development strategies will raise real wages in rural areas?

The answer to this question requires a broad understanding of both the supply and demand determinants of wage formation in rural labor markets, including the extent to which a supply-demand framework is even helpful in explaining the formation of rural wages. The diversity of experience in Asia and the Near East is truly mind-boggling, and no single model or set of parameters can begin to capture either the static situation or dynamic behavior. The purpose of this paper is much more modest: a review of some basic empirical trends and patterns with respect to agricultural employment and income distribution; a rough summary of the important elements that influence the demand for labor in the rural economy; an analysis of the instruments available to policy makers to manipulate those elements to influence income distribution, primarily through increases in real wages in rural labor markets; and a sketch of the analytical tools available for identifying key trade-offs and opportunities in the likely economic environment in the 1990s. The basic framework for the discussion is long-run equilibrium between trends in labor supply and demand leading to real wage formation in rural labor markets.

No readily available data show trends in real wages for unskilled workers in rural areas for the important countries in Asia and the Near East. Several proxies, however, provide useful glimpses at what must be happening to rural wages and are important indicators in their own right. The following variables are analyzed in the paper to provide insights into the structure and dynamics of the rural economy: the rate of increase in the agricultural labor force relative to the overall labor force; the share of the agricultural sector in GDP relative to the share in the total labor force; implied levels and changes in agricultural per capita incomes relative to

224

those in the nonagricultural sector; changes in labor productivity in agriculture relative to those in the rest of the economy; and changes in average levels of caloric intake.

At least three relatively discrete topics need to be treated in a discussion of the relationship between the agricultural sector and patterns of employment in a country. The narrowest concern, but possibly the most significant in quantitative terms for many countries, is how many people will find jobs directly in the agricultural sector under alternative growth strategies. For countries somewhat further along in the agricultural transformation, the indirect effect on employment of agricultural growth may be more important. The employment consequences of investments in rural infrastructure (and the second-round impact on agricultural employment when output then expands), of greater volumes of marketed inputs and output processing, and of evolving consumption and investment patterns eventually dominate the direct effects of employment in agriculture. And as commodity and factor markets become well integrated between rural and urban areas, the macroeconomic and general-equilibrium consequences for employment from changes in agriculture, especially changes in important food and agricultural prices, are likely to be the most important of the three factors influencing the relationship between agriculture and employment.

Investment in infrastructure has two important dimensions in employment generation in Asian agriculture. Rural infrastructure, in the form of irrigation and drainage works, roads, ports and waterways, communications, electricity, and market facilities, provides the base on which an efficient rural economy is built. Much of the investment needed to provide this base comes from the public sector, even when the private sector is playing the predominate role in agricultural production and marketing. Without this public investment, rural infrastructure is seriously deficient in stimulating greater production of crops and livestock, and the reduced employment opportunities are obvious. Investment by the private sector is also less prohibitive in the absence of adequate rural infrastructure, thus further reducing rural dynamism. The main role of investment in infrastructure in agricultural employment is no doubt through this longer-run stimulation of agricultural production.

A second role needs to be stressed as well. The investments in infrastructure themselves can generate substantial rural employment directly, and this potential has not been lost on planners seeking both long-run employment creation and short-run work programs to alleviate rural poverty or even famine conditions. "Food for Work" and "Employment Guarantee" schemes almost always are designed to build rural infrastructure using low-cost or unemployed workers. Large-scale irrigation and road construction projects offer the potential to employ vast numbers of unskilled rural laborers if project designers are sensitive to employment issues in the choice of technique and are willing to address the managerial problems that arise from labor-intensive techniques in construction.

The progressive commercialization of agriculture as more productive inputs are purchased and a greater share of output is marketed is more than just a stimulus to agricultural productivity; it also creates substantial employment in the agriculturally related industries. In modern economies far more workers are engaged in agribusiness than in farming itself. Unfortunately, relatively few policy instruments are available to stimulate efficient employment in the agribusiness sector. Parastatal and state-owned enterprises have a poor record of commercial viability in most of Asia and the Near East. Their employment record may be "good" in terms

of numbers of workers, but labor productivity—value added per worker—tends to be very low. More efficient firms and more productive workers emerge from a competitive private sector, and stimulating the development of such firms is now a high priority of most countries in the region. Because so many impediments to the private sector have existed historically, especially in the agribusiness/marketing field, policy reforms that end barriers to private-sector participation are an important first step. But stimulating private investment while creating a competitive market structure is a delicate task, not one for which most governments have any real experience. Policies that restrict licenses to a limited number of firms in order to guarantee market share might well induce investment, but they produce an oligopolistic market structure. By contrast, an aggressive competition policy might well scare off private investors, especially domestic entrepreneurs, at least initially.

It is fairly apparent that simply "getting prices right" in the agricultural and marketing sectors does not of itself induce the necessary private investments or competitive market structure. Inappropriate price policies are like other barriers to participation by the private sector; removing them might be necessary but not sufficient, in the absence of other institutional and legal reforms, to guarantee greater involvement by the private sector. Economists are woefully ignorant of the basic causes of the "animal spirits" that motivate private investors, but the need for a competitive market structure is compelling to the profession. Businessmen are happy to explain what they need to make a profit; a government-guarantee of that profit would then lead them to invest. Striking the right balance between the two perspectives will take pragmatic experimentation with alternative policies.

The most powerful lessons on the relationship between agricultural change and income distribution are the need to stimulate agricultural productivity and to foster the intersectoral links that contribute directly to agricultural development, employment, and rising real wages. When the industrial and service sectors are growing efficiently and have strong market linkages to the rural economy, an agricultural sector that grows fast enough to raise labor productivity, combined with a price-stabilization policy that assures income gains to farmers and access to food for low-income consumers, will raise rural wages and improve income distribution. There are no tricks here; only a coherent food and agricultural policy maintained for several decades can make a sustainable difference to the poor. Managing short-run price policy to stabilize the real incomes of the poor while protecting long-run investments in the rural sector provides an important guarantee of welfare levels of the most vulnerable with the shortest time horizons. But food price policy cannot solve the problem of hunger any more than it can the problem of agricultural productivity. For both problems, agricultural development that raises real wages is needed.

Most agricultural development policies that influence rural wage formation do so via the demand side of the equation. The main instruments are investments in rural infrastructure, including irrigation with its second-round impact on multiple cropping, new technologies that raise yields, increase labor requirements, shorten the growing season, and permit a second or third crop, adequate price incentives to stimulate on-farm savings and investments, and roundabout expenditure multipliers, and a favorable environment for vertical diversification, which steadily transfers workers from agriculture to industry and the service sector, even if it leaves them in rural areas (and living on the farm). These are the ingredients of

agricultural development and structural change. Their successful implementation depends on a healthy relationship between the agricultural sector and the rest of the economy, in terms of both market linkages and policy balance.

Agriculture and Fertilizer Policy

Junaid Kamal Ahmed and Walter Falcon

Fertilizer is a unique input. Its large contribution to agricultural production makes fertilizer crucial to any strategy designed to speed the modernization of the rural economy. Its volatile prices in the international market create linkages to the macro economy through the balance of payments and government budget, as well as through instability in food supplies if the international prices are routinely passed through to farmers. A country that chooses to produce its own fertilizer to circumvent instability in world markets faces a technology with increasing returns to scale, large capital costs, and requirements for guaranteed access to low-cost feedstocks. Whether fertilizer is imported or produced domestically, an efficient marketing infrastructure is needed to ensure widespread and timely dissemination and distribution. Farmers must know about the use of fertilizer and be able to afford to buy it in optimal amounts.

These issues must be resolved simultaneously, a daunting task for policy makers seeking to develop a coherent fertilizer policy. In the face of significant market imperfections, the unique features of fertilizer require governments to intervene and establish an efficient fertilizer strategy. This paper emphasizes the importance of primum policy as the crucial link to the three primary levels of concern: domestic production or imports as a source of supply, the nature of government involvement in marketing and distribution, and the role of government policy in stimulating farm-level demand for fertilizer and a more dynamic agricultural economy. No government will leave all of these concerns to the free market. The key question is which interventions will improve efficiency and set the domestic fertilizer economy on a sustainable path. Given the importance of the industry and the large sums of money involved, the answer must deal with both the economics and the politics of the question.

This paper analyzes different aspects of government intervention in the fertilizer sector. Emphasis is on the effects of the various pricing policies undertaken by governments, their justifications, and long-run impact. Experience of different Asian countries is stressed, and general policy conclusions are put forward based on the lessons learned since the mid-1960s. A case is made that government intervention in the fertilizer sector is not only pervasive, but that some of it has an underlying economic rationale. This paper provides guidance on the types of intervention that are consistent with such a rationale, the feasibility of their implementation, and the economic and fiscal costs likely to be incurred. The types of interventions likely to be counterproductive are also identified. The primary sources of market failures that justify government intervention occur at the supply and demand ends of the fertilizer system. Government interventions in marketing and distribution have often been counterproductive. Designing a fertilizer strategy that copes with the mixed roles of government and the private sector in such circumstances has eluded most countries in Asia and the Near East.

There are only three ways for a country to supply its nutrient requirements for the agricultural sector: import from the world market, produce the fertilizer in a modern domestic plant, or use organic techniques of nutrient recycling. No

country has been able to use the latter approach to sustain rapid increases in agricultural output, and most policy makers see the choice of supply as between imports and domestic production. If a decision is made to produce domestically, and this is nearly always a policy decision even if the private sector will own and operate the plants, then issues about timing and sources of investment arise, along with associated issues of domestic producer prices relative to fertilizer prices in the world market. Many developing countries since the mid-1960s have accelerated domestic investment to promote self-sufficiency in fertilizer production. In developing countries, fertilizer production has increased from 13 percent of the world total in 1975 to 32 percent in 1985.

For countries that have the necessary natural resources and a growing internal demand for fertilizer, domestic production can be efficient if the economy's exposure to fertilizer price instability in the world market is reduced and its subsequent macro effects dampened. But such benefits can be negated by improper timing of investment in domestic plant capacity and inefficient producer pricing. Because of increasing returns to scale in fertilizer production, domestic plants that come on-stream substantially before there is adequate growth in domestic demand result in production inefficiencies and capacity under-utilization. If the government subsidizes the export of domestically-produced fertilizer, improper timing of investment can lead to large budgetary outlays. Likewise, if the government's pricing policy is one of setting ex-factory prices that sustain inefficient production, the policy may succeed in buffering the economy from short-run fluctuations in the world market, but at significant economic cost. An efficient and effective fertilizer supply policy thus requires a delicate balance of policies for trade, investment, and producer pricing.

On the demand side, the use of a fertilizer subsidy for farmers has been justified most often to increase agricultural production, particularly in countries in which food self-sufficiency is a major policy objective. Policy makers usually see the fertilizer subsidy as a tool for offsetting the effects of low agricultural prices and for improving income in the rural sector. At the same time, fertilizer subsidies are heavily criticized on the basis of neoclassical models of economic efficiency for their distortions of incentives and adverse impact on income distribution.

In a textbook world of complete and perfect markets, there is no need for taxes or subsidies to promote economic efficiency. In the presence of certain types of market failures, however, a potential case for government intervention can be made. In fertilizer use, policy analysts point to three potential sources of market disequilibrium: risk-averse behavior on the part of farmers, inadequate knowledge about the productivity of fertilizer use, and imperfections in capital markets. As a result, it is argued that farmers will underinvest in fertilizer. A fertilizer subsidy can be used to compensate, at least partially, for these various sources of disequilibrium. A subsidy serves to some extent as a substitute for crop insurance and a rural credit market. It also provides incentives for farmers to experiment with higher levels of fertilizer, thereby speeding the learning process about optimal applications. To the extent that risk aversion, inadequate information, and imperfections in capital markets lead to a departure in fertilizer use from the social optimum, a fertilizer subsidy should improve the efficiency of resource allocation.

The actual implementation of fertilizer policy in Asia and the Near East presents a major puzzle to economic analysts. Analytically, the potential for intervention into the fertilizer

sector to improve economic welfare has been demonstrated in country after country. No country has ignored this message. All the countries in Asia and the Near East intervene into their fertilizer sector in one way or another, and most intervene massively. State control of fertilizer imports and exports, state-owned or licensed fertilizer factories, monopoly distribution rights for a government firm or restricted set of semi-private firms, and controls over fertilizer use by farmers are the norm throughout the region. Interventions at the level of farm use are especially popular, with price subsidies, extension workers, model farmers, and village leaders all encouraging farmers to use more fertilizer.

Despite the apparent match between analytical design and policy implementation, the record of the fertilizer sector in these countries is strewn with the wreckage of repeated failures. In virtually every country and in virtually every area of government intervention, the actual results have usually been dramatically worse than promised by the models. If government intervention is necessary to create a modern fertilizer sector in a developing country, why do governments in fact do it so badly? The answer must be found in models of political economy and public choice rather than narrower models of project costs and benefits. The two together, however, provide ample insights into why things go wrong so often.

The fertilizer sector is an irresistible source of funds for government officials, off-budget operations, and favored clientele in the private sector. No country can do without fertilizer. *Some* mechanism must be found to supply it to farmers if agricultural output is to grow. Even in relatively small countries where domestic production of fertilizer does not make economic sense, controlling imports provides lucrative opportunities for over-invoicing, side-payments for distribution licenses, and informal taxes throughout the marketing chain. The task for fertilizer policy in the 1990s is to find a path through the minefield of market failures *and* government failures by limiting interventions to those areas where both analytics and potential to control corruption are promising. Experience of the last several decades provides some insights.

First, there are substantial benefits from domestic production of fertilizer if the basic natural resources are available to permit reasonable costs of production. Ownership of the plants is not the key element in determining the efficiency of operation; ex-factory pricing policy is. Aid donors have not always been as helpful in reaching the right decisions in this arena as they might be. Fertilizer factories, make marvelous aid projects. They are discrete entities, absorb lots of money, can use Western machinery and technology, and require little donor monitoring. To guarantee a reasonable rate of return on the investment, however, donors often insist on guaranteed ex-factory prices. Such a pricing policy has very negative effects on choice of technique and operating efficiency.

Second, once a country has the domestic capacity to produce fertilizer, beneficial pressures are generated to develop an effective distribution system to deliver it to farmers. One argument for domestic production is the reduced exposure to instability of fertilizer prices in world markets, but the enhanced regularity of supply to farmers because of domestic production is a separate factor. In political terms, the fertilizer producers are an additional weight in the balance between farmers' desires for regular and low-cost supplies as opposed to government officials' desires to control and extract rents. Tipping the balance in favor of farmers by fostering a more effective distribution system has helped avoid fertilizer shortages when foreign exchange crises occur. Farmers who are

totally dependent on imports for their supplies do not have this added support for their interests.

Last, "pure" solutions are guaranteed not to work. Total government control of the fertilizer sector has proven very high cost and insufficiently effective in delivering supplies to farmers. The dynamic losses in efficiency are larger than either the allocative or X efficiency losses, although the latter can be extremely large in some circumstances. A free-market approach solves some of these problems but creates others, including the likelihood that no fertilizer industry at all will emerge from domestic investors. The resulting instability may dampen the entire growth process as well as threaten the political survival of any government that attempts such a strategy. Some combination of market forces and government interventions is needed, with the market providing allocative signals, the government stabilizing them around a market trend, and a competitive private sector delivering the goods at low cost. The challenge is to see if any country can find and sustain this magical combination.

Employment and Income Growth in Asia: Some Strategic Issues

Rausoldra Ahmed

This paper examines the economic progress made during the last two decades (1965-85) by some selected countries of Asia: India, Pakistan, Bangladesh, and Sri Lanka in South Asia; Thailand, Malaysia, Indonesia, and the Philippines in Southeast Asia; Korea and Japan in East Asia.

South Asian countries have realized a very slow growth rate in per capita GNP compared to Southeast and East Asian countries. The per capita GNP of Thailand was about twice that of India in 1965. By 1985, Thailand's per capita GNP was more than three times that of India's. Indonesia had about the same level of per capita GNP as that of India in 1965, now it has twice that of India. South Korea's per capita GNP was about three times that of India in 1965, but South Korea raised that level to make it eight times by 1985. The difference in the pace of growth in per capita GNP within South Asia is less dramatic, but yet noteworthy. Bangladesh's per capita GNP was roughly three-fourths that of India's in 1965 but Bangladesh has slipped down to the per capita GNP that is half that of India's in 1985.

Growth in employment roughly corresponds to the growth in production, but there are considerable diversities among countries in sectoral growths in employment. Moreover, available employment statistics do not reflect the degree of underemployment. The performance in growth rates of average income and production seems to bear only a weak but positive association with the alleviation of poverty.

Simultaneous success in economic growth and alleviation of poverty seems to be quite important in developing countries of Asia. It is argued in the paper that an appropriate development strategy is the key to this success. In the context of emerging agrarian structure of most developing Asian countries, particularly in South Asia, such a development strategy must pinpoint priority to agriculture and rural non-farm employment. Agriculture alone is not sufficient for reducing poverty and accelerating growth. Three factors, namely, (a) development of rural infrastructure, (b) generation and spread of modern technology in agriculture, and (c) exploitation of international markets through a number of macro-policy measures, constitute the strategic elements of such a development strategy. Some empirical evidences are presented to buttress these arguments.

21

The Impact of Economic Policy and Structure on Patterns of Food Demand in Asia and the Near East

Richard H. Goldman

Many countries in the ANE region have achieved impressive growth in per capita consumption of calories in the past couple of decades. Others have been less successful. The rate of population growth has varied widely among these countries. This has helped some countries and hindered others in their attempts to improve per capita availability of food. The countries in this region have relied on a variety of policy instruments to achieve food consumption and other development objectives. Analysis shows, for example, that per capita consumption in some countries has been stimulated largely by pricing policy, while other countries have relied more on income growth, particularly in rural areas. A comparison also reveals that countries relied to varying degrees on production and trade policy to achieve consumption goals. In some countries the entire increment of Green Revolution-induced production was used to enhance per capita availability of cereals, while in others much of the added production was used for import substitution. There is, as well, a group of countries where, despite low agricultural growth, dramatic improvement in per capita food consumption was achieved through expansion of food imports.

In the coming decade, demographic and economic factors suggest that growth in demand for cereal calories will slow down. At the same time, diet diversification, which is already underway, will continue. Part of this process will result in an increasing demand for coarse grains for animal feed to support expanding demand for poultry meat and eggs and other feed-intensive protein sources.

Agricultural Research and Technology in the 1990s in Asia and the Near East: Trends and Possible Strategies for Aid

Carl E. Pevs

IMPACT OF AGRICULTURAL R&D IN ANE

Agricultural research has paid off in the past. Recent studies of the major field crops indicate that research by Asian governments, by the International Centers of the CGIAR, and by the international and national research systems working together have consistently produced high rates of return to government investments. A few recent studies suggest that private R&D also produces high social rates of return.

Public research in the basic grains has had a generally favorable impact on income distribution. Much of the benefit from modern varieties have been passed along to consumers in the form of lower prices. Since purchases of basic grains make up a large share of the income of the poor, they benefit much more than the rich, who spend little on grain.

POTENTIAL FUTURE IMPACT

Agricultural research will continue to be a productive investment in the 1990s. There is some evidence that currently available technology, and applied research may produce somewhat less growth in the near future. The spread of modern varieties of wheat is approaching 90 percent in Asia, and the spread of modern rice varieties may also be slowing down. Nevertheless, there are many technical opportunities for increased production through crop management research, research to spread modern varieties of coarse grains and oil seeds, and research on some plantation crops.

Biotechnology holds the promise of increasing yield stability through better control of disease and insect pests. This could have an impact on rice production in the next five to

ten years, and on other crops later. It is unlikely to have much impact in the yield potential of major field crops in Asia and the Near East until after 2000. To increase yields, national research programs will have to build on the breakthroughs in biotechnology in rice, maize, and other crops in which basic research is currently underway.

TRENDS IN R&D IN ANE

Research systems in most ANE countries grew rapidly between 1960 and 1980. Since 1980, government R&D expenditure has gone up in some ANE countries, but down in others. R&D expenditures in all ANE countries are low relative to the size of agricultural GDP.

Research expenditure by the international agricultural research centers in the CGIAR has leveled off. Within the CG system, emphasis is shifting to sub-Saharan Africa. The number of international centers outside the CG is growing, and the CG is considering accepting some of them as members of the CG. Many of the new centers emphasize resource management rather than plant breeding.

Private sector research in Asia is growing rapidly, but from a very low base. Private research expenditures is now as large as public research only in a few crops such as maize in some ANE countries.

WEAKNESSES OF CURRENT SYSTEMS

NARS spend too little on agricultural research, particularly on the major food grains and subsistence crops. Most NARS in the ANE countries do have fairly strong applied plant breeding programs, but their research to adapt the results of applied research to farmers' needs is weak, and strategic and basic research is almost nonexistent.

Private research expenditures in ANE are much less than public expenditures. It is very applied, and concentrates on hybrid seed development, pesticide research, machinery development, and plantation research. As such, it neglects many of the same areas in which the public sector is weak.

The international centers are strongest in applied research. They are moving into biotechnology research. CG and non-CG centers are starting to work on some important resource management issues, but research on resources and the environment is still one of the most neglected areas of international and national research.

AID R&D PRIORITIES FOR THE 1990s

Countries. AID's R&D priorities should be investments in Burma, the Philippines, and other countries that have low R&D expenditures to Agricultural GDP ratios.

Within countries. Priority should go to the relatively favorable agricultural regions in countries where food production is still an important problem.

Commodities. Basic food grains have priority, especially in South Asia. Food grain self-sufficiency is still fragile in Asia. Production may not keep up with demand in the Near East. Technical opportunities for productivity growth are available, and countries are currently under investing in food grain research.

Noncommodity research on resource and environmental issues must be strengthened.

Types of research. Adaptive research that tailors technology to farmers' needs and strategic research, such as applying biotechnology to breeding stress resistant crops, should receive the most attention.

Types of institutions. To increase food grain production, public research and CGIAR centers need support. For diversification, AID should support private research and the government agricultural research institutions. For more basic

biotechnology and resource research. LDC agricultural universities and general universities, international centers, and DC universities and private research companies must also receive resources.

STRATEGIES FOR IMPLEMENTING PRIORITIES

To increase the productivity of government research institutions in ANE governments, AID should encourage more participation in R&D priority setting by farmers and agribusiness. AID can provide money to existing farmer groups to fund research by the group or by other institutions. AID can support programs that help organize farmer groups. Finally, AID can encourage government research institutions to work more closely with farmer groups.

AID should also be investing in more basic strategic and basic agricultural research in ANE. This requires more than just scholarships, buildings and equipment. AID must find ways to support joint research, improve communications between scientists within LDCs, and with their colleagues elsewhere.

AID should do more to promote private sector research. It can help remove policy constraints on private research. It can encourage public research projects that will induce more private research, such as the development and release of superior inbred lines. Finally, AID may be able to subsidize private research on certain important topics.

Irrigation in Asia and the Near East in the 1990s: Problems and Prospects

G. Levine, R. Barker, M. Rosegrant, and M. Svendsen

Food grain production has grown at a rate of about three percent per year in Asia and the Near East for the past two decades. At the present time there is a sharp difference of opinion as to what the future holds for agriculture in this region. This difference of opinion is closely linked to uncertainties associated with the development of irrigation, which has played a central role in the achievement of rapid output growth.

TRENDS IN NEW IRRIGATION AND IN IRRIGATION INVESTMENTS

In order to better understand the current situation with respect to irrigation, we assembled data on the rate of change in new areas irrigated and on trends in irrigation investment by major international lenders (World Bank, Asian Development Bank, U.S. Agency for International Development, and the Japanese Overseas Economic Cooperation Fund). New irrigated area grew fairly steadily at a rate of about two percent worldwide, and in from the mid 1960s to 1980, but this growth rate fell to less than one percent in the 1980s.

Following the sharp rise in food grain prices in 1973, investments in irrigation by the major lenders rose sharply in the mid 1970s. But as food grain supplies have increased and prices have fallen in the 1980s, investments in irrigation and agriculture also have declined. Other factors that undoubtedly have contributed to this decline include the large public and foreign debt load carried by most of the agriculturally based economies in the region, the decline in share of unexploited irrigation development and rising per hectare costs, and the stiffening political resistance from environmental interests and those displaced or otherwise negatively affected by irrigation development.

The apparent cyclical fluctuation in irrigation investment raises questions about the appropriateness of benefit-cost or internal rate of return as the basis for project justification. The major lenders, dealing on a project-by-project basis,

apparently do not see themselves as endogenous actors in the system, capable through their investment decisions of creating cyclical fluctuation in agricultural production. Given the long-term nature of irrigation investments, would it be more appropriate to treat irrigation in the manner of a utility or basic national infrastructure, such as roads and power?

ISSUES RELATED TO THE PERFORMANCE OF EXISTING SYSTEMS

The decline in irrigation investments raises a number of important issues, particularly regarding the performance and potential productivity of existing systems, which we have explored only briefly. First, and perhaps most obvious, as investments in new systems decline and there is a shift toward rehabilitation and qualitative improvements in existing systems, there is a need for more adequate ways to characterize and quantify irrigation services. Failure to develop such standards and techniques will leave us unable to measure the impacts of our investments. Very little information exists at present on the potential for developing new irrigation or for raising the productivity of existing systems.

Developing countries have been accused by international lenders of not properly maintaining their irrigation systems. How can efficiency in the operation of systems be improved? There is a growing consensus that farmers should have more direct participation in the design, operation, and maintenance of systems.

Due to the extreme budget constraints that many governments are facing, there is a major interest in devising ways to obtain additional resources from farmers for O&M. The transfer of operation and maintenance responsibility to users, particularly at the tertiary or field channel level, is gaining popularity. There is a feeling, partially supported by research, that water user group operation of portions of the system is more efficient than government operation. Relatively successful techniques for assisting farmers in organizing water user groups have been tested in the Philippines, Sri Lanka, and Nepal.

The relatively low prices for rice and wheat, and the increasing costs for new irrigated land, have stimulated interest in the production of other crops. Diversification implies greater ability to respond to spatial and temporal variations in water need associated with diversified cropping patterns. There is a need to improve our understanding of the requirements of flexibility and of procedures for obtaining it.

IMPLICATIONS FOR USAID POLICY AND PROGRAMS

The uncertainties in predicting the future of an important and complex sector makes the identification of appropriate investment activities difficult. Nevertheless, there are indications from past trends and in more recent experience that have implications for USAID's irrigation portfolio. These are summarized as follows:

- There are sufficient differences among countries of the region in terms of both irrigation potential and in the stage of irrigation development that *a single pattern to the development of irrigation activity is unlikely to be appropriate*.
- It is clear that, notwithstanding significant development of understanding of the irrigation sector and irrigation organizations during the past 15 years, there is still much that is not adequately known. Opinions differ widely as to the most appropriate investment strategies in different circumstances. The fact that these differences in opinion exist suggests that *increased study would be not only appropriate but urgent*.
- There is a great need for better data even to define the different qualities of irrigation so that one can assess the

impact of investments on productivity. USAID should consider the fostering of increased capability in *data collection and problem analysis* to assist in significant policy, operations, and design decisions.

- There is a need to *examine more carefully the shifts in investment priorities* which have occurred recently within the irrigation sector and *the potential impacts of the downward trends in investments in new area irrigated* documented in this paper.
- One specific component of the sector where there is an obvious need for better understanding is the *role of the private sector* at both the water course and systems levels.
- In most of countries, *increased emphasis on effective farmer participation* in the irrigation sector would be valuable.
- In most countries, *increased attention to the structure and operation of irrigation organizations* would be beneficial.
- We need a *greater understanding of the rehabilitation process and of the tradeoff between rehabilitation and maintenance*.
- We need to understand how systems can be managed more flexibly to *enhance the potentials for crop diversification*.
- While it is anticipated that much of USAID's programs will emphasize the "software" aspects of the irrigation sector, *in countries with significant underdeveloped potential for expansion of irrigated area, support for development of physical infrastructure might be appropriate*.

The foregoing suggests that USAID has significant opportunities for major contributions to irrigation development in the region, but the appropriate country irrigation portfolios are likely to be complex and often different mixes of activities—physical infrastructure development, support of organizational and institutional change, and sponsorship of field studies, research, and training. *This represents a major challenge for USAID.*

The Role of Irrigation in the Agricultural Development of Asia

David Seckler

Throughout Asia, irrigation has been the lead input in growth of cereal yield. In the 13 Asian nations included for analysis, all of the countries appear to lie on virtually the same irrigation/fertilizer/HYV production function. Many observers believe that improved efficiency of water use through improved irrigation management and technology. This expectation may be largely unfulfilled, however, due to a fallacy of composition, since water losses measured on a local basis are often recovered in other parts of the system. Growth in total irrigated area in most Asian countries is declining. Only in India does growth exceed one percent per annum. There is a great need for data on cost of irrigation development and on the economic performance of recent irrigation investments. During the coming years, irrigation investments will have to be made with increasing care in order to maintain irrigation as a cost effective source of agricultural growth.

Institutional Sustainability and Rural Development: Issues for Asia and the Near East in the 1990s

Arthur A. Goldsmith

This paper looks at some of the factors that affect institutional sustainability, making particular (though not exclusive) reference to Asia and the Near East. It focuses (again not

exclusively) on two sets of institutions that are central to rural and agricultural development. The first set are colleges or universities that teach agricultural science and related subjects; the second set are public agencies responsible for integrated rural development projects (or what is often now called area or regional development).

The focus on these two sets of institutions is in response to U.S. development strategy, which has given special attention to higher education and area development projects. Higher education, of course, is critical to the processes of technology transfer and agricultural diversification, while area development is central to better natural resource management and employment generation. USAID's experiences, in turn, have generated numerous insights as to how to bolster educational and regional development institutions, and have also stimulated demand from the field for guidance about nourishing these types of institutions in the future.

Institutional sustainability is not always a feasible objective, nor even necessarily a desirable one for some projects. Insurmountable external and internal problems can terminate almost any institution. The odds for sustainability are improved, however, when an organization is able to adapt itself to its environment and to bring its operations in line with its resource endowment. Achieving a "fit" among these internal and external elements is the role of organization strategy.

While AID and other donors devote much energy to international and national strategy issues, they have tended to ignore strategy at the organizational level. The study and training of project management has focused on administrative functions, i.e., on the routine tasks of budgeting, accounting, procurement, and so forth. Relatively little attention has been given to the entrepreneurial dimension of management, i.e., to the non-routine job of strategic planning and implementation.

The entrepreneurial function is well-known in the private sector, but as Schultz (1981) points out, it contributes importantly to the building of agricultural institutions in the public sector, as well. A public entrepreneur is someone who starts or elaborates a public organization and alters significantly the existing pattern of allocation of public resources (Lewis, 1980). It is increasingly evident that creative leadership of this sort is a major ingredient in the development of sustainable institutions.

The development field, to the extent that it deals with public entrepreneurship at all, often misinterprets it as solely a matter of charismatic leadership, and therefore as something unique and non-duplicable. Certainly the more flamboyant, daring aspects of entrepreneurship cannot be taught or repeated. Strategy formulation, on the other hand, is a transferable skill. For AID to increase the probability of institutional sustainability in the 1990s, it needs to rethink its approach to management training and to project design, to put greater emphasis on managerial choice, on developing strategies at the organizational level, on evaluating environmental conditions realistically, on anticipating change, and on not overreaching institutional limits. This would not guarantee institutional sustainability, but might improve the chances that any given project would continue to provide benefits after AID funding runs out.

Agriculture and Rural Development in Asia and the Near East: AID Programs and Strategies

R. Sutton, P. Muscato, J. Winchester, and J. Lee

Active agriculture and rural development (ARD) programs are located in 15 countries in the Asia and Near East (ANE)

region, extending from Morocco in the west to the South Pacific in the east.

The overall AID budget for development is \$5.0 billion in the current fiscal year, of which \$3.0 billion is managed by the ANE Bureau. Both amounts are considerably lower than levels of three or four years ago.

Funding for ARD projects in the ANE region has increased from about \$500 million in the early 1980s to over \$600 million in recent years. Over the last ten years there has been a shift in emphasis away from "bricks and mortar" toward "softer" activities such as research, education, training, and management.

The ARD programs in the ANE region are complex and varied. Some representative projects are irrigation construction in Egypt, Pakistan and Sri Lanka; imports of fertilizer in Burma; production credit in Egypt and the Philippines; numerous research, extension and education activities; policy analysis and planning in Sri Lanka, Thailand and Tunisia; and natural resource activities in India, Thailand and Sri Lanka.

Each country mission periodically prepares a Country Development Strategy Statement. As part of the overall strategy, the ARD strategy typically emphasizes relaxing constraints on agricultural productivity, increasing agricultural production by increasing input availability, and encouragement of a policy environment which enhances rural employment and hence rural incomes.

In all but two of the country strategies reviewed, the ARD strategies include development and maintenance of an effective, coordinated and self-sustaining research and educational capacity from which agricultural technologies may be developed and disseminated.

All country strategies examined, with the exception of Burma, included emphasis on policy. About half of them focus on macro economic policies affecting the ARD incentive structure, while sectoral policy issues are emphasized in the others.

Trade and Development: The Complementarity of Agricultural Trade

Matthew D. Shane

It has been argued by Lee and Shane (1987) and others that the driving force behind growth in agricultural trade with developing countries is their rapid economic development. In the intermediate stage of development, the dynamics of development drive the dynamics of trade growth. During this stage, large increases in per capita income occur, driven by high income elasticities and demand for a changing composition of diet, from basic staples to food grains to meat. This demand for upgraded diets far outstrips the capacity to increase production domestically. During this period of development, if adequate foreign exchange is available, the excess of demand growth over production growth will be met by increasing imports.

If the above argument is valid, then a very strong case can be made for stimulating development in Third World countries by providing technical and economic assistance. Such assistance, if it is effective in stimulating development, will help create the demand for U.S. agricultural exports.

Since a large share of the economic activities of developing countries involves agriculture, can it be argued that agricultural development as well as general economic development leads to increased import demand for agricultural products? The answer to this issue depends on the degree to which agricultural development is complementary or competitive with U.S. agricultural exports. If agricultural development implies producing more food grains or oilseed, then it is

unlikely that the income effect of that development can more than compensate for the increase in supply generated from that development. However, if agricultural development is complementary to U.S. exports by expanding the supply of tropical products, then this could very likely lead to an increased demand for food grains and oilseed imports.

In this report, I investigate the degree to which agricultural trade of the Asia and Near East countries are more complementary with that of the United States than is the rest of the world. There appears to be increased competition for agricultural markets since 1978. However, there also appears to be increasing complementarity of imports over the same period. The simultaneous increase in competition in the export market and growing complementarity in import markets implies growing global specialization.

The degree of complementarity of the countries in Asia and the Near East varies substantially. Thus, while Thailand's exports are highly competitive with those of the United States, many of the countries are highly complementary. These include the North African and Middle Eastern countries, and the South Asian countries of Bangladesh and Sri Lanka.

Thus, the degree to which U.S. agricultural development assistance will facilitate the generation of import markets vary significantly from country to country. Careful consideration, therefore, needs to be given to the appropriate region and areas for U.S. agricultural development assistance.

In this report, the concept of complementarity is defined as the degree to which the overall agricultural trade pattern defined by the composition of agricultural trade, is different from that of the United States.

Human Capital and Agricultural Productivity Change

K.E. Evenson

Human capital held by farmers, and by extension agents and researchers specializing in the development and diffusion of improved technology, is vital to the achievement of productivity change in agriculture. This paper reviews studies that have sought to associate human capital and agricultural productivity growth. It emphasizes the productivity contributions of research and extension specialists. More than 50 studies covering many developing countries are reviewed. With few exceptions, they measure large productivity impacts and compute relatively high rates of return to public sector investments in research and extension programs.

A G E N D A
FOR 1989 ANE - ARDO - CONFERENCE
FEBRUARY 19th - 24th, 1989.

THEME :

RESPONDING TO THE CHALLENGE : AGRICULTURAL AND
RURAL DEVELOPMENT STRATEGIES FOR THE 1990's

OBJECTIVES :

1. Discuss the draft ANE strategy and arrive at consensus on its use as a guideline for action.
2. Explore the human, financial and organizational resources available to support implementation of the strategy
3. Make specific recommendations (targeted,actionable) for implementing the ANE strategy in AID/W and the field.

Sunday, February 19th

5:00-6:00 **Registration**

6:00-7:00 **Cocktail Reception**

7:00-8:30 Mustapha FARIS, President Directeur Général,
National Bank of Economic Development.

Michael USSERY, U.S. Ambassador
A.I.D. Administrator Message (Video Tape)

Charles JOHNSON, USAID Director

Welcome, Conference Overview and Selected
Introductions

Jim LOWENTHAL, Chief, Asia Near East / Technical
Resources / Agricultural and Rural Development
Division.

Logistics

Michael KORIN, Chief, Asia Branch, ANE / TR/ ARD

Monday, February 20th

8:30-10:00 **Welcome to IAV HASSAN II**
M'Hamed SEDRATI, Director IAV HASSAN II.

Opening and welcome to new arrivals
Jim LOWENTHAL, Chief, ANE/TR/ARD

Opening Comments,
Carl ADELMAN, Assistant Administrator, ANE

Keynote Address and Discussion
Robert PAARLBERG, Harvard Center for International
Affairs

10:00-10:30 **Break**

**MODULE I: ASIA NEAR EAST STRATEGY
IMPLEMENTATION MODALITIES AND
IMPLICATIONS FOR COUNTRY ARD
PROGRAMS**

Moderator : Pat PATERSON, ADO, USAID: Islamabad

10:30-12:00 Update : Current Development Context and Emerging
Trends
Jim LOWENTHAL, Chief, ANE/ TR/ARD

Field View
Senior ARDO

Overall Rationale and Description of the ANE draft
Strategy
Marty HANRATTY, Agricultural Economist,
ANE/TR/ARD

12:00 -1:30 **Lunch**

1:30 - 2:45 **Discussion of Strategy Elements Price
Stabilization, Employment, Income and
Consumption**
Richard GOLDMAN, Economist, Harvard University

Technical Change
Dereck BYERLEE, Head, Economics Department,
CIMMYT

Natural Resouces
Theo PANAYOTOU, Natural Resources Economist,
Harvard University

2:45-3:15 **Break**

3:15-4:45 **Reactions to the draft Strategy from field
perspectives.**
Functional Sub-groups

4:45-5:00 **Wrap up**

8:00-10:00 **Group dinner**

Tuesday, February 21st

MODULE I (continued)

Moderator : Charles UPHAUS

8:00-8:10 **Schedule Review and Annoucements**

8:10-9:00 **Infrastructure and Water Management**

Tony GARVEY, Deputy Director , ISPAN Technical,
Support Center Human and Institutional Development

Marcus INGLE, The International Development
Management Center at the University of Maryland.

9:00-11:00 **Reactions to the draft Strategy from field
perspectives
Functional Sub - groups**

11:00-11:30 **Break**

11:30-12:30 **Reports from Functional Sub-groups**

12:30-2:00 **Lunch**

Moderator : Michael KORIN, Asia Branch Chief,
ANE/TR/ARD

2:00-3:00 **Assessment of Country Status and Response to
the draft Stgrategy
Individual Missions**

3:00-3:30 **Break**

3:30-5:00 **Poster Session with Results of Individual
Responses to Strategy and Review of
Responses and Mid-Conference Review Advisor
committee**

Wednesday, February 22nd

8:00-8:10 **Schedule Review and Announcements**

**MODULE II : RESOURCES FOR
RESPONDING TO THE STRATEGY**

Moderator : Marcus WINTER, ARDO, USAID: Jakarta

8:10-10:30 **Structure of A.I.D. (International organization issues)**

William P.FULLER, DAA/ANE Human Resources and Personnel (Job classifications, training, work force projections)

Richard MEYER, Personnel Analysis Consultant

Laurance BOND, Director, Office of Personnel Management, PFM/PM Financial Resources (funding trends and level , PD & S funds)

Leonard ROGERS, Deputy Director, ANE/DP

10:30-11:00 **Break**

11:00-12:30 **Programmatic Resources (Panel Discussion)**

Food Assistance and P.L. 480

Duane ACKER, Assistant to the Administrator for Food and Agriculture, A/A.I.D.

Gerald WEIN, Food for Peace, Coordinator, ANE Bureau

Relations with Other Donors, e.g., Japan

Richard COBB, Deputy, ANE/TR Private Sector as a Resource for Strategy Implementation with Emphasis on Agribusiness

Mark NEWMAN, Director and Manager International Trade and Agribusiness Research, Abt Associates Inc.

12:30-2:00 **Lunch**

Moderator : Rollo EHRICH, USAID / Rabat

17/36

2:00-3:00 **Networking / telecommunication opportunities**

Bob BLUMBERG, Information Systems Specialist.
Communication Strategy / writing / Skills/ Publics
Information Activities & Products

Gordon MURCHIE, Director, Office of International
Development Communications, A.I.D./XA/IDC, Market

Intelligence Software
Samual DAINES, SRD Research Group, Inc.

3:00-3:30 **Break**

MODULE III : SPECIAL TOPIC

3:30-6:30 **Higher Agricultural Education in ANE**

Larry BUSH, Professor of Sociology, University of
Kentucky

Richard BAWDEN, Dean , Hawkesbury Agricultural
College, Australia

Larbi FIRDAWCY, General Secretary, I.A.V. Hassan II

8:30-10:00 p.m **Concurrent Sessions**

- Draft Natural Resources Strategy
- Draft Science & Technology Strategy
- Locust Situation
- Eastern Waters

Thursday, February 23th

**MODULE IV : RECOMMENDATIONS
FOR ACTION**

Moderator : ALan HURDUS, ADO, USAID/Dhaka

8:00-8:10 **Schedule Review and Annoucements**

8:10-9:30 **Summary of Deliberations (Panel)**
Advisory Committee

- 9:30-9:45** **Break**
- 9:45-10:15** **Overview**
- Use of Indicators for Strategy Implementation**
 Paula GODDARD, Deputy Associate Assistant
 Administrator, PPC/CDIE
- 10:15-2:00** **Recommendations for Action to Implement**
 Strategy Functional Sub-groups (work through
 lunch)
- 2:00-2:45** **Reports from Functional Sub-groups**
- 2:45-3:15** **Discussion**
- 3:15-3:30** **Break**
- 3:30-4:30** **Closing and Next Steps**
 William FULLER, Deputy Assistant Administrator,
 ANE
 Jim LOWENTHAL, Chief, ANE/TR/ARD
- 7:30-10:00** **Banquet**

Friday, February 24th

Field trips

ARDO CONFERENCE PARTICIPANTS
February 19-24, 1989

ACKER, Duane
Assistant to the Administrator
for Food and Agriculture
A/AID Room 5881 NS
Washington, DC 20523

ADELMAN, Carol
AA/ANE
Room 6724 NS
Washington, DC 20523

AFFLECK, Richard
USDA/OICD/TAD/AME
Washington, DC 20250-4300

ALISON, Kathy
ISPAN
1611 Noth Kent St. Room 1001
Arlington, VA 22209

ANDERS, Glen
USAID/New Delhi
Washington, DC 20520-9000

AZAR, Munther
USAID/Amman
Washington, DC 20520-6050

BATHRICK, David
S&T/AGR Room 409 SA-18
Washington, DC 20523

BAWDEN, Richard
Dean, Hawkesbury
Agricultural College
Richmond, NSW, Australia 2753

BECKER, John
USAID/New Delhi
Washington, DC 20520-9000

BLUMBERG, Robert
5619 North 8th Street
Arlington, VA 22205

BOND, Laurance
Director, PPM/PM
Room 1418D SA-1
Washington, DC 20523

BURGETT, Ans
USAID/Tunis
Washington, DC 20520-6360

BUSCH, Larry
Professor of Sociology
University of Kentucky
3 Rue Francois Mouthon
75015 Paris, France

BYERLEE, Derek
Program Director
CIMMYT
Apdo. Postal 6-641
Mexico 6, D.F.

CARMACK, Joe
USAID/Cairo
Washington, DC 20520-7700

CHETWYND, Eric
S&T/RD
Room 608C SA-18
Washington, DC 20523

COBB, Richard
Deputy Director
ANE/TR
Room 4440 NS
Washington, DC 20523-0053

CUMMINGS, Ralph
S&T/FA
Room 513 SA-18
Washington, DC 20523

CUMMINGS, Randall
USAID/Amman/ADO
Washington, DC 20520-6050

DAINES, Samuel
SRD Research Group
880 East 1800 North
Logan, Utah 84321

DELGADO, David
USAID/Bangkok/ADO
Washington, DC 20520-6360

DICKHERBER, Harry
USAID/Islamabad
Washington, DC 20523-8100

EHRICH, Rollo
USAID/Rabat/ADO
Washington, DC 20520-9400

EMMERT, Jan
USAID/Colombo
Washington, DC 20520-6100

FLASPOHLER, Richard
USAID/Cairo
Washington, DC 20520-770

FLYNN, John
USAID/Colombo/ADO
Washington, DC 20520-6100

FULLER, William P.
DAA/ANE
Room 6724 NS
Washington, DC 20523

GARVEY, Tony
ISPAN
1611 N. Kent St. Rm 1001
Arlington, VA 22209

GODDARD, Paula
DAA/PPC/CDIE
Washington, DC 20523

GOLDMAN, Richard
Professor of Economics
Harvard Institute for
Int'l Development
One Eliot Street
Cambridge, MA 02138

GOLDMAN, Richard
USAID/Islamabad
Washington, DC 20520-8100

HALE, Joanne
USAID/Jakarta
Washington, DC 20520-8200

HANRATTY, Martin
Economist, ANE/TR/ARD
Room 4440 NS
Washington, DC 20523-0053

HANSEN, Gary
PPC/CDIE/PPS
Room 220B SA-18
Washington, DC 20523

HELLYER, Robert
USAID/Rabat
Washington, DC 20520-9400

HURDUS, Alan
USAID/Chaka
Washington, DC 20520-6120

ICHORD, Robert
Chief, ANE/TR/ENR
Room 4440 NS
Washington, DC 20523-0053

INGLE, Marcus
Director, International
Development Management Center
College Park, MD 20742

ISMAN, Pat
Development Program Management
Center
USDA/OICD
Washington, DC 20250-4300

JOHNSON, Twig
S&T/EN Room 509D SA-18
Washington, DC 20523

KORIN, Michael
Chief Asia Branch, ANE/TR/ARD
Room 4440 NS
Washington, DC 20523-0053

KUX, Molly
ANE/DP
Room 3319 NS
Washington, DC 20523

LAWHEAD, Carl
USAID/Cairo
Washington, DC 20520-6190

LEVENSON, Burton
USAID/Kathmandu
Washington, DC 20520-6190

\ LEWIS, Gary
Afghanistan Rep
USAID/Islamabad
Washington, DC 20520-8100

LOWENTHAL, James B.
Chief, ANE/TR/ARD
Room 4440 NS
Washington, DC 20523-0053

McCLELLAND, Donald G.
PPC/PDPR/RP
Room 3893-C NS
Washington, DC 20523

MEYER, Richard
6525 Waterford Circle
Sarasota, FL 34238

MURCHIE, Gordon
External Affairs
Room 4889 NS
Washington, DC 20523

NEUFVILLE, Mortimer
Dean, School of
Agricultural Sciences
University of Maryland
Eastern Shore
Princess Anne, MD 21853

\ NEWMAN, Mark D.
Director & Manager
Int'l Trade and
Agribusiness Research
ABT Associates Inc.
4250 Connecticut Ave., N.W.
Suite 500
Washington, DC 20008

PAARLBERG, Robert
Harvard Center for
Int'l Affairs
1737 Cambridge Street
Cambridge, MA 02138

\ PANAYOTOU, Theo
Nat. Resources Economist
Harvard Institute for
Int'l Development
One Eliot Street
Cambridge, MA 02138

PESSON, Lynn P.
BIFAD/S
Room 5314-A NS
Washington, DC 20523

PETERSON, Pat
USAID/Islamabad/ADO
Washington, DC 20520-8100

PROCTOR, Harry
USAID/Cairo
Washington, DC 20520-7700

PRUSSNER, Ken
USAID/Manila/ADO
Washington, DC 20520-8600

42

ROGERS, Leonard
ANE/DP
Room 6851 NS
Washington, DC 20523

SANDS, Fenton
USAID/Rabat
Washington, DC 20520-9400

SCHAMPER, John
USAID/Sanaa
Washington, DC 20520-6330

STAINS, Ed
USAID/Cairo/ADO
Washington, DC 20520-7700

STRYKER, Ron
USAID/Rabat
Washington, DC 20520-9400

SWANSON, John
USAID/Sanaa/ADO
Washington, DC 20520-6330

THURSTON, Rob
USAID/Kathmandu/ADO
Washington, DC 20520-6190

TUNSTALL, Dan
World Resources Institute
1709 New York Ave., N.W.
Suite 700
Washington, DC 20006

UPHAUS, Charles
Chief Near East Branch
ANE/TR/ARD
Room 4440 NS
Washington, DC 20523-0053

VON DER OSTEN, Alexander
Director General
ISNAR
P.O. Box 93375
2509 AJ The Hague
Netherlands

WARD, Thomas
PFM/PM/FSP/CD
Room 1108A SA-1
Washington, DC 20523

WEIN, Gerald
Food for Peace Coordinator
ANE/DP
Room 6851 NS
Washington, DC 20523

WINTER, Marcus
USAID/Jakarta/ADO
Washington, DC 20520-8200

WITT, Eric
USAID/Suva
Washington, DC 20520-4290

ANE Agriculture and Rural Development Officer's Conference
Bio-Datas
Speakers External to A.I.D.

RICHARD J. BAWDEN

Richard Bawden, Dean of the Faculty of Agriculture and Director of Applied Systems Research at the Hawkesbury Campus of the University of Western Sydney, Australia, has held a number of research and executive positions in industry, international aid organizations and academia. He is Executive Director of Hynwest Pty Ltd, a family company specializing in systems approaches to organizational learning and development, and is also Visiting Professor of Systems Agriculture at Rutgers University, and Visiting Fellow of the East/West Research Center in Hawaii. He is the author of a book, various book chapters, and numerous conference and journal articles. He is an occasional broadcaster on radio and television as well as a public speaker. Over the past decade, Richard Bawden and his colleagues at Hawkesbury have been pioneering a unique approach to experiential learning whose major focus is the application of systems and learning theories to the strategic development of organizations. A resident of Australia, Bawden's work has taken him to the U.S.A., the Philippines, Thailand, New Zealand, Uruguay and India. He received a Ph.D. from Queensland University and his first degree from London University (Wye College).

ROBERT G. BLUMBERG

Robert Blumberg, Senior Systems Integrator for Telecommunications & Information Systems Office of Technology Assessment with the U.S. Congress, has held a number of technical, research and executive positions in industry, international aid organizations and the private sector. His areas of specialization are microcomputer systems (including Local Area Networks or LANs), industrial marketing and power quality engineering. Blumberg currently establishes and maintains LANs, provides technical expertise in systems integration, serves as advisor on hardware, software and power conditioning requirements and evaluates equipment for Congress. He also develops and implements standardized Personal Computer configurations to increase ease of use and office productivity, installs software and hardware and provides training and documentation as a computer consultant for the Asia/Near East Bureau (TR/ARD) of the U.S. Agency for International Development. Blumberg also has experience in the areas of energy, project development and implementation and proposal preparation. Through the years, Blumberg's work and interests have taken him to southern and eastern Africa, Egypt, India, Nepal, Pakistan, Afghanistan, Iran, Turkey and Europe. He received his M.B.A. from the University of Georgia and a B.S.E.E. from Georgia Institute of Technology.

LAWRENCE M. BUSCH

Lawrence Busch, Professor in the Department of Sociology at the University of Kentucky, also holds research and teaching appointments in the College of Agriculture, the College of Arts and Sciences, and the Department of Behavioral Science, College of Medicine. He has held various research and academic positions at Lexington University and Cornell University. His areas of expertise include sociological theory; technology and social change; rural sociology; and science, agriculture and development. He is currently serving a one-year appointment as Research Director at the Institut Français de Recherche Scientifique pour le Développement en Cooperation in Paris, France. Busch has also served as organizer and facilitator for workshops for the U.S. Agency for International Development and for Lexington University. He has published extensively, including several books on the topics of science, agriculture, biotechnology and development, as well as numerous journal articles, book chapters, and papers. He has also participated in various media activities, including radio and television interviews and a videotape presentation. Through the years, Busch's work has taken him to Morocco, India, Brazil, Mali, the Sudan, Senegal, Cameroon, Upper Volta and France. He received his Master's and Ph.D. in Development Sociology from Cornell University.

DEREK R. BYERLEE

Derek Byerlee, Director of the Economics Program at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico, has held a number of technical, research and consulting positions in international aid and research organizations, and in academia. Byerlee has served as Visiting Professor at the University of Minnesota, as Assistant and Associate Professor at Michigan State University, as a Research Fellow at Njala University College in Sierra Leone, and as a Junior Research Fellow at the University of New England, Australia. He also serves as Associate Editor of the **Applied Agricultural Research Journal** and is on the Editorial Board of the **Journal of Agricultural Economics**. He currently administers a program of 17 economists based in 10 countries of Africa, Asia and Latin America. The CIMMYT Economics Program provides social science analysis, research information and methods and training for designing technologies, setting research priorities and evaluating research impacts both in CIMMYT and in collaborating national programs. Through the years, his work has taken him to the Philippines, Panama, Afghanistan, Upper Volta, Liberia and Nigeria. Byerlee received his Ph.D. in Agricultural Economics from Oregon State University, and a Master's in Agricultural Economics from the University of New England, Australia.

SAMUEL R. DAINES

Samuel Daines, founder of SRD II Incorporated, a company specializing in strategic market intelligence for fruits, vegetables and flowers, has held a number of research, technical and executive positions in international organizations and academia. He has served as President of the SRD Research Group, Inc., an international trade and irrigation consulting firm; as Senior Policy Advisor and Senior Economist to the Agency for International Development, where he has worked on, directed or designed over sixty A.I.D. projects or international research studies in over twenty countries; as Senior Policy Researcher in the area of industrial and trade policy for the Massachusetts Institute of Technology; and as Training Associate with the Ford Foundation. His company, SRD II Inc., produces computer software systems which produce supply and demand, price fluctuation and bottom-line profitability information; assists clients in market and export plans; produces training videos and manuals on production handling and marketing and also produces post-harvest technology reviews. Through the years, Daines' work has taken him to numerous countries including India, Jamaica, Sri Lanka and Tunisia, and many in Latin America. He received his Juris Doctor in International Law and Economics from Harvard Law School and a B.S. in History from Utah State University.

MOHAMMED L. FIRDAWCY

Mohamed Larbi Firdawcy, General Secretary and professor at I.A.V. Hassan II, Director of the World Bank Middle Atlas Range Management Program, is also an independent consultant working with the Food and Agriculture Organization, the United Nations Economic and Social Council, and with the International Center for Agricultural Studies in Switzerland. He has held a number of research, technical and executive positions in international aid organizations, private industry and academia, among them Executive Committee and Board Member of SR-CRSP, Member of the **Centre International des Hautes Etudes Agronomiques Méditerranéennes** (International Center for Mediterranean Agricultural Studies), and various positions within the World Bank and A.I.D., including being part of an evaluation team for I.A.V. with A.I.D. He has also served as Vice President, Member of the executive Committee and Secretary-Treasurer of the **Association des Facultés Agronomiques Africaines** (Association of African Agricultural Universities - A.F.A.A.). Firdawcy is the author of various publications and articles, several written under the auspices of the A.F.A.A., UNESCO, U.S.A.I.D. and FAO. He received a Ph.D in Economics from the **Faculté des Sciences Economiques de Montpellier** and a Master's in Sociology from the Sorbonne in Paris.

WALTER A. GARVEY

Walter Garvey, Senior Water Resources Planning Engineer at Harza Engineering Company, has held a number of research, executive and technical positions in the private sector, international aid organizations and academia. At present, he is responsible for the technical, administrative and financial management of multidisciplinary national, regional, river basin, and project planning programs for water resource development, including the development of irrigation and agriculture, domestic and industrial water supply, fisheries, flood control and drainage and hydropower at Harza. Garvey has served as Deputy Project Director and Program Manager for Technology for the U.S.A.I.D. Irrigation Support Project for Asia and Near East (ISPAN); as Team Leader of a series of multidisciplinary programs completed over a period of seven years in Bangladesh for the UNDP, World Bank and ADB; and as Project Manager for regional water resources plan for the Norte Grande Regional of Chile. He also served as Assistant Professor of Civil Engineering, Department of Systems Design, with the University of Wisconsin. Garvey has published several technical papers. Through the years, his work has taken him to Pakistan, Bangladesh, Sri Lanka, India, Venezuela and Chile. He received his Ph.D. and M.S. in Civil Engineering from the University of Notre Dame.

RICHARD H. GOLDMAN

Richard Goldman, a Fellow at the Harvard Institute for International Development (HIID), is an economist who has specialized in the analysis of food and agricultural policy issues in Asia and Africa. At Harvard, Goldman teaches courses on agriculture and economic development and on economic policy analysis in the Department of Economics and the Kennedy School. He has served for extended periods as a policy advisor to governments in a number of developing countries, including Pakistan, Kenya, Indonesia, Malaysia and Sri Lanka. He has carried out research and published articles on market and policy impacts on price stabilization (Indonesia and Kenya), trade-offs involved in food self-sufficiency policies (Malaysia), the impact of agricultural technical change on income distribution (Malaysia), utilizing production constraints research as a policy management tool (Pakistan), using buffer stocks and international trade to manage food security policy (Kenya), the design of agricultural strategy (Kenya and Pakistan), and the impact of pricing and other policy instruments on levels and distribution of food consumption (Sri Lanka and Pakistan). He has designed the curriculum and is the coordinator of HIID's five-week Africa regional Workshop on Food and Agricultural Policy Analysis. Goldman received his Ph.D. in Agricultural Economics from Stanford University and his Master's in International Relations from the University of Pennsylvania.

MARCUS D. INGLE

Marcus Ingle, Director of the International Development Management Center at the University of Maryland, is an international management and organizational specialist with more than 20 years experience designing, implementing and evaluating institutional development and management training programs in Asia and the Near East, Latin America and Africa. He has served as International Management Specialist with the Office of International Cooperation and Development of the USDA. Ingle has also directed or participated as a team member on numerous consultancies and research and development efforts, as a government official (with both U.S.A.I.D. and USDA), and as a private consultant. In his position at IDMC (University of Maryland), he is continuing his efforts in Agriculture Research Management in Egypt and Thailand, as well as managing the U.S.A.I.D. Asia Near East institutional sustainability effort. He has published extensively on development management and the use of microcomputers in international development. Through the years, his work has taken him to numerous countries, among them Thailand, the Caribbean, Egypt, Nepal, Portugal, Guatemala, Malawi and Kenya. Ingle received a Ph.D. in Social Science from Syracuse University and Master's of Public Administration from the University of Washington.

RICHARD C. MEYER

Richard Meyer, a self-employed consultant, has led two different teams responsible for assessing the effectiveness of the U.S. Economic Development Missions to India and El Salvador. He has also lead three major assessments of elements of the U.S. Agency for International Development's (A.I.D) personnel system, i.e. Training, Recruitment and the Agricultural Development career specialty. Meyer served as Senior Foreign Service Officer with A.I.D., as Senior Advisor to the Director of A.I.D. and Director of Executive Personnel. His service abroad includes five years of community/rural development work in Vietnam and 8 1/2 years of economic development in West Africa as Director of the U.S. Development Mission to the country of Burkina Faso. His areas of expertise are program management, personnel systems, human resource management and international affairs. Through the years, Meyer's work has taken him to Asia, the Middle East, Africa, Western Europe, the Caribbean and Central America. Meyer received his Juris Doctor from Northwestern University School of Law, and his B.S. in Business Administration from the University of Notre Dame.

MARK D. NEWMAN

Mark Newman, Senior Agricultural Economist and Director of International Trade and Agribusiness Research for Abt Associates, has over 16 years experience in marketing, international trade and policy research and analysis. Prior to joining Abt Associates, Newman was Head of the Western Europe Section of USDA's Economic Research Service. He was also Associate Professor of Agricultural Economics at Michigan State University and Coordinator of Agricultural Marketing, International Trade, and Food and Agricultural Policy Research at the Senegalese Agricultural Research Institute, as well as Assistant Professor of Agricultural Economics at Kansas State University. Newman is the author of several publications and papers on his areas of expertise. His international experience includes almost six years residence in developing countries including Senegal and Benin, and short term assignments in Africa, the Caribbean and Europe. Newman received his Ph.D. in Agricultural Economics and his Master's in Economics from Michigan State University.

ROBERT L. PAARLBERG

Robert Paarlberg, Visiting Professor at Harvard University Department of Government, has held a number of research and Fellowship positions in academia. Paarlberg also serves as Associate Professor of Political Science at Wellesley College, and as Associate at the Harvard Center for International Affairs. He has also served as Resident Fellow and was an individual grant recipient for the National Center for Food and Agricultural Policy, Resources for the Future and for the Institute for the Study of World Politics. He also served as Director of the Council of Foreign Relations Study Group on U.S. International Agricultural Policy; as Scholar-in-Residence for the Rockefeller Foundation; and in the Office of External Research of the Department of State. Paarlberg has published extensively, including four books on food and foreign policy, numerous chapters in edited volumes, journal articles and occasional papers. Paarlberg received his Ph.D. in Government from Harvard University and his B.A., also in Government, from Carleton College.

349

THEODORE PANAYOTOU

Theodore Panayotou, Research Associate at the Harvard Institute for International Development (HIID) and lecturer on Economics for the Department of Economics and Faculty Advisor for the Edward Mason Program, HIID and Kennedy School of Government, has held various technical, research and consulting positions in international organizations, research centers, and in academia. His areas of specialty include natural resource and agricultural economics, capital theory and growth, social welfare economics and policy analysis. He has served as Associate and Country Representative in Thailand of the Agricultural Development Council and Winrock International; as Program Specialist with the Agricultural Development Council; as an Economic Consultant for Criterion Analysis; and as Rockefeller Foundation Special Staff and Fellow. Panayotou is currently involved in various research projects related to agricultural policy, as well as co-backstopping various HIID projects. Panayotou has published extensively, including three books and numerous monographs, articles in journals and books, book reviews and commentaries, discussion papers and research reports. Through the years, Panayotou's work has taken him to Greece, Canada, Thailand, Bangladesh, Indonesia, Malaysia, the Philippines, Sri Lanka, the Middle East and Italy. He received his Ph.D. in Economics from the University of British Columbia, Canada, and his Master's in Economics from York University, Canada.

STRATEGIC PLANNING - A PROCESS OF ORGANIZATIONAL LEARNING

A Background Paper prepared for ANE-ARDO Conference
RABAT, MORROCCO,

February 19-24, 1989

Richard BAWDEN*

"Strategic planning is people acting decisively and roughly in concert, to carry out a strategy they have helped devise....linking the forward direction of their own organization (system) with the movement of historical forces in the environment".

George Keller.

Introduction

The focus of this conference is the draft ANE strategy. My particular brief, with Larry Busch is to explore the role of institutions of higher agricultural education in the region in the broad context of strategic development. My basic submission is that agricultural universities and colleges are vital in three respects when strategic planning is being considered:

- o they are vital in the translation of strategic plans into relevant activities for development;
- o they are of profound importance in helping people come to terms with the concept of strategic planning and with the change in "styles" of thinking that usually has to accompany that;
- o they are examples of strategic planning in-action.

Most of us are very familiar with the first of these issues. As Larry Busch has emphasised in his paper, the role of Universities in the translation of past AID strategies into agricultural development, is exceedingly well recognized. Indeed the millions of dollars that have been invested in institutional building initiatives, in enhancing research capacities, in curriculum development and in total educational infrastructures bear testament to the importance that has historically been attached to higher education in national transformations.

Richard Bawden, Faculty of Agriculture, Hawkesbury Agricultural College, University
Western Sydney, Richmond, N.S.W., Australia, 2753

This has been particularly true for the acceleration of the capacity to increase the production from crop and animal enterprises through the application of scientific and technological thinking and practices. Whilst the need for this focus to be continued is clearly apparent from most of the documents that support the current strategic initiatives for ANE, it is equally obvious that universities will have to learn how to do some things very differently from what they have done in the past. For one of the supreme ironies of academia, is that while universities have been marvellously creative in science, technology and the arts, they have not been very good at creating their own futures. This, I believe, is due in large part to the way which academics think. We are used to splitting the world up into its component parts and seeking explanations or interpretations for the way things work. We have tended, furthermore, to believe that these explanations and interpretations are the "truth."

For people born and bred in these traditions, it is extremely difficult to look at issues in their complex entirety and in ways which admit that we may never know the "truth of the matter." We are well versed in explaining what happened in any particular situation. From time to time we also indulge ourselves in predicting what might happen next! But here we are now being expected to design what might happen next...with no real guarantee that things will turn out even remotely like that which we had imagined.

The point is that, with the sort of suggestion being proposed in the ANE strategic plan, academia is being asked to not only indulge in this new game of future creation but to bring new ways of thinking about the entire process of future creation. In other words we are being asked to consider both plans and the process of planning.

I will attempt to illustrate the nature of this challenge by now turning to some of the specific issues raised in the Draft Strategy. In so doing I want to propose that the process of strategic planning is akin to a particular style of learning where visions are transformed into knowledge as a prelude to informed action. I also want to submit that this new style of learning is extremely difficult and will take time and considerable commitment to develop. Perhaps I could orient the discussion by suggesting that agricultural and rural development is now entering an exciting, but very different new Era.

Four Eras in Agricultural and Rural Development

"In every age, man has proclaimed himself at a turning point in history, and to a certain extent, as he is advancing on a rising spiral, he has not been wrong. But there are moments when this impression becomes accentuated and is thus particularly justified".

Pierre Teilhard de Chardin.

From time to time in the history of human endeavour, a major shift does seem to occur in the way we go about doing the things we do. It's as if there is a build-up of feelings of inadequacy with conventional approaches that suddenly to be released with the development of a new approach. The

renaissance of 15th century Europe, Industrial and Agrarian Revolutions, the Age of Science, etc., are all examples of "turning points in history". New eras characterized not only by new knowledge and new actions, but also by new ways of knowing and acting. Together these represent what Thomas Kuhn refers to as shiftable "paradigms".

I would submit that the development of agriculture and rural communities or sectors in particular countries (or in different provinces within the same country), can be examined from this perspective of different eras. I am going to suggest that the form and function of developmental projects can be usefully examined from the viewpoint of whether they reflect a focus on Pioneering, Production, Productivity or Persistence. I further posit that the focus which dominates will dictate the need for particular ways of thinking, particular methodologies for investigation and for particular strategies for appropriate actions. Finally I suggest that the Draft Strategy contains issues pertinent to these distinctions, particularly with regard to the role, functions and organization of universities.

Agriculture was born of Pioneering. Through observation, trial and validation, our forefathers invented ways of growing and tending crops and livestock with sufficient efficacy to minimise effort in hunting and gathering. The Age of Pioneering then, is as old as agriculture itself, and it remains alive and well to this day. There will always be occasions when we prefer the empiric over the scientific; the intuitive over the conceptual. Farmers the world over, to a greater or lesser extent pioneer new ways of doing things as guided by their hunches!

In the middle of the nineteenth century, a new approach to agricultural and rural development emerged to complement (but not replace) the empirical age: The Age of Production was heralded in by the application of the scientific principle of von Liebig that "...the growth of a plant is dependent on the amount of foodstuff which is presented to it in minimum quantity". Find the limiting nutrient, augment it, and new increments of growth will result. Here observations lead not to action but first to theory. The reductionist methods of precise scientific inquiry represent a vast improvement on the vagaries of the hunch. Yet, in a somewhat perverse way, much of the creativity of science remains focussed on intuitive insight - the pioneering dimension lives on, augmented not superceded by science.

As scientifically-derived technologies enable a consistent rise in the growth of yield, the need for a new focus begins to emerge. The "cost", in money or effort, of achieving the last little increment of output well exceeds the "value" of the last little input used to derive it. The new paradigm which has gained currency post world war 2, represents a shift from increases in production effectiveness to increases in production efficiency (productivity).

The Age of Productivity joined its two predecessors. Sure it was important to try out new hunches; and sure it was important to seek and alleviate the latest limiting factor, but in the face of limited resources, the notion of productivity provided a higher order of involvement or management than the other two.

There are some important differences in thinking in productivity terms and those which distinguish the scientific from the intuitive. The first

major difference is that the parameters of productivity are abstract in that they are relationships between inputs and outputs, where the parameters of production can be measured in absolute terms such as physical yield. Secondly we are dealing with the performance of whole systems rather than of individual components and thus the nature of the relationship between components is at least as important as the nature of the components themselves. Most importantly, these relationships include the interactions of human managers with the resources they are managing and these managers can have a whole host of different notions of productivity important only to themselves.

If the shift from a focus on Production to Productivity included the idea of a shift from effectiveness (of parts of the whole) to efficiency (of the whole) so there is an emerging need for a new shift towards ethics (of responsible management of the whole). We may have highly technically effective husbandries being used in the operation of highly efficient farming systems. Yet such operations might be ethically indefensible in the face of socio-cultural and/or physico-chemical degeneration of the environments in which the systems are operating. Such systems that cause environmental deterioration cannot/should not persist. The Age of Persistence then concerns itself with the ecology of development. Is, what is being done, ecologically responsible? Is it sustainable in the long run? Who benefits and who are the victims? Here we must address uncertainty, ambiguity, complexity, change and unknown and unknowable futures.

Let me re-emphasise the point that each of these different foci or "eras" demands different ways of thinking about the world - and I do not mean here simply different attitudes. When I talk of these distinctions in ways of thinking I really do bring into question some of our most profound beliefs about the world and about our beliefs about the nature of knowledge about the world!

So when we address specific issues in the draft ANE strategy we must now bring some new thinking to bear on what the implications for the various country groups means in terms of the type of developments that will be necessary in the various universities and colleges that are within the domain of particular projects. As I have already suggested, notions appropriate to a focus of Production are commonly encountered in the types of research initiatives, undergraduate curricula and extension models in universities almost anywhere in the world. Strengthening capacity to improve the yields of crop or animal enterprises is thus not difficult as there are plenty of examples to examine.

When it comes to productivity, the situation is far more difficult. Issues of productivity must include concern with economics and other social sciences, as well as the straight biological and physical sciences. Furthermore it is necessary to think in terms of the ways things interact with each other and of the impacts that certain changes in parts of the system can have on the system as a whole. Research and curricula must address interdisciplinary, complex issues rather the relatively straightforward problems of production. Indeed rather than thinking of solving problems, we must now think in terms of optimizing performances. Management now becomes a vital issue with all of the implications associated with decision making and taking.

Finally we come to the issues associated with the notions of Persistence. This little point in developing the most productive agricultural systems

in the world if there is no market in which to sell their produce; or if the cost is the degradation of the physical environment; or if they result in the massive dislocation of labourers and their families from rural areas into a state of destitution in urban slums. From solving problems and optimizing performances, we move now to improving situations; where the situations themselves and the constitution of improvements to them are both conjectural.

The Draft Strategic Plan has persistent or sustainable development as a recurrent theme for all of its messages irrespective of the group of countries being considered. Given the pervasiveness of this issue, and given the dearth of examples of universities that are grappling with research and curriculum from this new perspective, the rest of this paper will focus on knowing and doing for the Age of Persistence; the theory and practice of ethical development.

Learning for Persistence

"A new framework - People-centred development - based on social learning processes and the empowerment of people and communities, is emerging with critical relevance to the developing countries and the industrialized states of the west".

Laurence D. Stifel

The concept of Persistence is taken from the ecological literature. If a species is to persist and avoid extinction, it must learn to co-adapt with its environment. As conditions around it changes it must be sufficiently plastic to accommodate those changes. Furthermore, it must be capable, through the activities of the individuals which comprise it, to change the environment around it, as best it may, to allow a better fit or maintain or optimal one. Finally the individuals must be "coupled" in some way with each other and their environment to make change in the structure of the species as a whole, possible.

In other words, species and environment "learn" from each other where learning, in this sense, means the transformation of experience into knowledge, as a basis for action (in this case co-existence).

This metaphor of the learning system, is extendable to any system/environment complex, (including human organizations), where three conditions pertain:

- . The system exists as a structured, coherent whole of interacting parts, coupled with its environment
- . The system has some way of monitoring changes in environments; and
- . Both system and environments have mechanisms for adapting to changes in the other: are capable of changing their structures to achieve a "better reciprocal fit".

B.) on this notion of "learning to adapt", universities should be capable

of behaving as learning systems, although currently most of them seem not to be doing so. Indeed most of them in my experience, appear to be structured in ways which positively militates against them performing as learning systems. The consequences of this are profound:

1. unless they change, they will not be able to persist;
2. unless they change, they are unlikely to build relationships with other systems or elements in systems, in a way which will help in mutual persistence.
3. by not addressing the issues of persistence, nor attempting to design strategies that will assure their own persistence, universities will fail to provide paradigms and exemplars of persistent development.

In addition to the characteristics attributable to all systems as coherent wholes (e.g. interacting sub-systems, transformations, boundary, inputs and outputs, cybernetic linkages and mechanisms, emergent properties, etc.) systems involving human beings have a characteristic crucial to the notion of persistence-through-learning. Human involved systems are capable of envisioning (and indeed creating) future states. It is this particular dimension that strategic planning aims to exploit.

As learning is the process by which experience (of the world) is transformed into knowledge as a basis for action (adaptation to, and of, the world),

then

strategic planning is the process by which visions (of a better world) are transformed into strategies as a basis for action (for systemically desirable and culturally feasible improvements).

The trick is to combine the envisioning and the learning processes into an organic whole; a new learning system which is capable through its modes of inquiry, to not only describe the past, but also to invent a variety of new futures.

Now here's a challenge of serious proportions: The system can only be creative, if those who comprise it are: (a) creative learners and visionaries themselves; and (b) are also prepared to share their learning in ways which enables the whole system to learn and be creative in its strategic behaviour. It's here that present structures seem to militate against change. Academics are fine when it comes to creative thought in their own disciplines. They are much less enthusiastic about creative thought about their own systems as a whole. So often they are not prepared to even think about the plight of agriculture or the rural environment as a whole, nor the role the university could play to change that, beyond the aggregation of scientific discoveries from their own disciplines, and the disciplines of others. The conventional structure of academia is not conducive to thinking about creative new futures nor to entertain the thought that there might be several different ways of learning (beyond science).

And there are two, even more fundamental impediments to progress than the

way the university is structured. These relate to: (a) pervading views of reality, particularly in institutions concerned with the natural sciences; and (b) the tacit beliefs about the nature of knowledge, the objectivity of scientific way of knowing, and the certainty of ultimate truth.

What is emerging in studies in many areas associated with learning, is that there is not one best way of learning. There are numbers of different ways each appropriate under different conditions. Furthermore, the objectivity of the scientific method and the extent to which there are ultimate truths "out there", are also conjectural. And as learning is the process of transforming experience to knowledge then it is highly personal and idiosyncratic.

As if universities and university professors were not going to have enough trouble with different ways of learning and idiosyncratic knowledge, we are now suggesting that they also suspend their belief in certainty. If multiple visions of the world are possible then no one vision (thus strategy for its achievement) can be any more "correct" than any other. If we live in a multiverse rather than a universe, we live in a world of permanent contradiction and conflict.

It is with this multiverse that universities and all other "learning systems" are beginning to grapple. In this sense they have to come to terms with ways of dealing with conflict and contradiction. This is certainly true of aid organizations as they learn to see themselves and their role in a new light. And it is true of policymakers too as they begin to investigate a world beyond (but including) productivity. Whether it's local erosion and unemployment, or the greenhouse effect and international trade issues, it is becoming increasingly apparent that the world is systemic by nature; that each part is inexorably connected to the next and that the "whole" and its environment is complex and dynamic. Local changes can have global implications and so the need is for systemic ways of thinking. Thinking in ecological terms, in ways which appreciate inter relationships is a vital prerequisite if we are to do things which will enable our managed systems to persist. And this observation provides a focus for examining the new age of ethical professional behaviour and the context for new organizational and personal strategies.

Praxis for Persistence: The Domain of Co-existence

"Everything we think and say has consequences for what we do".

Humberto Maturana.

Or, everything we do in the world is determined by the way we "see" it. Actions are driven by theory yet few of us seem to question just what theories we hold as the basis for what we do. I suggested earlier that each time a "new age" comes along it is characterized by new ways of thinking and doing, by new theories and practices (praxis). Yet each age, rather than eschewing its predecessors, should embrace their ways. Education becomes the process of mastery of a range of ways of learning which are contingent on situations, rather than a singular preoccupation with one dominant methodology over another contingent on the "age" we are in. And this is particularly important for persistence.

Let me illustrate the importance of bringing different learning styles to bear on issues, by making the distinction between three types of professional agriculturists/rural developers. Each of these thinks and act a different way based on variations around a basic theme of learning. The assumption is that as professionals we are intervening in some way in the relationship between our client and his or her environment. In other words we are going to affect the process of learning of our client in one way or another. The basic model below (Figure 1) reflects the relationship between "man and his environment or enterprise". The assumption is, that the process of learning involves the two functions of "finding out" and "taking action" between the two "worlds"; the concrete world of experience and the abstract world of concepts.

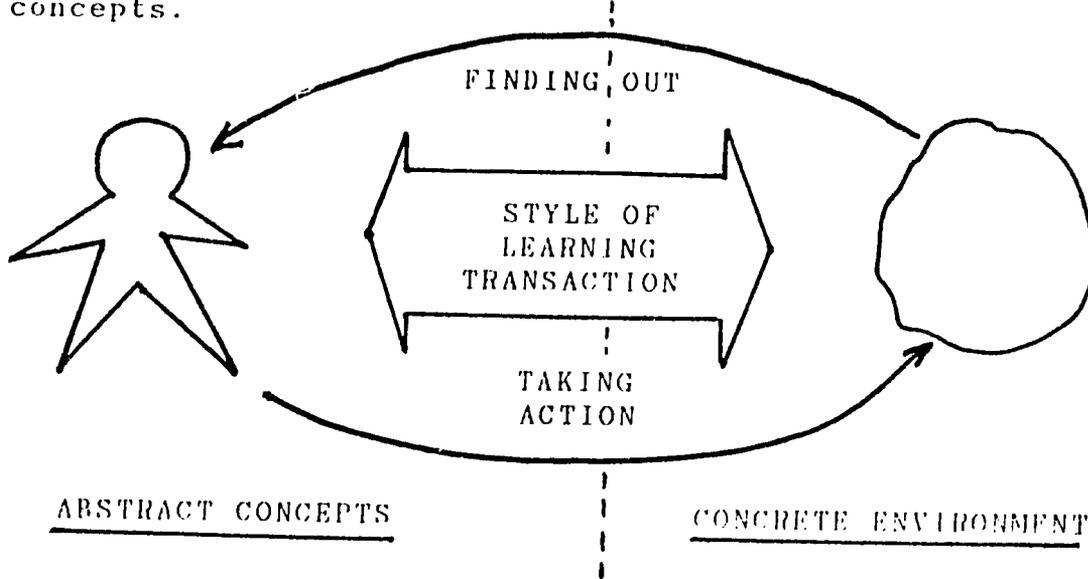


Figure 1: Learning as the Basic Relationship Between Man and his Environment

The conventional view of the extension professional concerned with production is as a "technological fixer" of the enterprise. His or her interactions are with the enterprise or components within it, rather than with the farmer who is really relegated to the role of "grateful adopter".

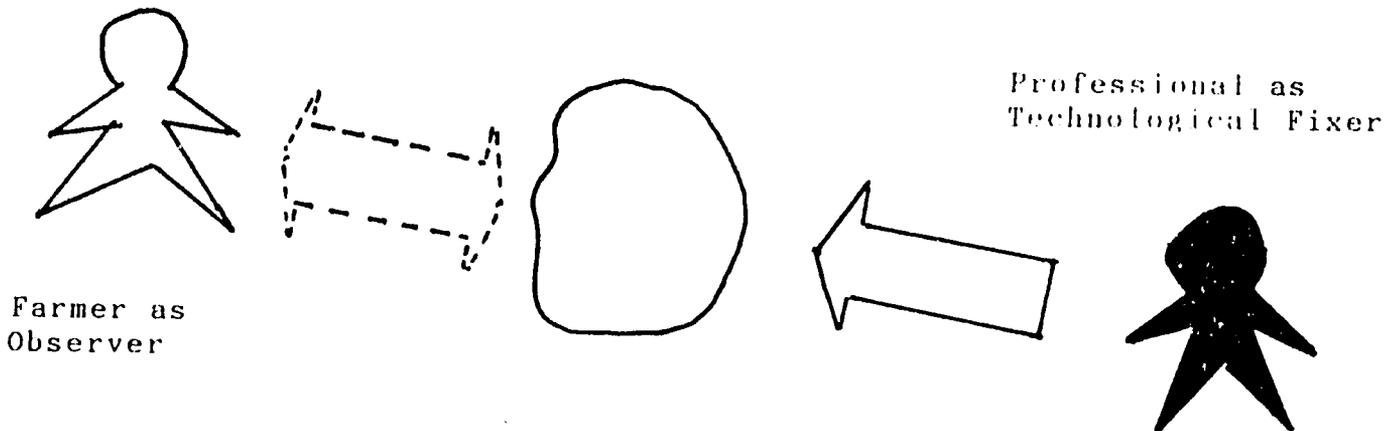


Figure 2: A Praxis for Production

As mentioned earlier, in the age of productivity, we are concerned with abstract notions of the input, output and efficiency of total systems. The professional is now a Systems Analyst concerned with analysing the whole system, engineering improvements and sharing the performance - optimizing strategies with the client as manager.

Professional as
Systems Analyst

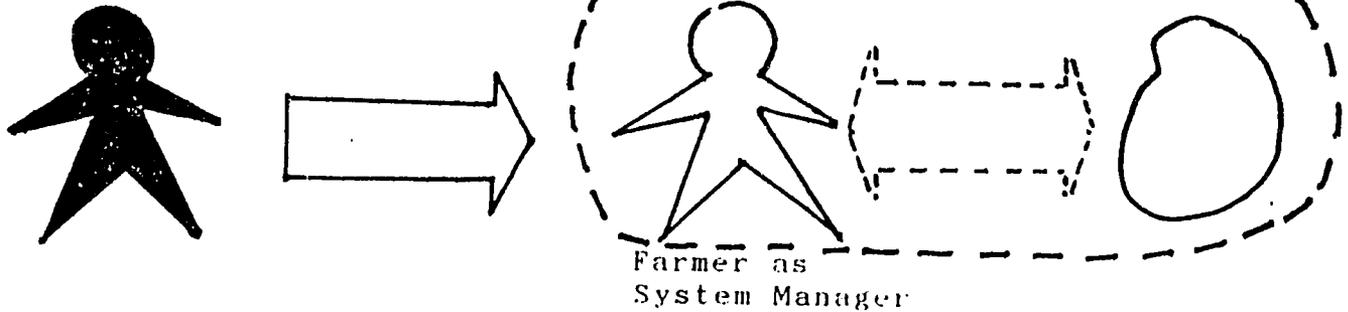


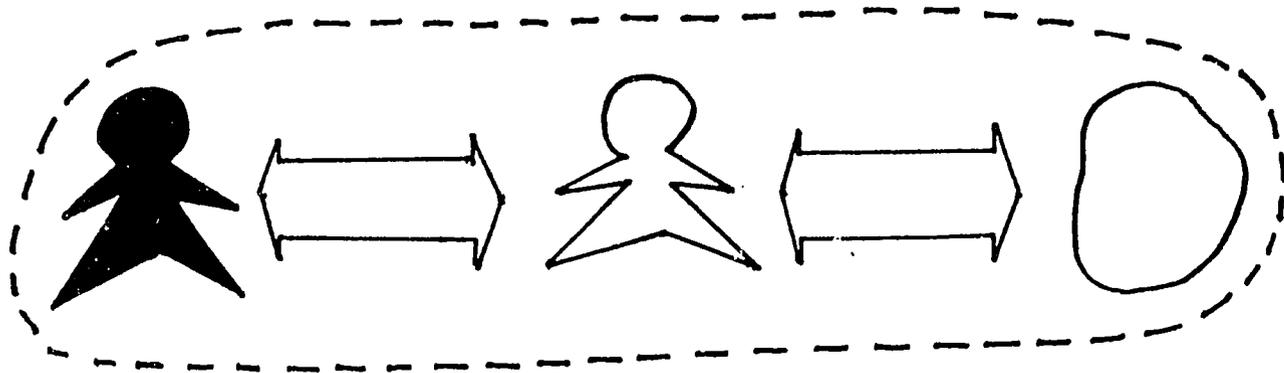
Figure 3: A Praxis for Productivity

Both of these approaches are characterised by the following:

- a. The focus for improvement (effectiveness and efficiency respectively) is assumed.
- b. Both situations are "researched" by an objective professional who remains uninvolved in the issue being researched. The transactions tend to be uni-directional.
- c. The problems are relatively easy to identify and the solutions will be adopted.
- d. There is little if any, sense of long term strategic change; both approaches emphasise the resolution of immediate concerns.
- e. Information is taken as an input (a commodity) which can influence the direction of change.

The third type of professional, the "systemic facilitator" of the Age of Persistence, has characteristics in marked contrast to the above set. Perhaps the major shift is that from "researched" system to "researching" system. The role of the professional, where he now explicitly becomes part of the system, is one focussed on helping the system to learn. The concern is not simple problems to be fixed or performances to be optimised but situations to be improved. In addition to effectiveness and efficiency, the professional here must be concerned with ethics: With those who play the key roles in directing the system accepting responsibility for its actions in the face of potential threats to the coherency of the system itself and to the environment with which it inter-relates. Indeed, relationship exploring,

building and maintaining is the key focus for this approach and these are based in turn, on learning. The praxis is truly the facilitation of the learning of the whole system and as the research results in action, in and by system, all of the actors involved behave as action researchers (Figure



Professional as
Systemic
Facilitator

Farmer as
Participant in
Cooperative Learning

Figure 4: An Action Research Praxis for Persistence

Now the transactions are two-way with each participant bringing different experiences, theories and competencies to the exploration of complex issues which, by definition, must be unique. The outcomes should be an improved learning system where the improvement is assessed in an ethical context.

The above examples have been based on a simple model of farmer and extension agent (in the broadest sense). But the same model can easily be extended to other situations where there are interactions between professionals and their clients. In many cases we deal not with one-on-one relationships but with the multiple relationships which characterise organisations.

These models and the contexts in which they are set, provide a framework for a brief investigation into the main issues raised in the ANE strategy outline.

Full Circle

"It seems clear that the ARDO of the 90's will require increasingly broad capacity to understand and address the inter-relationships of agricultural production options with trade, natural resources, price policy, rural-urban linkages and off-farm investment, and the integration of food aid with development assistance".

Jim Lowenthal.

The whole ARDO strategy, it seems to me, reflects a very strong movement towards the Age of Persistence and this dictates, according to my logic, the need for new ways of thinking and acting by ARDO,s in the field. It will also mean marked transformation in the way universities are organized and the paradigms that prevail for "situation improving". In calling for the sort of changes that it does then, the Draft Strategy Paper brings forth a whole new world of needs. The emphasis is very clearly on "collaboration" and "cooperation as partners", in situations characterised by complex interactions and inter-relationships.

To follow my reasoning, we will have to learn to "think" systemically if we are to "do things" systemically. What better, than a focus on the practitioner as a "systemic facilitator" and the outcome of initiatives as the creation of learning systems and the reinforcement of learning cultures. As emphasised above, we are dealing here with a hierarchy of competencies with needs focussed on production and productivity as well as persistence. Indeed each "level" in such a hierarchy, provides the context for those which precede it. Yet each does deal with a different focus (effectiveness, efficiency and ethics) and each demands a different way of thinking and acting. There is as much skill in selecting the methodology appropriate to the situation as there is in using it.

For me, the critical notion of the emerging, people-centred paradigm of development, is that of the creative learning system: Systems of people and things acting as coherent wholes in co-evolution with their environments. This is as key for the development of policies for trade and exchange rate stabilisation, as it is for the formulation of human capital; as true for more responsible management of natural resources as it is for encouraging private sector involvement; as true for the further development of rural infra-structures as for university revitalisation. And in many senses this last issue is perhaps the core to it all.

The development of universities as systems for learning and as systems which themselves are learning is absolutely crucial. If my arguments above have been seductive in any way, then the need for new ways of knowing and new knowledge will be vital - and who but universities see this as their charter.

Yet universities as systems which learn, are difficult to organise and maintain in a state of co-evolution with their environments. The examples are rare in the world: And when they do form they exact a heavy toll on those who lead them. George Keller, puts it so well "... To enter the heart of strategy, one must go through the doorway of debate and catharsis and controversy".

The Age of Persistence is also the Age of Conflict. There are few doubts about means or ends when it comes to Producing more or increasing productivity. The major uncertainty comes when we address issues of exactly what it is that we want to persist. This is why persistence or sustainability is such a slippery concept. Yet it also dictates the need for us to learn how to deal with contradiction; how to manage conflict (in addition to managing complexity and managing scareness - a hierarchy developed by Werner Ulrich and which parallels the idea of the different ages developed here). Insights into the management of conflict come from the cognitive scientists Humberto Maturana and Francisco Varela :

"A conflict is always a mutual negation. It can never be solved in the domain where it takes place, if the disputants are "certain". A conflict can go away only if we move to another domain where co-existence takes place. The knowledge of this knowledge constitutes the social imperative for a human-centred ethics".

This viewpoint presents a tremendous challenge to organisations and individuals who have got where they are by being "certain"; who have analysed problems and given the correct technical solutions; who have revelled in identifying the "facts of the matter" and providing technologies appropriate to their perception of the issues.

Co-existence means suspension of certainty and a willingness to find new domains. This is what true collaboration entails and one therefore has to ask the question:

"Are you ready for that?"

REFERENCES

1. Bawden, R.J. and Busch, L. (1988). "Agricultural Universities for the 21st century". Background Paper for US-AID Washington.
2. Bawden, R.J. and Macadam R.D. (1988). "Towards a People Centred University: A case study of reform". Background Paper for Winrock International, Bangkok.
3. Keller, G. (1983). "Academic Strategy: The Management of Revolution in American Higher Education". John Hopkins University Press, Baltimore.
4. Ulrich, W. (1988). "Systems Thinking, Systems Practice, and Practical Philosophy: A Program of Research". Systems Practice 1: 137 - 163.
5. Maturana H.R. and Varela F.J. (1988). "The Tree of Knowledge: The Biological Roots of Human Understanding". New Science Library Shambhala, Boston.

STRATEGIC PLANNING - A PROCESS OF ORGANIZATIONAL LEARNING

Checklist of Questions

Based on (1) The University as a learning organization; and
(2) The ARDO as a learning strategist.

(1) Is this University a learning system?

You visit a university and you want to know if it is "in co-evolution" with its environment - if it has mechanisms in place to allow it to monitor changes which are going on in the world which surrounds it;

- mechanisms in place to allow adjustments to be made to any of its activities in the light of such environmental changes;

- mechanisms in place to allow its own activities to affect the nature of the environments around it; and

- mechanisms in place to evaluate the quality of any changes which occur in either the university itself, or in the world around it; or in the nature of the relationship between the two.

In other words, you want to establish whether or not that particular university has well defined processes for strategic planning and development, or not. In systems terms then we address two basic questions:

(i) How is the system coupled with its environment?

(ii) How does the system handle its own evolution?

Following these lines we ask questions like:

Who, within the university, is in contact with farmer groups; with consumer and client groups; with local, regional and federal politicians; with agribusinesses and market organizations; with service organizations like educational institutes, research centres, advisory and consultant groups, organizations for welfare, and for special interest groups like youth, women, landless laborers and the unemployed; with bureaucracies associated with agricultural production, rural development, water resources, soil conservation, forestry, health and community affairs; with alumni and with specific employers etc etc ?

What sort of knowledge are they gathering?

With whom are they sharing that knowledge?

How is that knowledge being used in the generation of strategic

policies for the university in terms of the formulation of mission statements; curriculum development; research policies and resource allocation strategies; extension, outreaching and continuing education activities; recruitment plans for students and faculty; strategies for seeking extra-government resources?

Who is active in gathering and sharing "forefront" knowledge in scientific disciplines and technological developments important to agricultural and rural development?,

How is that knowledge being gathered, shared and used?

Who is gathering and sharing "forefront" knowledge on issues such as the philosophies of science and of knowledge; on theories from cognitive science, pedagogy, organizational management; on concepts of curriculum design, research methodologies, information technologies; on current thoughts on values and ethics and public policy?

How is all this knowledge being gathered, shared and used?

How is the university organized and structured to enable this knowledge to be gathered, shared and used in the formulation of strategic plans which are designed to improve the quality of the coupling between the institution and its environments?

In what ways are people encouraged to be involved in the strategic development of the university and in its relationships with its environments?

How are the existing strategic planning and development initiatives being evaluated?

What mechanisms seem appropriate to address the issue of how the present situation might be improved?

In summary then, we need to address the two questions:

- o Is this system learning?
- o How might the effectiveness of its learning be improved?

Which brings us neatly to the issue of what it is that you, the ARDO, can do to assist in the process of organizational (system) learning.

Are you an effective learning strategist?

Obviously, in asking the type of questions we have just outlined, you would be behaving like a learning strategist - someone involved in helping those associated with the strategic planning functions of a university, to "learn to do it better" - to help the university

to become a more effective learning system!

But this in turn assumes, that you yourself are an effective learner AND that you know how to help others to become more effective learners.

What do you mean by the process of learning?

What is your concept of knowledge?

What do you understand as the connection between knowledge and values?

What do you understand by research, by science, by technology by education, by extension; by meaning, by mind, by intelligence, by theory and by practice; by reality, by concepts, by perception and by reflection?

What do you mean by development?

In addition to questions of this sort, there are important issues of methodologies of inquiry to be addressed. In dealing with universities-in-evolution we are dealing with complex, dynamic systems which deserve to be treated as such and not reduced to their simplest functional or structural parts. The approach advocated here is to "help the organization learn about itself as if it were a system co-evolving with its environments."

Now questions relating to this "systemicity" need to be addressed:

What do you understand by the concept of a "system"?

What characteristics do you attribute to a system?

How do you go about identifying, and helping others to identify systems relevant to situations and issues?

Now these are not idle questions nor mere word games. At base, they reflect (a) the way you think, and (b) what you think about the world around you and your place in it: In turn this determines (a) what you do in the world, and (b) the way you go about doing it!

As an ARDO your basic brief is to intervene in situations (systems) in ways which result in "improvements". Which raises the obvious questions:

- o In what sort of situations (systems) do you intervene?
- o What constitutes improvements to these situations (systems)?

You cannot avoid examining your own values and knowledge and beliefs as you address these two questions. Nor can you avoid the notion

that others with whom you are working (including your "clients")
'll probably hold different values and beliefs and know different
things to you.

Your performance as a professional comes down to how well you handle
these differences; and how you and your "clients" learn to inquire
into novel situations in novel ways.

RICHARD BAWDEN

February 1989.

BUILDING AGRICULTURAL SUPPORT AT HOME
FOR AGRICULTURAL DEVELOPMENT ABROAD

Outline for Keynote Remarks to 1989 ANE ARDO Conference
February 19-24, Rabat

Robert Paarlberg
Harvard University

Inside AID, Agricultural and Rural Development Officers have a most difficult job. They must swim against the political tide both at home and abroad. Abroad, they must struggle against privileged rural elites who have little interest in change, and against "urban-biased" host country officials (and perhaps other AID officials as well) who take little interest in the countryside. Then, if they succeed against these odds in promoting successful agricultural development abroad, their reward may be harsh criticism at home, from powerful U.S. domestic farm lobby organizations who see aid to farm producers abroad as aid to their "foreign competition." In sum, the politics of agricultural development abroad makes success for ARDO's difficult, and the politics of farm policy at home makes success sometimes dangerous.

Is there any way to escape this difficult political double-bind? In particular, is there any way to build greater support among agricultural groups at home for the legitimate task of agricultural development abroad? I will argue that one constructive approach might be for ARDO's to pay a bit more attention to the legitimate concerns of the U.S. farm groups that so often criticize foreign agricultural development assistance. An understanding of these legitimate concerns will not only help you in the direct dealings you have with the U.S. farm lobby. It will also, I believe, help you to do a better job serving your real clients -- the hundreds of millions of destitute farmers and landless rural laborers who are still living in poverty throughout Asia and the Near East. Paradoxically, by listening a bit more closely to the gripes of the rural rich at home (I'm referring to U.S. farmers), you will be better able to serve the real needs of the rural poor abroad.

What Are the Concerns of U.S. Agriculture?

I am not one of those who cries over the fate of U.S. farmers. The U.S. farm sector is productive and prosperous. Last year, the 2 percent of the U.S. population who still work in that sector enjoyed an all time record net cash farm income of \$57.1 billion. And the total equity of the U.S. farm sector -- assets minus liabilities -- is currently equal to more than half a trillion dollars. Because of the valuable land that they own,

many full time commercial U.S. farmers are, quite literally, millionaires.

But it would help you to know that this prosperous U.S. farm sector has, nonetheless, been through a most difficult decade. U.S. agriculture came into the decade of the 1980's believing what all respected economists were telling them: that foreign demand for U.S. farm products was going to remain for the immediate future on the sharp upward trend that had been established during the boom years of the 1970's. Much of this continued growth in demand was expected to come from the developing world, where agricultural production was seen to be lagging, and where both income and population were still sharply on the rise. Believing in this rosy vision of growing market demand abroad, U.S. farmers borrowed heavily in the late 1970's to buy more land and more machinery, so as to expand production capacity. In the process, total U.S. farm indebtedness increased by roughly 60 percent.

Then, just when the U.S. farm sector was gearing up to produce and export more, export demand collapsed. Between 1981 and 1986, the value of U.S. farm exports fell by a disastrous 40 percent, and exports to the developing world in particular fell by 30 percent. Along with this collapse in foreign trade, U.S. domestic farm commodity prices fell, farmland values fell, and many U.S. farm debts suddenly became unservicable. A deep financial crisis swept over the U.S. farm sector, and in just five years time more than 240,000 U.S. farms went out of business.

What had gone wrong? Careful analysis indicated that the U.S. farm sector was being blindsided by a sudden shift in U.S. macroeconomic policy, namely the decision taken by the new Chairman of the Federal Reserve Board, Paul Volker, to attack inflation by tightening the money supply. This sudden monetary policy shift drove up interest rates, drove up dollar exchange rates, and threw the world economy into a deep recession. This was a devastating macroeconomic combination: higher interest rates on farm debt at home and farm customer debt abroad, world market shares lost due to less competitive dollar exchange rates, and reduced consumption growth due to the world recession. U.S. agriculture was thrown into its worst crisis since the Great Depression.

Unfortunately, U.S. farmers were not entirely satisfied with these "macroeconomic" explanations for their problems. Farmers -- and farm state politicians -- like to think in sector-specific terms. They were more comfortable believing that the sudden collapse in foreign demand for U.S. farm products had to be the result of some parallel growth in foreign supply. Ignoring all evidence to the contrary, they became convinced that a significant part of this collapse in foreign demand was the result of a sudden production surge among the importing countries

of the developing world in particular. They attributed this imagined developing world production surge, in part, to the highly publicized agricultural development assistance efforts of donor agencies such as the World Bank and AID.

In truth, the FAO volume index of agricultural production for the developing market economies clearly shows no overall production trend increase during the first half of the 1980's, as compared to the decade of the 1970's. There were some isolated individual country cases of extremely rapid above-trend production growth in the developing world during these years -- most notably the People's Republic of China. But the PRC was neither an AID or a Bank client, so foreign donors were in a poor position either to be blamed or to take credit. U.S. domestic farm lobby leaders were thus on the weakest of analytical ground when they seized upon foreign agricultural development assistance as one of the key reasons for their serious trade and financial difficulties in the 1980's. But their constituents were in trouble and demanding action, so they decided to attack what they knew they could describe as an outrage -- the use of tax dollars during a domestic farm crisis to help U.S. farm "competitors" abroad. U.S. development assistance policy, which already had as many critics as it could handle in Congress, thus became a political target for the frustrated U.S. farm lobby.

One short term result was passage, in 1986, of the "Bumpers Amendment" (Section 209 of PL 99-349), which prohibited the use of U.S. foreign aid to promote foreign production of agricultural commodities for export which compete with similar commodities produced in the U.S. A second result was formation of the Foreign Agricultural Investment Reform ("FAIR") coalition, composed of more than a half dozen prominent Washington farm lobby organizations and commodity groups, and the introduction of a "FAIR" act (S. 220/H.R. 306), in January 1987, designed to prevent the use of U.S. tax dollars -- especially through international financing institutions such as the World Bank -- for development and expansion of any foreign commodity production "which results in declining U.S. exports."

How Can ARDO's Respond To These Concerns?

When confronted with such ill-informed and heavy-handed U.S. farm lobby intrusions into the foreign assistance arena, ARDO's will have every right to be irritated. They will be tempted to respond either with harsh words -- about the tens of billions of dollars in subsidies that U.S. farm groups currently get from the U.S. government every year, and about how that should just about exhaust any legitimate claim they have on the content of U.S. public policy beyond the farm arena -- or they will be tempted to respond with a patient lecture about how agricultural development in poor countries paradoxically tends make better overseas customers for U.S. agriculture in the long run, by adding to local employment and income, thus creating added local demand for

food as well as added local supply. I have tried this second tactic myself on many occasions. Searching through the academic literature I have come up with at least half a dozen competent cross-national studies, all done since 1985, which tend to confirm the positive links that can form between more farm production in the developing world, more income and employment, dietary enrichment, and in the end larger rather than smaller U.S. farm sales. Incidentally, it is precisely in your region of the developing world, in Asia, where these positive links are most likely to form. This is because in Asia access to productive farming resources tends to be more equitably shared among the rural population (compared to Latin America), ensuring that agricultural success will generate broadly-based income growth, and also because Asian income growth levels -- in contrast to the African levels -- have already reached the point at which rapid dietary enrichment begins.

I can tell you from first-hand experience, this sort of "scholarly rebuttal" of the farm lobby argument may be intellectually strong, but it is politically weak. Even if it were possible to persuade sophisticated U.S. farm lobby leaders of the paradoxical positive relationship between agricultural success in the developing world and U.S. farm export expansion, it would still be too much to ask those leaders then to endorse this relationship, as a reason for supporting aid, in front of their own fully aroused and much less sophisticated constituencies.

A more promising approach, I believe, would be to win over the critics of agricultural development assistance by first yielding to them on a narrow interpretation of the kind of aid they find objectionable. To admit that your critics have a point is difficult, but it can be a healthy first step toward reviving both your political support base at home, and your sense of purpose abroad.

The U.S. farm lobby has been remarkably specific about the kind of agricultural development assistance which it finds objectionable. In the Bumpers Amendment, assistance is considered objectionable only when it enhances production for export of commodities which compete with U.S. products. Quite reasonably, a loophole is then provided for all aid projects which will increase "food security." In the FALK act, assistance is objectionable only if there is no market demand for the product, or if production is to be subsidized. These, I would submit, are restrictions that most AFD's ought to be able to live with.

Start with the Bumpers restrictions. There may be some AFD countries that should be producing for export commodities that compete with temperate zone U.S. farmers. Perhaps Indonesia should some day be producing large quantities of palm oil for export. But should not be spending its limited funds to move

Indonesia in that direction, so long as other countries in the region -- and perhaps Indonesia itself -- have food staple production and consumption problems that remain unsolved? Arguably, when Indonesia finally positions itself to move beyond an emphasis on basic food staples, then its farm sector should probably become -- like that of Malaysia -- an AID "graduate."

The larger point would be that most Asian developing countries and almost all Near Eastern countries are likely to remain -- at least until they "graduate" -- importers rather than exporters of temperate zone farm commodities. And if Taiwan and South Korea are any indication, even after "graduation" these countries will probably continue to exploit their comparative advantage in non-farm activities, and use their resulting income gains to add still more to their net imports of temperate zone commodities. Thus, there is little in the precise language of the Bumpers Amendment to prevent ARDO's in ANE from doing their job -- which is to use the farm sector first and foremost to generate income and employment for poor people, rather than to generate an exportable surplus of commodities for rent-seeking government monopoly marketing boards, or for wealthy private sector traders.

As for the language of the FAIR act, there ought to be nothing objectionable in AID about avoiding the promotion of subsidized farm production, or about avoiding the promotion of commodity production where "surplus" world market conditions make the venture commercially unattractive on its own terms. Again, without too much effort these U.S. farm lobby concerns can be viewed as not incompatible with AID's own proper concerns. AID's proper concern is with the welfare of poor people, and added farm production should be seen as attractive only when it contributes to that welfare. When it does so it will automatically add to the local demand for foods, which is good rather than bad for farmers in the U.S., because it boosts rather than shrinks U.S. exports.

The U.S. farm lobby may not always have its heart in the right place, or even its head, but the precise legislative language it has embraced in detailing its position on agricultural development aid is thus surprisingly prudent and responsible. If U.S. agricultural development assistance officers can somehow get beyond their prideful resistance to "being told by U.S. farmers what they can and cannot do," they might see that what U.S. farmers are telling them to do is mostly what they should be doing anyway.

A non-qualifying AID acceptance of at least some of the narrow language found in the Bumpers Amendment and in FAIR will probably not bring an end to all farm lobby complaints about agricultural development assistance. It will, however, diminish some of the needless hostility toward AID found today in farm circles. The farm lobby is not asking for much, after all: mostly just some

small recognition that its clients' interests are being taken into account. If that recognition is provided, then perhaps the way can be cleared for the farm lobby to discover that AID is one of its best friends after all.

Implications for the ANE Rural Sector Strategy

How should the ANE Rural Sector Strategy document under review at this conference be altered to reflect what I am recommending here? I was especially pleased, when I first saw a draft of this document, to observe that its emphasis is already largely compatible with the course I am suggesting. The emphasis throughout is -- appropriately -- on dynamic change rather than static balances, and specifically on broad income and employment goals, rather than on narrow agricultural production or export goals. This reassures me that implicitly at least, the consumption side of the region's food balance is being stressed as much as the production side. Also, the emphasis differs as we move from the low income agricultural to the low income transitional to the middle income industrializing economies discussed in the document. It is in the low income agricultural countries, where per capita food staple production is low and in some cases actually declining that we find -- appropriately -- the greatest food staple production-side emphasis. I note that all this is compatible with both the letter and the spirit of the Bumpers Amendment, and the U.S. farm lobby could hardly object.

There are, however, several ways in which this strategy document -- without altering its intent -- could be made to sound even more attractive to potentially critical U.S. domestic farm lobby groups.

1. First, in several places the language of the document does revert to what I would call an excessive emphasis on production and trade balance goals. In Section II(2) the document comes close to endorsing what it describes as a regional "drive for cereals self-sufficiency." Later, in Section II(3)C, the middle income industrializing countries are congratulated for having solved what is called their "grain self-sufficiency problem." "Self-sufficiency" is a phrase that makes the U.S. farm lobby see red. And I believe it is also an inappropriate (or at best an inadequate) ANE development policy goal. Low income Asian countries which suffer from widespread malnutrition, like Bangladesh and India, should not be setting "self-sufficiency" as a goal; they should look beyond trade balances and set "higher calorie consumption" as their goal. AID should encourage them to pursue demand-side goal with development projects that link gains in food production to gains in rural income. The trade balance implications should be considered, at most, a secondary concern.

As for the middle income industrializing countries of the Near East and Southeast Asia, for these countries (with the exception of Thailand) grain self-sufficiency should actively be

discouraged as a long run objective. Among these middle income countries, as diets begin to diversify and as the comparative advantage of the farm sector falls relative to the industrial sector, imports of grain for breadmaking and for livestock feed become an appropriate and a highly affordable farm trading posture. Indonesia, for example, should be permitted to follow in the path of other industrializing Asian NICs, meeting its changing and expanding dietary needs if necessary with ever larger imports of wheat. Already, Indonesia's annual imports of wheat and wheat products have risen from 20,000 tons in the mid 1960's to 1.6 million tons in 1987/88.

2. On this same theme, there are several other points at which your strategy document misses its chance to reassure U.S. farm traders. Too often the goal is described in terms of ANE graduate country "exports." ANE middle income aid recipients should be described as graduating to an involvement in trade as importers as well as exporters, and as importers of U.S. farm products first of all.

U.S. farmers already know about the well-established import needs of some much earlier aid recipients, such as South Korea and Taiwan. They now need to be told more about the next generation of graduates -- countries such as Malaysia and Thailand. The American Soybean Association, which has been complaining for years about Malaysian palm oil exports, should be reminded that Malaysia now also imports temperate zone farm products -- including wheat, corn, fresh apples, oranges, grapes, canned fruits, vegetables, and even soybeans. This healthy import activity should be described as a result of Malaysia's \$2000 per capita income, which was made possible in the first instance by successful aid-assisted agricultural development (mostly in non-competing markets such as rubber, timber, pepper, and cocoa). And even Thailand, Asia's most export-oriented farm producer, is now a substantial market for U.S. cotton (to serve its textile industry) and even wheat (as the diet changes and bakery items become a popular convenience in urban areas). Thailand, thanks to its rapidly increasing wealth -- again driven in the first instance by agricultural success -- also imports a number of higher value farm items, including non-fat dry milk, fresh, canned, and frozen fruit, U.S. breeding animals, and U.S. hides and skins (for the fast-growing footwear industry).

3. Also on this same point, mention is made several times in the document of the opportunity to promote "agroprocessing" industries, in both low-income transitional and middle income countries. Invariably, however, a reference follows to the "future exports" that these industries will make possible. Again, what about the "future imports"? A part of both the equipment to create these industries, and quite often the commodity input supplies to operate them, can and should be imported. This potential import demand from efficient agroprocessing should be kept in mind from the start, so AID can

be alert to any damaging efforts that might be made, through protectionist policies (as in Thailand's soybean industry), to stunt this import demand.

4. One "agroprocessing" industry that does not receive adequate attention in the document is animal meat production, especially swine and poultry production. Modern poultry production has the advantage of being linked neither to land nor to climate. The inputs required -- both the grain and the breeding stock -- are easily transported. And in developing countries where labor is in surplus, feed and water distribution need not be automated. An IFPRI report by J.S. Sarma has recently concluded that "Livestock production is an important source of rural income and employment in the Third World. Rural labor-intensive livestock production could be a major component of future agriculture-based, employment-oriented development strategy for developing countries, as this would help to meet the equity objectives by contributing cash incomes to small farmers and improving employment, nutrition, and food security of low-income people. Donor agencies should assist the developing countries in pursuing such a strategy." [1]

One key to such a strategy is the creation and expansion of specialized infrastructure, especially refrigerated facilities for storage, processing, and transportation. Production and consumption of livestock products lags in many developing countries, relative to the known income elasticity of demand, because of such infrastructure bottlenecks. Some reference in your strategy document to these bottlenecks would be reassuring to U.S. farmers, who ought to be keenly interested in the expansion of livestock production abroad. More livestock production means more feed use, and it is U.S. farmers who are the world's largest and most efficient producers and exporters of animal feed.

5. My fifth and final suggestion would be to make more explicit, throughout your strategy document, AID's proper concern for social justice in the countries in which you operate. U.S. farm lobby groups are not completely naive about how agriculture operates in much of the developing world. They are for good reason offended by the feudalism that survives today in much of Latin America, parts of South Asia, and the Philippines, and they are offended at the thought of U.S. tax dollars going to make these feudal agricultural systems more profitable for the traders, the dominating landlord families, the money lenders, and the political elites. U.S. farmers -- and other domestic aid constituency groups -- are moved by social justice arguments, and they would take a more charitable view of AID operations abroad

1. J. S. Sarma, "Livestock-Feedgrain Linkages in the Developing Countries," IFPRI Policy Briefs 2, October 1988.

if they knew that ordinary farmers and farm laborers in the developing world were the prime beneficiaries.

It should not be too much to ask that your ANE strategy document make more prominent reference to social justice. To ignore this dimension of the agricultural development problem would be in fact a significant professional oversight. It is by now well understood, and especially from the experience of East Asian success stories like Taiwan, that rural social justice and agricultural productivity go hand in hand. Of course, it will always be sensitive for donors to criticize recipient country social relations. But social justice issues have been mentioned in official descriptions of some ARD projects in individual ANE recipient countries, such as the Philippines, so there should be no reason to exclude such mention from your more general strategic plan.

Conclusion

Upon reflection, then, maybe the relationship between ANE ARDO's and the U.S. agricultural community back home does not have to be such a difficult one after all. It is in Asia and the Near East that U.S. agricultural development assistance efforts have met with greatest success, and the income gains that have accompanied that success have meant larger rather than smaller markets for U.S. farm exporters. Your new strategy document focuses on ways to make that success more general throughout the region. This could mean still more growth in trade of the kind that ought to please U.S. farmers. The most important thing missing from your strategy document is, in my view, a more explicit statement of an understanding you seem to share with U.S. farm groups: an understanding that aid should be geared toward people, not just production, and toward consumption gains, not just trade balances or export earnings.

EMPLOYMENT, PRICE STABILIZATION, AND CONSUMPTION
DIVERSIFICATION IN THE ANE AGRICULTURAL STRATEGY

Richard H. Goldman

Harvard Institute for International Development

ANE ARDO CONFERENCE

Rabat Morocco
February 1989

This paper calls attention to three of the themes highlighted in the draft ANE agricultural strategy paper--generating employment, stabilizing staple food prices, and diversification of food consumption patterns. The draft strategy reflects an awareness that ANE countries represent a broad spectrum of agricultural and economic structures and development processes. The focus of particular country development strategies and donor economic assistance programs in the coming decade will also reflect this diversity. Nevertheless, in all of these countries the ability of the economy to generate employment with stable or increasing real wages, the capacity to stabilize staple food prices, and the degree to which national resource allocation accommodates or retards the tendency toward more diversified consumption patterns are important standards against which development policies will be judged. While these three themes play independent roles in the growth process, there are important interactions among them as well.

Employment Generation

Characteristics of the agricultural labor market are shown in Table 1. Some ANE countries, particularly those in the Near East, are very far along in the process of economic structural transformation. In Egypt, Morocco, and Tunisia, the growth of the agricultural labor force is very low and in some cases it has actually been falling. In contrast, the South Asian countries show much high shares of agricultural workers in the total labor force accompanied by growth rates that are almost as high as that for the total labor force. In Southeast Asia, the agricultural labor force shares are still relatively high, but the growth rate of the agricultural labor force is substantially less than that for the total labor, suggesting a rapid economic transition in the coming decade.

The labor force figures reveal only a part of the story, since the agricultural sector can serve as the employer of last resort with stagnant or even decreasing real wages, or it can be characterized by productivity-induced increases in demand for labor in a context where the non-agricultural sectors are actively competing in a nationally integrated labor market generating increasing real wages. A proxy measure for the behavior of real wages--agricultural GDP per rural worker--is shown in Table 1. The average annual growth rate of this measure between 1965 and 1985 was 2.3 percent in Southeast Asia, 1.8 percent in the Near East, and 0.1 percent in South Asia.

TABLE 1

AGRICULTURAL LABOR FORCE CHARACTERISTICS

Ag. Labor	Growth rate Share 1985	Relative Ag. Labor		Ag. GDP/ Rural Worker	
		Ag. Labor 1970-1980	Total Labor Growth 1970-1980	1965	1985
Malaysia	59	0.5	0.17	397	1000
Thailand	71	1.7	0.59	157	192
Philippines	52	1.8	0.75	164	302
Indonesia	57	0.6	0.29	164	223
Weighted Average Growth				2.3	
Pakistan	55	1.8	0.72	151	173
Sri Lanka	53	1.7	0.81	106	194
India	70	1.3	0.76	123	120
Bangladesh	75	1.0	0.42	87	100
Weighted Average Growth				0.1	
Tunisia	35	-0.7	-0.24	224	578
Turkey	58	0.6	0.27	291	356
Egypt	46	0.5	0.23	175	265
Morocco	46	0.7	0.24	136	219
Weighted Average Growth				1.8	

Adapted from C.P. Timmer, The Role of Agriculture in Employment Generation and Income Distribution in Asia and the Near East

Improving upon, perhaps even maintaining, this record of employment and income growth in the next decade will be a major challenge. In recent years there has been an increasing awareness that the agricultural sector must play a dynamic role in the early and middle stages of the economic growth process. Accompanying this is an improved understanding of the role of economic policy in supporting or retarding agricultural growth. A recent World Bank study attempts to measure the level of both direct price interventions in the agricultural sectors of various countries and the indirect (exchange rate and industrial protection) policy effects on the terms of trade between the agricultural and non-agricultural sectors. The direct and indirect nominal protection coefficients for selected crops in ANE countries (I've included some non-AID countries) are shown in Table 2. In general, there is heavy discrimination (negative protection) against the staple food crops and the export crops. Even when agricultural pricing policy (the direct interventions) are supportive, as they are shown to be for the food crops, there is a more than offsetting impact of the indirect policies. A comparison of the changes in the level of direct and indirect effects between 1975-79 and 1980-84 is shown in Part C of Table 2. In many countries apparent policy reform in either the direct or indirect categories (shown as increases in protection in the table) has been partially offset by an opposite movement in the other category. This is more pronounced for the food crops than for the export crops. These measures call attention to the fundamental integration of the agriculture and non-agricultural sectors. Agricultural and food policy design and management must be carried out in a broad context if agriculture is to continue to grow and play a dynamic role in national employment generation and income growth.

Although pricing policy reform has been important where dynamic agricultural growth has occurred in the past two decades, it has been largely due to huge investments in rural infrastructure and breakthroughs in biological and chemical technology. Both of these sources of growth and employment generation are threatened in the 1990s. Domestic fiscal constraints and a lack of donor resources have resulted in a major slowing of growth in rural infrastructure investment, particularly in irrigation. In addition, the period of rapid adoption of high yielding wheat and rice varieties is over. Both of these developments threaten agricultural and employment growth over the next decade.

Finally, in many countries rural population growth has been faster than the growth of the agricultural labor force, suggesting that there has been substantial employment in the non-agricultural sector of rural economies. This process is probably strategic to an effective labor absorbing growth strategy, but it is poorly documented and not well understood. In the coming decade it will be increasingly important for host country governments and AID learn how to promote and support source of rural employment generation.

Price Stabilization

An important feature of most national food and agricultural policies is an attempt to stabilize both producer and consumer prices, particularly those for staple foods. A measure of the impact of such policies on selected agricultural producer prices in some ANE countries is shown in Table 3. The variability of domestic food crop prices between 1960-84 is often less than half the variability of the associated border, or import, price. Price stabilization policies are often poorly designed and implemented. It is common for these policies to fail,

TABLE 2

DIRECT AND INDIRECT NOMINAL PROTECTION

A. Export Crops

	1975-1979		1980-1984	
	Direct	Indirect	Direct	Indirect
Egypt (Cotton)	-36	-18	-22	-14
Malaysia (Rubber)	-25	- 4	-18	-10
Pakistan (Cotton)	-12	-48	- 7	-35
Philippines (Copra)	-11	-27	-26	-28
Sri Lanka (Rubber)	-29	-35	-31	-31
Thailand (Rice)	-28	-15	-15	-19
Turkey (Tobacco)	2	-40	-28	-35

B. Food Crops

	1975-1979		1980-1984	
	Direct	Indirect	Direct	Indirect
Egypt (Wheat)	-19	-18	-21	-14
Malaysia (Rice)	38	- 4	68	-10
Morocco (Wheat)	- 7	-12	0	- 8
Pakistan (Wheat)	-13	-48	-21	-35
Philippines (Corn)	18	-27	26	-28
Sri Lanka (Rice)	18	-35	11	-31
Turkey (Wheat)	28	-40	- 3	-35

C. Change in Nominal Protection

	Food Crops		Export Crops	
	Direct	Indirect	Direct	Indirect
Egypt	- 2	4	14	4
Malaysia	30	- 6	7	- 6
Pakistan	- 8	13	5	13
Sri Lanka	- 7	4	- 2	4
Philippines	8	- 1	-15	- 1
Thailand	---	---	13	- 4
Turkey	-33	5	-30	5
Morocco	7	4	---	---

Adapted from Krueger, Schiff & Valdes, Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economywide Policies (World Bank)

in the sense that the policy objectives are inconsistent with the financial and storage resources available to back them up, and yet the stabilization of staple food prices can play a strategic role in national development strategy.

Staple food prices have large leverage on the real incomes of poor consumers. Although this is obvious with regard to urban consumers, market conditions have important consequences for poor rural consumers (including farmers) as well. The influence of unstable prices on the welfare of these families is asymmetric, with the dire consequences of high prices less than offset by the transitory benefits of lower prices.

TABLE 3

RATIO OF STANDARD DEVIATIONS OF DEFLATED PRODUCER AND
DEFLATED BORDER PRICES, 1960-1984

	Exports		Food Crops	
	Crop	Ratio	Crop	Ratio
Egypt	Cotton	.42	Wheat	.30
Malaysia	Rubber	1.02	Rice	.47
Morocco			Wheat	.63
Pakistan	Cotton	.62	Wheat	.17
Philippines	Copra	.94	Corn	.27
Sri Lanka	Rubber	.44	Rice	.65
Thailand			Rice	.26
Turkey	Tobacco	1.16	Wheat	.56

Source: Krueger, Schiff & Valdes, Agricultural Incentives in Developing Countries: Measuring the Effects of Sectoral and Economywide Policies (World Bank)

A second aspect of the role of price stabilization concerns its impact on investment. Unstable prices for strategic staple foods promote risks that can influence resource allocations and be a substantial deterrent to investment. In the face of unstable market conditions farmers, smaller farmers in particular, tend to lean away from producing for the market and focus on protecting household food supplies. These same market conditions inhibit their willingness to use purchased inputs and adopt improved agricultural technologies.

Price instability impacts not only on the commodity in question but on other investment markets as well, due to destabilizing impacts on input prices, such as raw material and urban wages, and on credit markets. When price instability acts as an important deterrent to the production of a marketed surplus for a strategic staple food, this has ramifications for investment in rural infrastructure, such as transportation, with negative implications for investment in other commodity production.

Finally, price stabilization can be employed to offset the impact of common rural market failures, particularly the absence of market-related institutions aimed at mitigating the impact of production instability induced risk.

It is important to recognize that the resource costs of implementing price stabilization programs is large. Ironically, these resource allocations themselves have important economic destabilizing tendencies. All realistic policies must rely on combinations of national stockpile adjustments and increasing exports or imports to offset the impact of unstable domestic production on prices, but the consequent destabilization of these balancing resources can have import disruptive impact on the macro economy.

As ANE countries implement price and market reforms, bringing about greater alignment of their domestic price levels with those prevailing in the world market, domestic price stabilization will take on an increased importance in the public policy agenda. To facilitate the process, AID can play an important role in improving the analysis of price stabilization policy options and in developing effective institutions for managing these complicated programs.

Consumption Diversification

Over the past two decades all countries in ANE have struggled to achieve increases in per capita calorie consumption. The record of their success in this area is shown in Table 4. Although the changes in calorie consumption were the result of a complex of social and economic forces, many of which were beyond the reach of actual economic policy making, nevertheless policy played a critical role in determining the pattern shown in the table. Working from the premise that changes in population, real per capita income, real prices, and income distribution are the principal factors influencing staple food demand, an estimate of the relative contribution of these factors to changing consumption levels is shown in Table 5. The impact of population is clearly shown here. Although the other factors have a smaller impact on total demand, they are the variables which have the primary influence on per capita consumption. In three of the countries where price data are available, Bangladesh, Egypt and India, pricing policy is shown to dominate income influences on per capita consumption. In three other countries, Indonesia, Thailand, and Pakistan, pricing policy and income are about equally important determinants of consumption, with two countries having reinforcing effects. In only two countries, the Philippines and Sri Lanka, do income effects dominate pricing policy. In two of the four countries where per capita consumption increased by more than 15 percent, Egypt and Indonesia, pricing policy contributed 37 and 24 percent of the change, respectively. It should be noted that this analysis is preliminary, but it nevertheless serves to call attention to the importance and variety of food policy instruments employed throughout ANE.

The "other" category shown in Table 5 is simply a residual from the other measures. It is very likely, however, that this category contains the impact of income distribution changes on the level of average national consumption. More work is underway, currently, to explore this.

While per capita consumption of calories has been growing in most ANE countries, the demand for food is becoming more diversified as well. The two are not unrelated. Average calorie consumption in many ANE countries has reached a level where the demand for calories in response to increasing income must be quite low. As this occurs, increases in per capita income result in consumption diversification. The food sources contributing to the recent change in calorie consumption are shown in Table 6. The country experience varies widely, with these sources -- cereals, fats and oils, sugar, roots, and pulses -- together accounting for between 33 and 90 percent of per capita calorie expansion. In no country did cereals account for more than 65 percent of calorie expansion.

Part of this diversification is due to increasing per capita incomes and the demand for greater variety in the diet once cereal and total calorie consumption reach a threshold level. An additional stimulus is changing relative food prices generated by varying combinations of production and trade policies. In Pakistan, for example, where the increase in fats and oils calories was almost three and a half times that required to offset the decline in cereal consumption, the real relative price of vegetable oil declined dramatically during the period.

In the coming decade we can expect a slow down in the expansion of demand for cereals. In most ANE countries population growth is slowing. The projected change in population growth rates is shown in Table 7. While some countries are expected to have only a modest slowing, there are a number of countries where

TABLE 4

DAILY PER CAPITA CALORIE AVAILABILITY

	1965	1973	1984	1965	Index 1973	1984
Bangladesh	1964	1949	1906	100	99	97
Egypt	2435	2631	3280	100	108	135
India	2100	1967	2185	100	94	104
Indonesia	1742	2031	2489	100	117	143
Pakistan	1747	2128	2223	100	121	127
Philippines	1936	1957	2328	100	101	120
Sri Lanka	2155	1075	2414	100	96	112
Thailand	2200	2302	2303	100	105	105
Morocco	2182	2593	2864	100	119	131
Tunisia	2296	2376	2888	100	103	126

TABLE 5

PROPORTIONATE CONTRIBUTION TO CHANGE
IN TOTAL CALORIE CONSUMPTION
(percent)

	Population	Income	Price	Other
Bangladesh	108	0	15	-23
Egypt	54	9	37	0
India	71	20	20	0
Indonesia	56	20	24	0
Pakistan	88	12	-11	11
Philippines	63	7	2	27
Sri Lanka	56	16	2	26
Thailand	100	24	24	-48
Morocco	74	7		19
Tunisia	56	14		30

TABLE 6

CONSUMPTION DIVERSIFICATION

Proportionate Contribution of Selected Food Sources to
1973-1984 Change in Per Capita Calorie Consumption

	Calorie Change	Proportionate Contribution Change in Calorie Consumption (%)				
		Cereals	Oils	Sugar	Roots	Pulses
Bangladesh	-43	83	-109	12	9	26
Egypt	649	41	28	16	3	-10
India	218	36	24	15	15	0
Indonesia	458	65	18	0	7	0
Pakistan	95	-35	123	-28	-3	-24
Philippines	371	40	9	13	0	0
Sri Lanka	339	52	13	10	0	0
Thailand	0					
Morocco	271	50	10	15	7	3
Tunisia	512	63	7	8	1	--

TABLE 7

POPULATION GROWTH RATES

	1970-1985	1985-2000	% Change in Growth Rate
Bangladesh	2.8	2.5	-11
Egypt	2.3	2.1	-10
India	2.2	1.6	-29
Indonesia	2.63	1.6	-30
Pakistan	2.7	2.3	-15
Philippines	2.6	2.1	-19
Sri Lanka	1.7	1.3	-24
Thailand	2.5	1.6	-36
Morocco	2.4	2.0	-17
Tunisia	2.2	1.9	-16

152

the population growth rate is projected to decrease by more than 20 percent. This feature combined with the influence of the higher levels of calorie consumption already achieved should have a marked impact on the demand for staple food calories. It will, to an extent, offset the impact of projected reduction in grain production growth rates.

The same factors will contribute to an increasing diversification in consumption patterns, including the sources of animal protein. Over the last decade the demand for animal protein exceeded the rate of population growth by almost 15 percent in eight ANE countries. In all ANE countries except Sri Lanka per capita consumption of protein from poultry and eggs expanded rapidly, from a small base, at an average annual rate of 9 percent. This expansion which is likely to continue, will probably be a dynamic source of feed grain demand in the 1990's, partially offsetting the growth diminishing factors mentioned above.

National resource allocation is, in a fundamental sense demand led. This is more so the case in economies which are undergoing structural change and carrying out reforms aimed at enhancing the proportion of resources allocated through the market mechanism. At the interface between domestic supply and domestic demand is a complex of price, marketing, trade and macro policies which constitute a demand management system. Population growth, income and income distribution are, in the short and medium run, exogenous factors which influence the structure of demand. Policy instruments which influence relative prices and international trade flows are the mediating factors which control the rate of growth in demand and channel it in different directions. In so doing, these instruments mediate the competition among development objectives -- such as enhancing food consumption and achieving self-sufficiency or foreign exchange objectives -- for the scarce budgetary and primary resources of a given nation. This demand management system has and will continue to play in the coming decade a strategic role in promoting, retarding, and guiding the process of agricultural and economic diversification and growth.

NATURAL RESOURCES AND THE RURAL ECONOMIC GROWTH STRATEGY
FOR ASIA AND THE NEAR EAST IN THE 1990'S

by

Theodore Panayotou

Harvard Institute for International Development

Harvard University

One Eliot Street

Cambridge, MA 02138

Paper prepared for the USAID / ANE ARDO Conference on the theme "Responding to the Challenge: Agricultural and Rural Development Strategies for the 1990's," Rabat, Morocco, February 19-24, 1989.

351

**NATURAL RESOURCES AND THE RURAL ECONOMIC GROWTH STRATEGY
FOR ASIA AND THE NEAR EAST IN THE 1990'S**

The Challenge

Agricultural growth in Asia and the Near East during the past two decades has been no less than remarkable, whether by comparison to earlier years or to other regions (see Tables 1 and 2). Food production, income levels, nutrition and poverty alleviation have all registered significant real improvements. AID's agricultural strategy that focussed on agricultural production and basic needs through programs aiming to improve the productivity of small and marginal farmers, has been a significant factor in this success. The instruments of this strategy have been the expansion of the supply of critical inputs, water, fertilizer and agrochemicals, the development of new agricultural technologies, and the formulation of price incentives to promote adoption of the new inputs and technologies.

The challenge for the 1990's is to sustain agricultural growth into the future and to spread its benefits more widely. The threats to sustainability come from both the demand and the supply sides. The demand for agricultural growth has diminished as a result of past successes. Large food deficit countries such as India, Indonesia and Philippines have attained self-sufficiency in their main staples and agricultural exporters, such as Thailand, Malaysia and Pakistan, have faced surpluses and depressed

commodity prices. Despite a recent price recovery, it is unlikely that agricultural growth will be as consuming a goal in the 1990's as it was in the 1960's and 1970's. This is particularly true for the middle-income industrializing countries such as Thailand and Tunisia and some of the low-income transitional economies such as Morocco and Indonesia. Governments facing tight budgets are looking for ways to reduce subsidies associated with food, fertilizer and pesticide policies that have become major drains on the budget.

On the supply side, the past "extensive" sources of growth are no longer available. The land frontier is all but exhausted. The most suitable sites for irrigation have already been taken up; further expansion of irrigation faces a steeply rising supply curve. High yielding varieties, especially for cereals, have already been adopted; where they have not, it is largely due to natural resource constraints and environmental problems. Few technological breakthroughs are expected in the next few years, and given the adoption lag they cannot become a major source of growth in the 1990's. Heavier use of pesticides is probably counterproductive and environmentally imprudent. Above and beyond these resource constraints there are underlying environmental problems and stresses which are the legacy of past policies and growth patterns. A major such problem is degraded watersheds due to indiscriminate logging and uncontrolled agricultural extensification. Degraded watersheds result in loss of water control, soil erosion and flooding during the rainy season (as experienced recently in Bangladesh, Thailand and the Philippines), inadequate water supply during the dry season and siltation of water bodies

and irrigation systems downstream.

A second major problem is rapidly deteriorating irrigation systems due to siltation and poor maintenance, the result of inadequate cost recovery and overemphasis on construction of new systems than improving the efficiency of existing systems (see Tables 4 and 5). A third problem is the expansion of saline and waterlogged soils due to overirrigation, itself the result of failure to attain rational allocation of scarce irrigation water via water pricing or other effective mechanisms (see Tables 4, 5, and 6). A fourth problem is soil erosion and inefficient land use, the result of insecurity of land ownership (see Tables 7-15). A fifth problem is the destruction of natural predators of agricultural pests and the emergence of pesticide-resistant strains of pests (see Figure 1), the documented result of excessive use of pesticides in the past (e.g. Java) (see Tables 15a and 15b). Last but certainly not least, is the increasing loss of genetic material and the narrowing of the genetic resource base of agriculture due to tropical deforestation and expansion of monocultures (see Tables 16 and 17). These problems are already manifesting themselves in slowing and slipping yields despite increased input use in many Asian and Near East countries (see Figure 1).

The challenge for the 1990's is to rekindle the interest in continued agricultural growth, find new dynamic sources of growth and ensure the sustainability of yield growth by addressing effectively the resource-base degrading legacies of the past. This is not a small challenge. Yet it is not all. As the AID draft agricultural strategy for the 1990's states,

"past increases in average per capita consumption levels, while a significant accomplishment, mask the fact that millions in the regions remain in the grip of poverty and malnutrition" (ANE/TR/ARD January 1989, p. 3). This is the rest of the challenge: to develop cost-effective strategies to spread the benefits from agricultural growth more widely especially to people in areas of low agricultural productivity, fragile environment and scarcity of employment opportunities.

An Opportunity

The challenge appears formidable enough, perhaps impossible if it is to be met with reduced rather than increased budgetary outlays. Yet, there is an opportunity, a unique yet subtle opportunity that could easily be missed, as we look for a spectacular new discovery, a new miracle seed that would start a new Green Revolution. No such technological fix is in sight and even if one comes about soon it is unlikely to have an impact during the 1990's. What about the use of more inputs: more land, more irrigation, more fertilizer and pesticides, more adoption of high-yielding varieties? As we have indicated earlier, these factors are facing either supply constraints (land and irrigation), reduced incentives (fertilizer and agrochemicals), or environmental constraints (adoption of high-yielding varieties). In certain areas selective expansion of input use will help but this is not the great opportunity facing agriculture in Asia and the Near East in the 1990's.

The opportunities for the future are to be found in the "failures" of

the past: (1) excessive government intervention at the expense of private sector initiative; (2) excessive protection of domestic agriculture at the expense of agricultural trade; (3) inadequate integration of agriculture into the larger economic system and lack of coordination of agricultural policy with macroeconomic policy; (4) overemphasis on "extensive" development of physical, financial and human resources at the expense of intensive management; and (5) inadequate attention to the preservation and maintenance and management of the resource base of agriculture, the very foundation of sustainable agricultural growth. These may not be policy failures when viewed from the perspective of the past. The 1960's and the 1970's were facing different constraints and opportunities: those were times of resource abundance, major agricultural breakthroughs, rapid population growth, and large food deficits. Agriculture was the dominant sector, food security a paramount national concern, and the need for development of physical, human and financial resources intense. Extensive government intervention and protection of domestic producers was necessary to provide price incentives for adoption of the new technologies to increase food production and incomes. These policies may have been appropriate and successful, perhaps too successful, under those conditions. But, they are no longer relevant as a general policy prescription or strategy, because circumstances have changed.

The 1980's and 1990's are times of rapid structural change and transition, times of relative food "abundance" and increasing resource scarcity, times of tight budgets and increased opportunities for agricultural trade. Inward-looking trade policies and many agricultural

subsidies have outlived their usefulness. As stated in the draft agricultural policy: "The increased profitability associated with the widespread acceptance of new technologies and the government cost increases call into question both the continued need for and the financial sustainability of current subsidy packages" (p. 2).

A Response

The changing circumstances in both Asia and the Near East and the United States present AID with a unique opportunity to meet the challenge even with a dwindling foreign assistance budget. The response outlined in the draft strategy goes a long way towards meeting the challenge in an effective way. There is no doubt that continued growth production, agroprocessing, trade and market development, human capital institutional development and agricultural policy are critically important and should rank as top priorities.

Unfortunately, natural resource management has barely made the list of priority activities even though the strategy states that "sound management of a nation's natural resource base is an important component of ANE's strategic objective of sustained income and employment growth" (emphasis mine). Yet natural resource management is ranked last, because of low marks for impact on income and employment. This is, in turn, the result of viewing the maintenance and management of the resource base of agriculture as an important component, not as an integral part and the very foundation of sustainable agricultural growth.

The mere inclusion of natural resource management in the agricultural strategy is a major step forward, a pioneer step that one hopes will have a catalytic impact on developing countries and other development assistance agencies such as Japan and the multilaterals. Yet, one fears that as the 1990's draw to a close, it may turn out that the inclusion of natural resource management as an "important," yet low in priority, component rather than an integral part of the strategy was too little, too late and for the wrong reason.

Too little, because the attainment of other objectives and priorities, such as increased staple cereal production, intrinsically depend on the health of the resource base. How is the staple cereal production to increase on a sustainable basis if the irrigation systems continue to deteriorate and siltate, if soil erosion and flooding accelerate, if pesticide-resistant pests proliferate and if the genetic base of crops continues to narrow? Certainly, the development of flood-, drought-, and pest-resistant crop varieties is part of the answer. This is why it is critical that agricultural production technology remains a top priority of the strategy. Yet, one fears that technological improvements may not be sustainable or may be offset by losses in area and productivity if the resource base continues to be eroded.

Too late because the strategy seems to suggest that the emphasis of the natural resources component would be in middle-income industrializing economies, not in low-income agricultural economies (or even low-income

transitional economies) because "governments in low-income agricultural economies do not view natural resource conservation investments as matters of high priority. Officials often regard objectives of increased production and natural resource conservation as conflicting at least in the short-run" (draft agricultural strategy, p. 12). Evidence, however, from both Asia and Africa strongly suggests that the poorer the country, the more interdependent are agricultural production and resource conservation, even in the very short run. Java, for instance, almost lost half of its crop to the brown planthopper because of heavy pesticide use encouraged by generous pesticide subsidies. The decline of agricultural production in Africa is due in no small measure to the degradation of the resource base.

A second difficulty with the adopted approach is that it seems to assume that the environmental degradation is reversible. At least in the tropics, land degradation is often irreversible because of the poverty of the soils, the heavy rainfall and high temperatures. But even in the Near East, desertification is thought to be largely an irreversible process. Thailand is a prime example from the tropics. Reforestation and land rehabilitation are becoming formidable tasks.

Lastly, and perhaps more importantly, although it is true that agricultural production and natural resource management are perceived by host governments as competing with each other for limited resources, AID could play a catalytic role in changing this perception, as it has done in countless other cases in the past.

While the increased power of special interest groups, particularly environmental, and the pressures from U.S. Congress are good reasons for including natural resource management in AID's agricultural strategy, there is an even more fundamental reason: without protection and rehabilitation of agriculture's deteriorating resource base, the other objectives and activities of AID's agricultural strategy might be in jeopardy. Moreover, AID has a unique opportunity to be a pioneer and a catalyst in a critical area of development and it can do this with very limited resources. It is a unique opportunity that should not be left unexploited.

A natural resources strategy for sustainable agricultural development is outlined in the following related papers:

Panayotou, T., "Natural Resource Management: Strategies for Sustainable Asian Agriculture in the 1990's," a paper prepared for the USAID/IIID Symposium on Agricultural Strategy in the 1990;s in Asia and the Near East, Washington, DC, September 6-9, 1988.

_____, "Management of Natural Resources for Sustainable Development: Market Failures, Policy Distortions and Policy Options," a paper prepared for USAID/Thailand, Bangkok, May 1988.

_____, "Economics, Environment and Development," Development Discussion Paper No. 259, Harvard Institute for International Development, Cambridge, MA, December 1987.

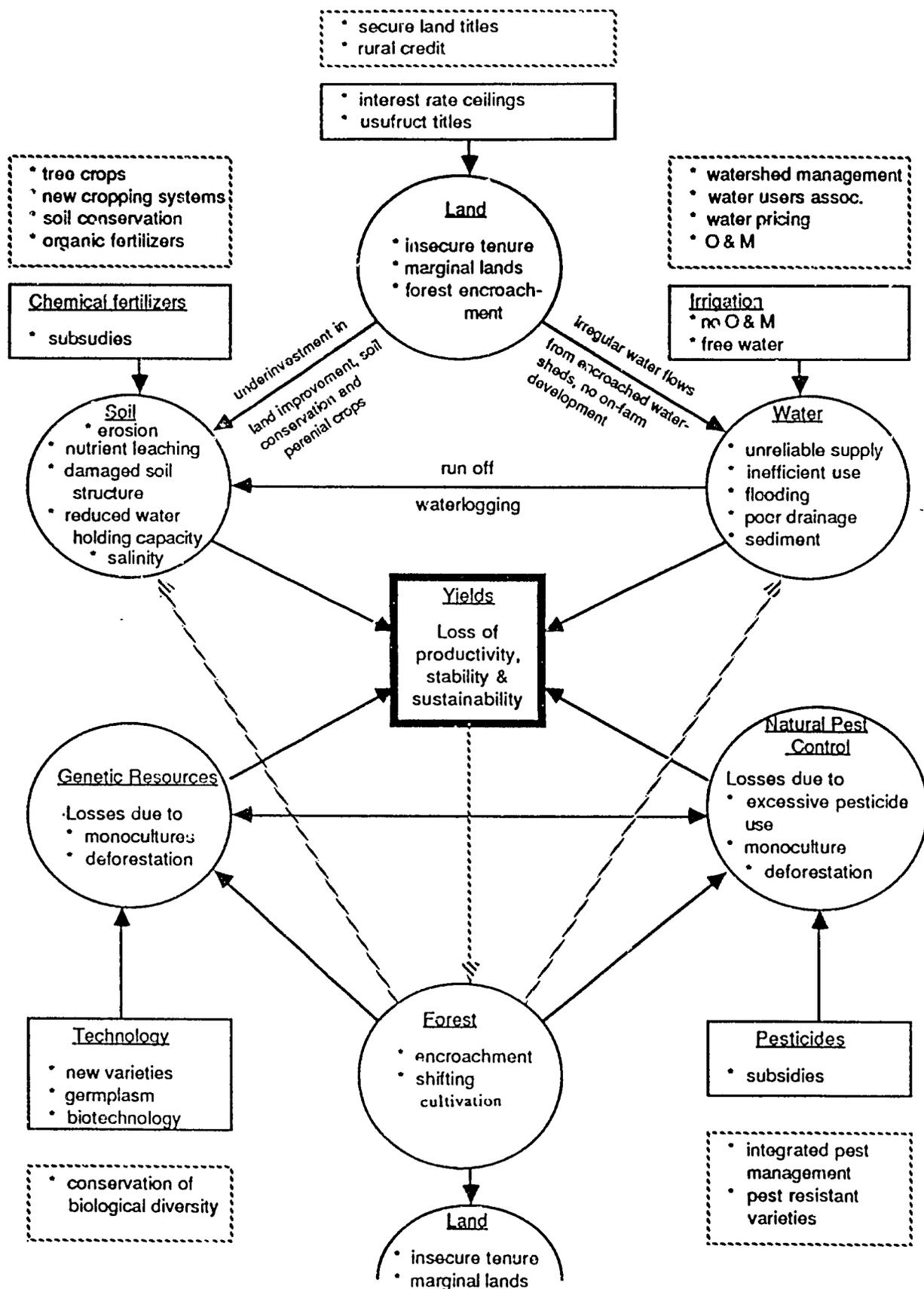


Figure 1: Loss of agricultural growth due to mismanagement of the agricultural resource base. Entries in the solid line rectangles indicate inferior or inadequate management policies. Entries in broken-line rectangles indicate superior or supplementary policies for improved resource management.

Source: Panayotou, T., "Natural Resource Management: Strategies for Sustainable Asian Agriculture in the 1990s," HIID/USAID Symposium on Agricultural Strategies in the 1990s in Asia and the Near East, Washington, DC, Sept. 6-9, 1988.

Table 1.

Production of Selected Food Crops, 1965-86

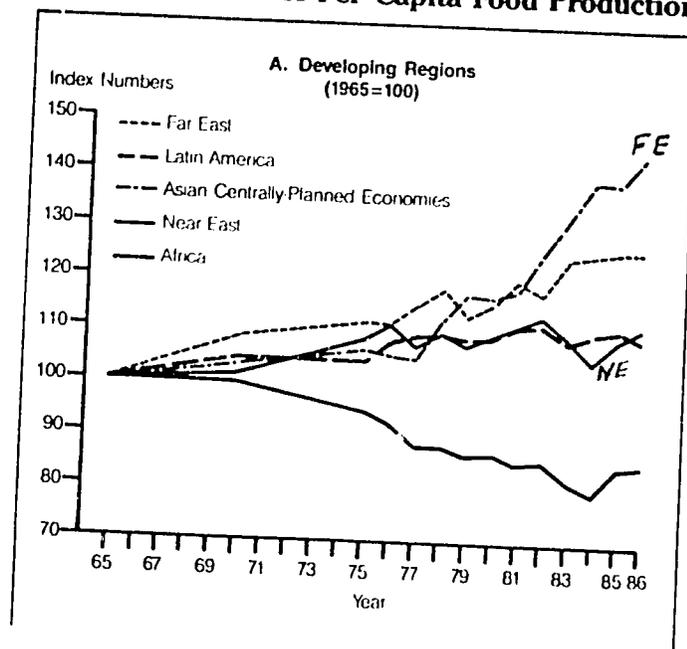
(thousand metric tons)

	1965	1970	1975	1980	1982	1983	1984	1985	1986
World	1,005,926	1,205,128	1,372,727	1,567,472	1,701,537	1,643,156	1,803,902	1,847,436	1,870,109
Developing Countries	470,248	587,418	683,263	770,799	831,546	889,742	920,264	928,135	949,654
Africa	37,877	43,087	47,679	49,957	51,244	45,229	46,094	60,528	62,966
Far East	157,652	212,254	239,075	273,652	275,965	316,348	318,692	325,197	328,949
Latin America	57,640	71,307	80,545	88,498	105,318	98,593	106,667	109,441	108,678
Near East	37,821	39,962	51,689	55,536	58,541	56,746	53,829	62,785	67,078
Asian Centrally Planned Economies	179,240	220,779	264,215	303,114	340,434	372,788	394,946	370,142	381,938

Quoted from World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc., p. 52.

Table 2.

Index of Per Capita Food Production



Quoted from World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc., p. 53.

4.5/86

Table 3.

Deforestation in Tropical Countries, 1981-85

Country	Closed Forest Area, 1980 (thousand hectares)	Annual Rate of Deforestation 1981-85 (percent)	Area Deforested Annually (thousand hectares)
Indonesia	123235	0.5	600
India	72521	0.2	147
Burma	32101	0.3	105
Kampuchea, Dem	7616	0.3	25
Papua New Guinea	34447	0.1	22
Malaysia	21256	1.2	255
Thailand	10375	2.4	252
Lao People's Dem Rep	8520	1.2	100
Philippines	12510	0.7	91
Nepal	2128	3.9	84
Vietnam	10810	0.6	65
Sri Lanka	2782	2.1	58

Quoted from World Resources Institute, World Resources 1986, New York, Basic Books, Inc., p. 72.

14/1

Table 4.

Irrigation Service Fees Paid by Farmers Compared to Public Irrigation System Costs, Selected Asian Countries^a

Country	Actual Revenue from Service Fees (dollars per hectare)	Operating and Maintenance Costs (dollars per hectare)	Revenue as a Proportion of Operating and Maintenance Costs (percent)	Total Capital and Operating Costs		Revenue as a Proportion of Total Costs	
				Moderate Estimate (dollars per hectare)	High Estimate (dollars per hectare)	Moderate Estimate (percent)	High Estimate (percent)
Indonesia	29.00	33.00	78.5	191	397	13.6	6.7
South Korea	192.00	210.00	91.4	1057	1523	18.2	12.6
Nepal	1.00	16.00	5.6	126	207	7.2	4.4
Philippines	16.00	14.00	120.4	75	104	22.5	10.2
Thailand	8.00	30.00	27.7	151	272	5.5	3.1
Bangladesh (major surface systems)	3.75	21.00	17.9	375	X	1.0	X

Sources: for Bangladesh, Q. Shahabuddin, "Irrigation Water Charges, Subsidies, and Cost Recovery in Bangladesh," paper prepared for the World Resources Institute, September 1985; for all other countries, Leslie E. Small, Marietta S. Adriano, and Edward D. Martin, "Regional Study on Irrigation Service Fees: Final Report," International Irrigation Management Institute, Kandy, Sri Lanka, January 1986, as adapted from R. Repetto, *Skimming the Water: Rent Seeking and the Performance of Public Irrigation Systems* (World Resources Institute, Washington, DC, 1986), Table 1, p. 5.

Note: a. Figure obtained by converting local currency values at official exchange rates prevailing in June 1985.

* not available.

Quoted from World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc.

Table 5.

Economic Rents in Public Irrigation Systems

Country	Charges as a Percentage of Farmer Benefits
Indonesia	8.21
Korea	29.33
Nepal	5
Philippines	10
Thailand	9
Pakistan	6
Mexico	11.26

Sources: Based on Leslie E. Small, Marietta S. Adriano, and Edward D. Martin, "Regional Study on Irrigation Service Fees: Final Report," International Irrigation Management Institute, Kandy, Sri Lanka, January 1986, Table 5, p. 37; Muhammad A. Chaudry, "Water Charges, Cost Recovery, and Irrigation Subsidies in Pakistan," prepared for the World Resources Institute, Washington, DC, 1985; and Ronald Cummins and Victor Bojer, "Water Subsidies in Mexico's Irrigated Agricultural Sector," paper prepared for the World Resources Institute, Washington, DC, 1985, cited in Robert Repetto, *Skimming the Water: Rent Seeking and the Performance of Public Irrigation Systems* (World Resources Institute, Washington, DC, 1986), Table 3, p. 13.

Note: a. Punjab Province, in set irrigated crops, under irrigation.

Quoted from World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc.

Table 6.

Irrigation and Salinization, 1974-84

	Area Irrigated 1984 (thousand hectares)	Percentage Change Over 1974-76	Percentage of Irrigated Lands Affected by Salinization
Bangladesh	1,920	42	
Burma	1,064	9	
Nepal	640	176	
Oman	42	24	
Pakistan	15,320	13	
Philippines	1,430	30	40
India	39,700	18	27
Indonesia	5,420	12	
Thailand	3,550	47	
Morocco	520	22	
Egypt	2,414	-12	30-40
Jordan	38	6	16
Sri Lanka	550	15	13
Tunisia	210	71	
Yemen	245	7	
Yemen, Dem	62	9	

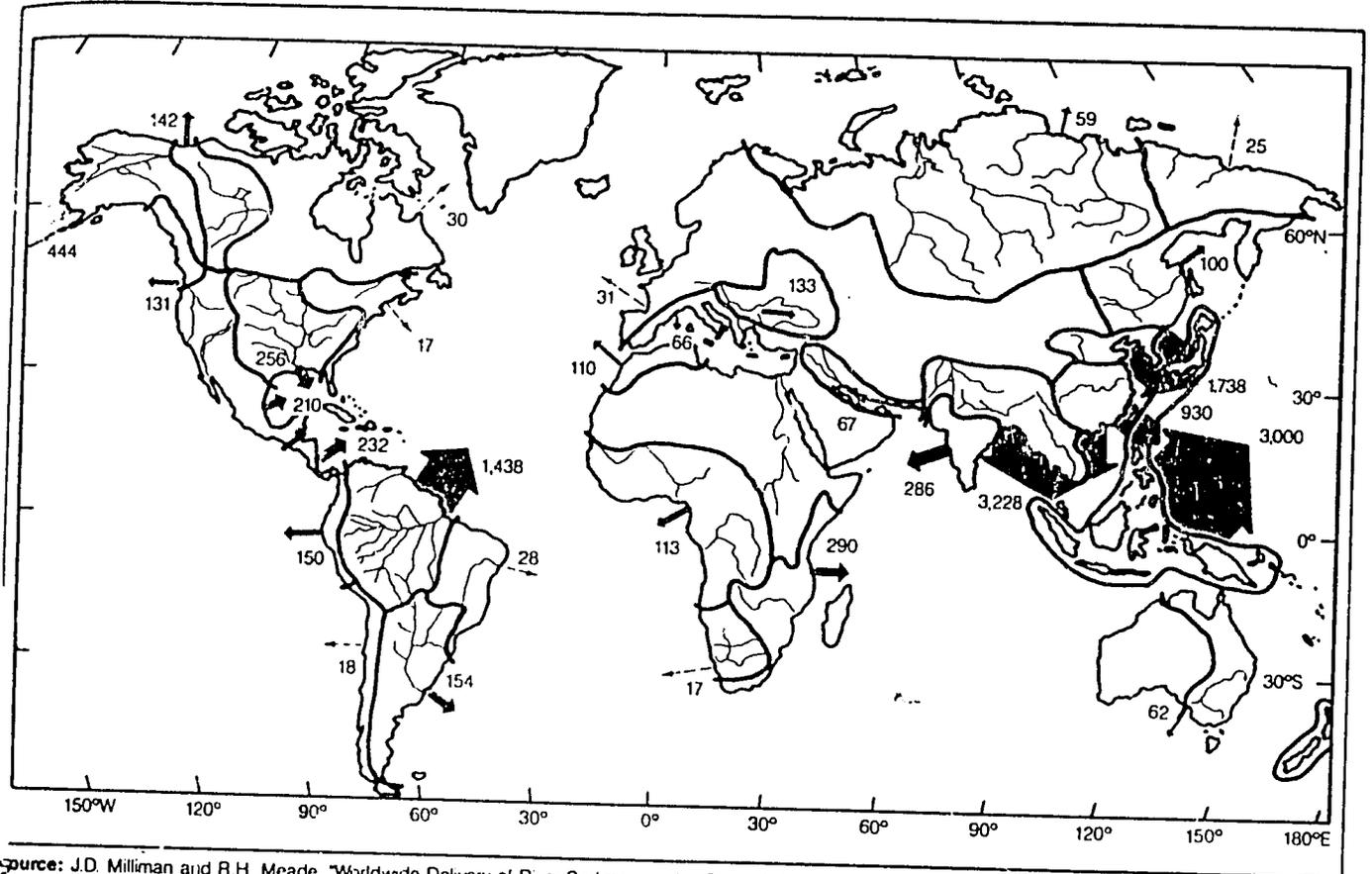
Sources: U.N. Food and Agriculture Organization; and other sources.
 0 = zero or less than half of 1 percent, X = not available; blank = no data available
 or salinization not a significant problem
 For additional information, see Sources and Technical Notes

Quoted from World Resources Institute, World Resources 1987, New York, Basic Books, Inc., p. 280.

403

Figure 2.

Annual Discharge of Suspended Sediment from Various Drainage Basins of the World



Source: J.D. Milliman and R.H. Meade, "Worldwide Delivery of River Sediment to the Ocean," *Journal of Geology*, vol. 91 (January 1983), p. 16.
Note: Width of arrows corresponds to relative discharge of sediment. Numbers refer to average annual input in millions of metric tons. Direction of arrows does not indicate direction of sediment movement.

Quoted from World Resources Institute, World Resources 1986, New York, Basic Books, Inc.

400

Table 7.

Soil Erosion in Selected Countries, 1970-86

	Extent and Location	Affected Area as Percentage of National Area	Amount of Erosion (metric tons per year)	Rate of Erosion (metric tons per hectare per year)	Year of Estimate
ASIA					
Burma	Irrawaddy River basin (43,000 ha)	.07	X	139	1980s
China	Loess Plateau region (60 million ha)	6.4	X	11-251	1980
India	Seriously affected cropland (80 million ha)	27	6 billion	75	1975
	Cultivated land Deccan Black Soil region	X	X	40-100	1980s
Indonesia	Brantas River basin, Java	X	X	43	1970s
Nepal	Entire country	100	240 million	35-70	X
Turkey	Entire country	100	5 million	X	1980s
Yemen	Abandoned terraces Serat Mountains (4,900 ha)	0.03	X	150-400	1984

Source: World Resources Institute and International Institute for Environment and Development. X = not available. For additional information, see Sources and Technical Notes.

Quoted from World Resources Institute, World Resources 1987, New York, Basic Books, Inc., p. 281.

Table 8.

Estimated Annual Soil Erosion, Selected River Basins

River	Outflow	Area of Drainage Basin (thousand square km)	Average Annual Suspended Load (million metric tons)	Estimated Annual Soil Erosion From Field (metric tons per hectare)
Niger	Gulf of Guinea	1,114	5	0
Congo	Atlantic Ocean	4,014	65	3
Nile	Mediterranean Sea	2,978	111	8
Amazon	Atlantic Ocean	5,776	363	13
Mekong	South China Sea	795	170	43
Irrawaddy	Bay of Bengal	430	299	139
Ganges	Bay of Bengal	1,076	1,455	270
Huang (Yellow)	Yellow Sea	668	1,600	479

Source: El-Swaify et al., Soil Erosion and Conservation in the Tropics, American Society of Agronomy (Madison, Wisconsin, 1982), p. 8.

Quoted from World Resources Institute, World Resources 1986, New York, Basic Books, Inc., p. 53.

Table 9.

**ESTIMATED ANNUAL COSTS OF IRRIGATION AND HYDROELECTRIC POWER LOSSES
DUE TO SEDIMENTATION OF RESERVOIRS**

	Hydropower (Annual)	Irrigation (Annual)	Total Capitalized Value
Estimated Output Value (Rp/unit)	2,738,412 MWh 70/KWh	277,671 ha 1,244,000/ha	
<u>Annual Losses Due to Sedimentation</u>			
Based on Loss of Total Storage (0.5)			
Lost Output	13,692 MWh	1,388 ha	
(Rp)	958,440,000	1,726,672,000	26,851,120,000
(US\$)	580,873	1,046,468	16,273,410
Based on Loss of Dead Storage (2.3%)			
Lost Output	62,983.5	6,386 ha	
(Rp)	4,408,800,000	7,944,184,000	123,529,840,000
(US\$)	2,672,027	4,814,657	74,866,840

Source: W.B. Magrath and P.L. Arens, "The Costs of Soil Erosion on Java -- A Natural Resource Accounting Approach," World Resources Institute, 1987.

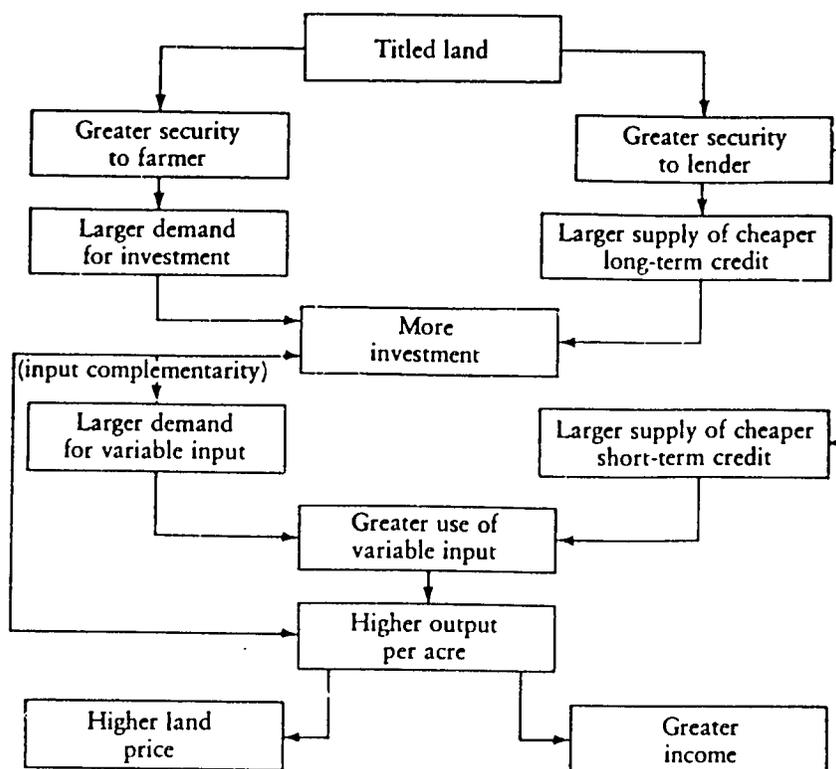
Table 10.

TOTAL ESTIMATED ANNUAL COSTS OF SOIL EROSION ON JAVA
 (\$ 000,000)

	West Java	Central Java	Jogyakarta	East Java	Java
On Site	141.5	27.0	5.7	149.6	323.9
Off Site					
Irrigation System Siltation	1.7--5.7	0.8--2.7	0.1--0.5	1.2--4.0	7.9--12.9
Harbor Dredging (1984/85)	0.4--0.9	0.1--0.3	---	0.9--2.2	1.4--3.4
Reservoir Sedimentation	9.0--41.3	3.5--16.3	---	3.8--17.3	1.63--74.9
TOTAL	152.6--189.4	31.4--46.3	5.8--6.2	155.5--173.1	349.5--415.1

Source: W.B. Magrath and P.L. Arens, "The Costs of Soil Erosion on Java -- A Natural Resource Accounting Approach," World Resources Institute, 1987.

**Security of Landownership and Farm Productivity:
A Conceptual Framework**



Source: G. Feder, et. al., Land Policies and Farm Productivity in Thailand, Baltimore, Johns Hopkins University Press, 1988.

Table 12.

Capital per Rai Owned, by Title Status

Item	Province							
	Lop Buri		Nakhon Ratchasima		Khon-Kaen		Chaiyaphum	
	Untitled farmers	Titled farmers	Untitled farmers	Titled farmers	Untitled farmers	Titled farmers	Untitled farmers	Titled farmers
Capital value (baht per rai)	729	915	809	1,332	700	1,378	694	738
Capital value adjusted for differences in land quality ^a	729	906	809	1,177	700	1,238	694	738
Mean land-quality index ^b	92	93	76	86	71	79	83	83
Number of plots in sample	100	84	89	72	61	82	120	112

Note: 6.25 rai = 1 hectare.

a. To adjust for differences in quality of land, the capital per rai of the titled farmers is divided by the ratio of the quality index of titled land to the quality index of untitled land.

b. The quality index is based on parameters estimated in the hedonic price equations reported in chapter 7.

Source: G. Feder, et. al., Land Policies and Farm Productivity in Thailand, Baltimore, Johns Hopkins University Press, 1988.

105

Table 13.

Costs and Benefits of Land Ownership Security in Thailand

Province	Price of untitled land (P_{nt})	Cost of titling		Benefits from titling		
		Full title (% P_{nt})	Private benefits (% P_{nt})	Gross social (% P_{nt})	Net social % P_{nt}	(baht/rai)
Naichon R.	3,448	3.3	130	82.9	79.6	2,745
Khun-Kaen	3,204	3.5	113	80.5	77.0	2,467
Chaiyaphun	719	5.6	54	41.3	35.7	719
Northeast	1,852	4.1	NA	68.2	64.1	1,852

P_{nt} = price of untitled land (in baht)

Source: G. Feder, et.al., Land Policies and Farm Productivity in Thailand, Baltimore, Johns Hopkins University Press, 1988.

Table 14.
Estimates of extent (thousand ha) of shifting cultivation for selected countries in Asia, 1981. Rao 1983.

Country	Population dependent on shifting cultivation (1,000)	Total area affected by shifting cultivation
Bangladesh	108	1000
Brunei	20	120
Burma	2600	1420
Fiji	-	200
India	2700	10 000
Indonesia	12000	35 000
Lao	1000	3000
Malaysia	1640	4700
Papua New Guinea	1000	4000
Philippines	830	2000
Solomon Islands	20	3
Sri Lanka	60	1000
Thailand	1000	4000
Vietnam	5000	8000
Total	27 978	74 443

Source: The International Board for Soil Research and Management, Inc., Tropical Land Clearing for Sustainable Agriculture, Jakarta, 1985.

Table 15.
Forest area and families involved in shifting cultivation in Indonesia, 1985.

Island	Estimated area of shifting cultivation ¹	Total forest area ²	Proportion of forest area in shifting cultivation (%)	Number of families in shifting cultivation ³ (000)	Proportion of total population in shifting cultivation (%)
	(000 ha)				
Sumatra	924	30 208	3.1	262	4.9
Nusa Tenggara	568	5547	10.2	251	23.0
Kalimantan	4477	44 967	10.0	228	17.3
Sulawesi	1352	12 879	10.5	243	12.7
Total	7321	93 601	7.8	984	9.2

Source: The International Board for Soil Research and Management, Inc., Tropical Land Clearing for Sustainable Agriculture, Jakarta, 1985.

Table 15a.

Pesticide Subsidies in Selected Countries, Early 1980s

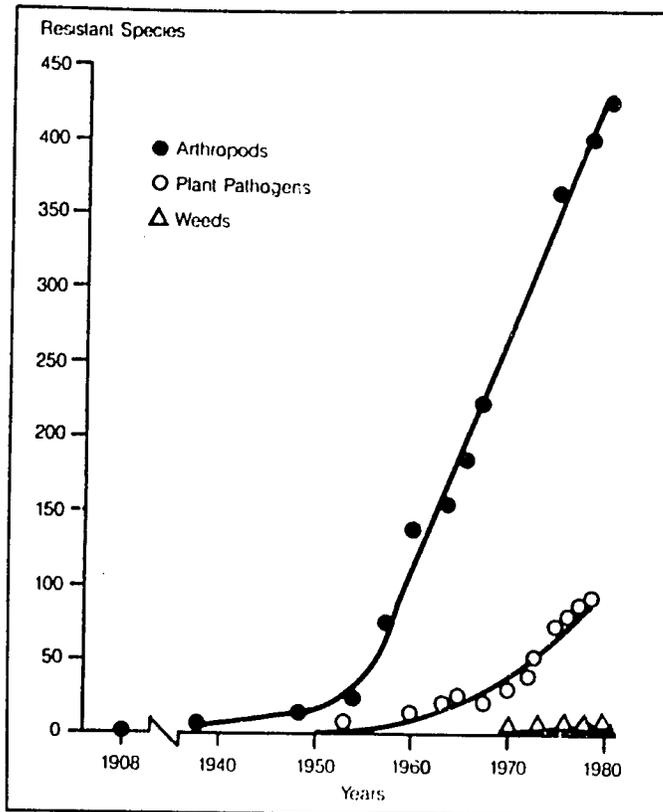
Region and Country	Annual Value of Subsidy (million U.S. dollars)	Size of Subsidy (percentage of full retail cost)
Africa		
Senegal	4	89
Egypt	207	83
Ghana	20	67
Latin America		
Honduras	12	29
Colombia	69	44
Ecuador	14	41
Asia		
Indonesia	128	82
China	285	19

Source: Robert Repetto, *Paying the Price: Pesticide Subsidies in Developing Countries* (World Resources Institute, Washington, DC, 1985), Table 1, p 5 and Table 2, p 6

Quoted from World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc..

Table 15b.

Growth in Resistant Species of Pests 1900-80



Source: Georghiu and Mellon, "Pesticide Resistance in Time and Space," in *Dover, Getting Tough: Public Policy and the Management of Pesticide Resistance* (World Resources Institute, Washington, D C, 1985)

Quoted from World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc.

Table 16.

Wildlife Habitat Loss in Indomalayan Nations, 1986^a

	Original Wildlife Habitat (square kilometers)	Amount Remaining (square kilometers)	Habitat Loss (percent)
Bangladesh	142,77	68,567	94
Bhutan	34,500	22,770	34
Brunei	5,764	4,381	24
Burma	774,817	225,981	71
China ^b	423,066	164,996	61
Hong Kong	1,066	32	97
India	3,017,009	615,095	80
Indonesia	1,446,433	746,861	49
Japan ^c	320	138	57
Kampuchea	180,879	43,411	76
Laos	236,746	68,656	71
Malaysia ^d	356,254	210,190	41
Nepal	117,075	53,855	54
Pakistan	165,900	39,816	76
Philippines	308,211	64,724	79
Sri Lanka	64,700	10,999	83
Taiwan	36,961	10,719	71
Thailand	507,267	130,039	74
Vietnam	332,116	66,423	80
Total	8,169,860	2,487,683	68

Source: John MacKinnon and Kathy MacKinnon, *Review of the Protected Areas System in the Indo-Malayan Realm* (International Union for Conservation of Nature and Natural Resources and United Nations Environment Programme, Gland, Switzerland, 1986), pp. 18-19 and pp. 247-274.

Notes:

- a. Excludes Christmas and Cocos Islands (Australia), the Maldives, and the Chagos archipelago (U.K. protection)
- b. Tropical portion only (i.e., area south of Yunnan high hills, including the southern coastal strip and the island of Hainan)
- c. Tropical portion only (i.e., southern Ryukyu archipelago)
- d. Includes Singapore

Quoted from: World Resources Institute, World Resources 1988-89, New York, Basic Books, Inc.

Table 17.

**Summary of the Status of Germplasm Collection of Selected Crops
and Their Wild Relatives**

Crop	Percent collected	Percent as unique types	Wild Species	
			Percent collected	Urgency
<u>CEREALS</u>				
Wheat	90	25	75	high
Rice	85-90	55	<30	low
Maize	98	57	85	low
Barley	80	20	10	low
Sorghum	75	33	10	high
<u>MILLETS</u>				
Pearl	>70	71	<10	high
Foxtail	>70	20	<10	high
Finger	50	17	<10	high
Kodo	50	19	<10	moderate
<u>ROOTS AND TUBERS</u>				
Potato	80-90	71	60	high
Sweet potato	<50	60	5	moderate
Yam (<u>Dioscorea</u>)	low	37	5	moderate
Cassava	75	50	10-20	moderate
<u>LEGUMES</u>				
Soybean	70	50	mod	moderate
Peanut	70	30	>50	moderate/high
Common bean	>50	50	10	high
Lima bean	<50	50	5	moderate
Runner bean	>50	83	10-30	high
Cowpea	high	67	low	high
Mung bean	70	43	low	high
Bambara ground nut	low	50	low	high
Chickpea	>80	50	<20	high
Pigeonpea	70	82	<50	moderate
Fava bean	50	66	(unknown in the wild)	
Lentil	50-60	52	30	moderate
Lupin	low	59	low	moderate/high
Winged bean	moderate	50	low	low

Source: Lyman (1984)

Quoted from Ted. J. Davis and I.A. Schirmer (eds.), Sustainability Issues in Agricultural Development, The World Bank, 1987.

ECONOMICS, ENVIRONMENT, AND DEVELOPMENT

Theodore Panayotou

Development Discussion Paper No. 259

December 1987

Harvard Institute for International Development
Harvard University
One Eliot Street
Cambridge, Massachusetts 02138

4/14

ABSTRACT*

The central theme of this paper is that good economics is good ecology and vice versa. First, the point is made that natural resources and the environment are productive assets that generate a return like other economic assets. Second, it is shown that unlike most economic assets which are protected, maintained and constantly enhanced natural resources are mined, degraded and abandoned. The author attributes this mismanagement of natural resources to market failures, compounded by misguided government policies, that lead to gross undervaluation of natural assets. The failure of national accounts to register the depletion of natural capital in the same way that the depreciation of man-made capital is being registered is an invitation for governments to convert their natural capital into current income. Then the paper goes on to identify policy reforms in developing countries that would increase economic efficiency and equity and at the same time conserve natural resources and protect the environment. In the concluding section the paper discussed possible modes of financing conservation and sustainable development.

*Theodore Panayotou is a Research Associate at Harvard Institute for International Development and a Lecturer on Economics at Harvard University.

Table of Contents

Introduction	1
Natural Resources as Economic Assets	2
Government Policies and Resource Conservation	12
A Note on Discounting and Irreversibility	19
Financing Conservation and Sustainable Development	22

1/16

ECONOMICS, ENVIRONMENT, AND DEVELOPMENT*

Introduction

It was once remarked that our reluctance to regard education as investment in human capital on a par with investments in machines results in people receiving worse treatment than machines. Along the same lines, our reluctance to regard conservation as an investment in productive assets on a par with investments in other economic assets results in the environment receiving worse treatment than economic assets. For example, tropical forests in critical watersheds may provide as many benefits as irrigation systems in terms of water control in addition to many other benefits. Yet billions are being spent in constructing and maintaining irrigation structures and very little, if any, in protecting or rehabilitating natural watersheds.

Economists, trained to detect and minimize economic waste tend to ignore the enormous waste of the wholesale destruction of natural ecosystems, by taking a rather narrow short-term and static point of view that ignores long-term social costs. Conservationists, tirelessly looking for ways to get their message across, overlook the immense force that the economic argument for conservation carries: "conservation does pay." The other side of the coin is "good economics does conserve." This is precisely the point that I would like to make in this paper. Economics and environmental conservation, far from being antithetical, go hand-in-hand. Good economics is good ecology and vice versa.

*Paper presented at the 4th Wilderness Congress, Estes Park, Colorado, September 11-18, 1987.

First, I will make the point that natural resources and the environment are productive assets that generate a return like any other type of economic asset. Then I will show that natural resources do not receive as good a treatment as economic assets and I will explain why. Second, I will demonstrate that macro, sectoral and development policies, especially in developing countries, generally undervalue natural resources. Then, I will identify policy changes that will increase productivity and economic return and at the same time conserve natural resources and protect the environment. Last, I will discuss possible modes of financing conservation and sustainable development in line with the arguments made above.

Natural Resources as Economic Assets

In many respects natural resources are like machines, buildings and factories or any other form of man-made capital. Natural resources are productive assets which, like other economic assets, generate a flow of goods and services over time. For example, forests produce timber, fuelwood, food and medicine, watershed protection, wildlife, biological diversity, recreational amenities and much more. No form of man-made capital can ever match this productivity.

Yet, man-made capital is cared for, protected, maintained and constantly enhanced; natural capital is not; if anything it is mined, degraded and abandoned. When it comes to budget allocation a good portion of national income is devoted to

investment for replacement, maintenance and augmentation of the economy's man-made capital stock. Very little, if anything, goes into the maintenance and enhancement of the economy's natural capital stock. There are several reasons for this unfavorable treatment of natural resources, none of which stands to economic reason.

First, in total disregard of economic principles, national accounts do not include natural capital as part of the economy's capital stock. The depreciation of man-made capital is fully accounted for in the national accounts, the depletion of natural resources is simply ignored. This is an open invitation for governments to liquidate their natural capital and convert it into current income. This will register as economic growth, that has been attained with little or no detectable or accountable costs to the economy. Few governments can resist this temptation especially when their political survival depends on economic growth that is hard to come by otherwise. Liquidation of man-made capital would never have passed as growth since the increase in the current account would be offset by a decrease in the capital account.

Second, again in disregard of economic principles, high-return natural capital is converted into low-return man-made capital, marginal consumption or is simply squandered. For example, a tropical forest in critical watersheds that yields inestimable services to downstream agriculture is logged over, slashed and burned, or simply degraded to be replaced by

irrigation systems that won't last and by agriculture that is not sustainable. At the same time as private and public asset portfolios are fine-tuned to take advantage of even small yield differentials, stands of trees, acres of land and stocks of fish that could generate a sustainable economic yield in perpetuity are depleted and converted into low-yield man-made assets.

Why is such a fundamental principle of economics so blatantly violated? Because a basic premise for the functioning of markets is not present: markets allocate resources properly only if the property rights to these resources are well-defined, secure and exclusive. Unlike man-made capital, natural resources especially in developing countries are no-man's-land (everybody's property is nobody's property). The open-access or common-property status of tropical forests, fisheries and much of the land in developing countries goes a long way in explaining their predicament. Make man-made capital open access and very soon it will resemble the condition of tropical forests and fisheries: run down, unmaintained, even vandalized. No rational person will invest in maintaining or building machines and structures which others are free to exploit and misuse at no charge. The reverse is certain to happen: there will be a rush to share the spoils, causing considerable destruction and waste in the process.

What often saves open-access natural resources from overnight depletion and destruction is their remoteness and inaccessibility (what was easily accessible is long gone). Increasingly, however, public infrastructure such as roads,

railways and ports built by governments in the name of development open up inaccessible areas to exploitation without prior development of the institutions necessary for efficient use and management. The result is not hard to imagine. For example, only fifteen years ago the lower Northeast region of Thailand was covered by undisturbed forest. Then the area was made accessible by the construction of a major highway. According to Thailand's National Economic and Social Development Board (1982 p. 233): "landless farmers ... from around the area and elsewhere have moved in and cleared the land for cultivation, resulting in the destruction of forest land (and watersheds) of 5.28 million rai (one million ha) between 1973 and 1977. The sporadic immigration to clear new land for cultivation has given birth to 318 villages in the past 9 years". Today, the area is totally devastated, by salinization, and soil erosion that make both forestry and agriculture unsustainable. Had private and communal property rights been issued before the opening up of the area, both agriculture and forestry could have been sustainable.

If you see similarities with other parts of the world including Indonesia's outer islands, the Philippines and the Amazon, it is not by accident. Open access is more the rule than the exception in tropical forests around the world. In Indonesia alone there are 16 million ha of degraded land covered mostly by "alang-alang" (Imperata cylindrica), the result of uncontrolled logging and shifting cultivation. And, this does not include the 13,000 square miles of rain forest burned down by the 1983 fire

in East Kalimantan.

But what happens when the government claims ownership of the resource as is the case in most countries around the world? Do governments act as exclusive and secure owners that fully value their productive assets? Not usually. The claim of the state to ownership is not effectively enforced and resources are not accorded sufficient protection, thus reverting into quasi open-access status with all the known consequences. Considering, however, the limited enforcement capability of developing countries in relation to the task of protecting vast areas as well as the population pressures they are facing, one can hardly fault governments for not enforcing their rights more aggressively. But, why not distribute more of these resources to individuals and communities while the state concentrates its efforts on the effective protection of important nature reserves and critical watersheds? For example, over 50 percent of the land in the Philippines is officially state property but in effect is common property. With the state acting as absentee landlord who does not even bother to collect a rent, much of this land has been degraded by illegal logging, shifting cultivation and squatting. Yet, it is the better-managed, and politically more sensitive private lands that have been and continue to be the target of land reform efforts in the Philippines.

It is an unfortunate illusion, if not a fallacy, that the state, regardless of the weakness of its enforcement and management capabilities will always conserve and protect the

environment better than individuals or communities. The evidence points the other way. For instance, large scale deforestation in Indonesia and Malaysia did not begin until the 1940s and 1950s when the central government in Indonesia and the states in Malaysia asserted ownership over forest lands previously held by individuals and local communities. This is not to argue against state ownership but to make the point that state ownership is no guarantee for conservation; nor is private ownership a prescription for uncontrolled exploitation. To be sure, there are many market failures affecting natural resources but it is a leap of faith to conclude that the state will always do better, without examining first the state's ability to assert its ownership and make the most of the society's scarce natural resources.

This brings us to another reason why natural resources should be treated on a par with other economic assets but are not. Natural resources are capable of generating a return to their owners over and above the cost of production. This return or rent is attributable to the scarcity of these resources and it is as real as the return to capital. Under secure ownership this rent goes to the owners of the productive asset (in this case a natural resource). Only if the entire rent is extracted will the resource be used optimally. Under open-access, there is no owner to appropriate the rent and it is thus wasted in its entirety in excessive effort among a multitude of claimants with disastrous effects for the resource.

Under state ownership, the rent belongs to the society at large. Unless the full amount of the rent is extracted whenever the resource is exploited, exploitation goes too far, and the society loses not only part of the rent it is entitled to but more damagingly it relinquishes to exploitation more of the resource than it is willing to. Unfortunately, governments invariably undervalue natural resources and price them too cheaply. Logging concessions are often given to foreign and domestic logging firms at truly concessionary terms. The combination of royalties and taxes charged are well below the rent or stumpage value of the forest that is opened up to logging. This leads, as expected, to excessive logging and the loss of billions of dollars that could have been used for reforestation and protection of reserved forests.

For instance, Ivory Coast leaves to the concessionaires as much as \$40 per cubic meter in uncollected rents; not surprisingly, Ivory Coast has the world's highest rate of deforestation of 7 % a year (Repetto, 1987). Indonesia captures only 50 percent of the rents from log exports and 25 percent of rents from sawn timber. With 700 million dollars of rents left annually to loggers it is not surprising that the demand for concessions has been so high that by 1983 concessions have been awarded to 65.4 million hectares, an area larger than the country's production forests! (Gillis, in press). Other examples come from Ghana and the Philippines where less than 40% and 10% of the rents respectively are being collected by governments for

the exploitation and degradation of their virgin forests (Repetto, 1987).

Moreover, royalties and taxes based on the total volume of timber harvested rather than on the marketable timber encourage selective cutting, destruction of remaining stands, and accumulation of large amounts of easily combustible litter on the forest floor predisposing the forest to uncontrollable fires. It is believed that the severity of the 1983 forest fire in East Kalimantan "had its origin in the nature and extent of logging activity during the past 15 years" (Gillis, 1984). The ecological consequences of this fire include extinction of flora and fauna, soil degradation, sedimentation of rivers and possible climatic changes. These are as much economic losses as is the loss of the timber and other products.

This brings us to a difference between natural resources and man-made capital that in principle should have worked for them but in reality it works against them. Natural resources such as forests produce not only timber and firewood; they also produce intangible services and amenities such as watershed protection, biological diversity, wilderness, recreational services, ecological balance and positive climatic effects. As such, tropical forests should be considered superior economic assets and accorded special protection. For example, governments should not only charge logging companies a full rent reflecting wood scarcity but they should add an imputed rent on top of the stumpage value for all these other services that the society is

being deprived of by conceding its forest to logging. The more important the non-wood services of the forest, the higher this imputed surcharge should be, thereby limiting logging to those areas where the non-wood services are least significant and preserve areas that are important environmentally. To put it in another way, activities such as logging, that impose environmental costs on society, should pay for these costs. Such payments would limit the scale of the environmentally destructive activities, make their methods less destructive and provide funds to counter their effects on the environment through activities such as reforestation, forest protection and landscaping.

This is the theory. In practice, environmental costs are often ignored for at least two reasons. First, they are difficult to measure because they are largely qualitative in nature and outside the domain of markets, and therefore difficult to place a dollar value on. For example, how is the preservation of wilderness or biological diversity to be valued and measured? Second, and more discouraging, environmental costs are in the form of externalities, i.e. those who generate them do not suffer their consequences and therefore they have no cause to take them into account when they plan their activities. For example, loggers have no reason to take into consideration downstream erosion and flooding in deciding the extent of their logging activities. No matter how large the damage of logging on downstream agriculture is, only logging costs are relevant to the loggers' calculations. Similarly, loss of species and ecological

disturbance are social costs that have no bearing on a logger's decision to log; if they do he/she will lose the ability to compete with other loggers. The result is again excessive logging with environmental consequences that remain unaccounted for.

This is a classic market failure and a prime area for government intervention to internalize the externality, that is, to make each activity accountable for its social costs, and to do this across the board so that those who practice conservation are not put at a disadvantaged position vis-a-vis those who don't. The way to do this is by taxing activities that generate negative externalities (social costs) and subsidize activities that generate positive externalities (social benefits). For example, logging should be taxed and reforestation subsidized in proportion to their external or side effects. Similarly, chemical fertilizers that cause pollution ought to be taxed and organic fertilizers that improve the soil structure should be subsidized. A similar case can be made for taxing the use of chemical pesticides and subsidizing integrated pest management. Soil-protective crops such as tree crops should be promoted while soil-erosive crop such as corn and cassava should be discouraged. Is this what actually happens around the world? As we will see in the next section, the reverse is the rule. Why? An often advanced argument is that environmental costs are very difficult to estimate, which is true, but hardly an argument for ignoring them much less for subsidizing them.

Government Policies and Resource Conservation

Developing countries around the world are facing three serious problems that are often given as reasons for not affording environmental conservation. First, they need increased productivity and rapid economic growth to feed and improve the living standards of their growing populations. Environmental conservation is seen as a stumbling block in their efforts for faster growth. Second, they need to reduce poverty and improve income distribution by spreading the benefits of economic growth more widely. Conservation is seen as deprivation of the lower socioeconomic groups from their free access to natural resources and, therefore, as running counter to equity objectives. Third, developing countries need to conserve their limited fiscal and financial resources to service their considerable foreign debt and to carry out development projects. They can hardly meet the costs of environmental conservation.

There is some truth to this argument in relation to certain conservation activities, such as the preservation of wilderness and the protection of species from extinction. However, there are many areas of conservation that are not only fully compatible with economic objectives but complementary and mutually supportive. Here, I propose to demonstrate that there are policy changes that could simultaneously promote economic efficiency and growth, improve income distribution, save budgetary resources and conserve natural resources and the environment. To see this, consider that currently many developing countries are keeping

their economies inside their environment-development production possibility frontier (fig. 1) through a constellation of policy distortions, such as subsidies, that cost the government considerable budgetary resources. Many of these subsidies have long outlived their usefulness, if they ever had one, but continue to be a drag on the budget, the economy and the environment. On the other hand, there are institutional arrangements and taxes that could be introduced to mitigate market failures, such as subsidies, insecurity of tenure, common property and externalities, that would promote economic efficiency and equity, generate government revenues and conserve natural resources. Policy reform will bring such economies close to (the trade-off part of) their production possibility frontier, generating both more development and better environment in the process (fig. 1). At this point, there would be more truth to the argument of a trade-off between development and environment. But we are still far away from such a "happy" state of affairs!

Here are a few examples. Upland rice is considerably less erosive than cassava or maize and it may even make a positive contribution to the productivity of other crops. Paddy with soil loss of 0.6-30 tons/ha/yr. is comparable to forest and tree crops while cassava and maize at 100-6,000 tons/ha/yr. are comparable to shifting cultivation (TDRI, 1987.) Yet successive Thai governments have consistently taxed rice and indirectly subsidized cassava production, on account of Thailand's large share in the world rice market (20-30%) and the need for crop

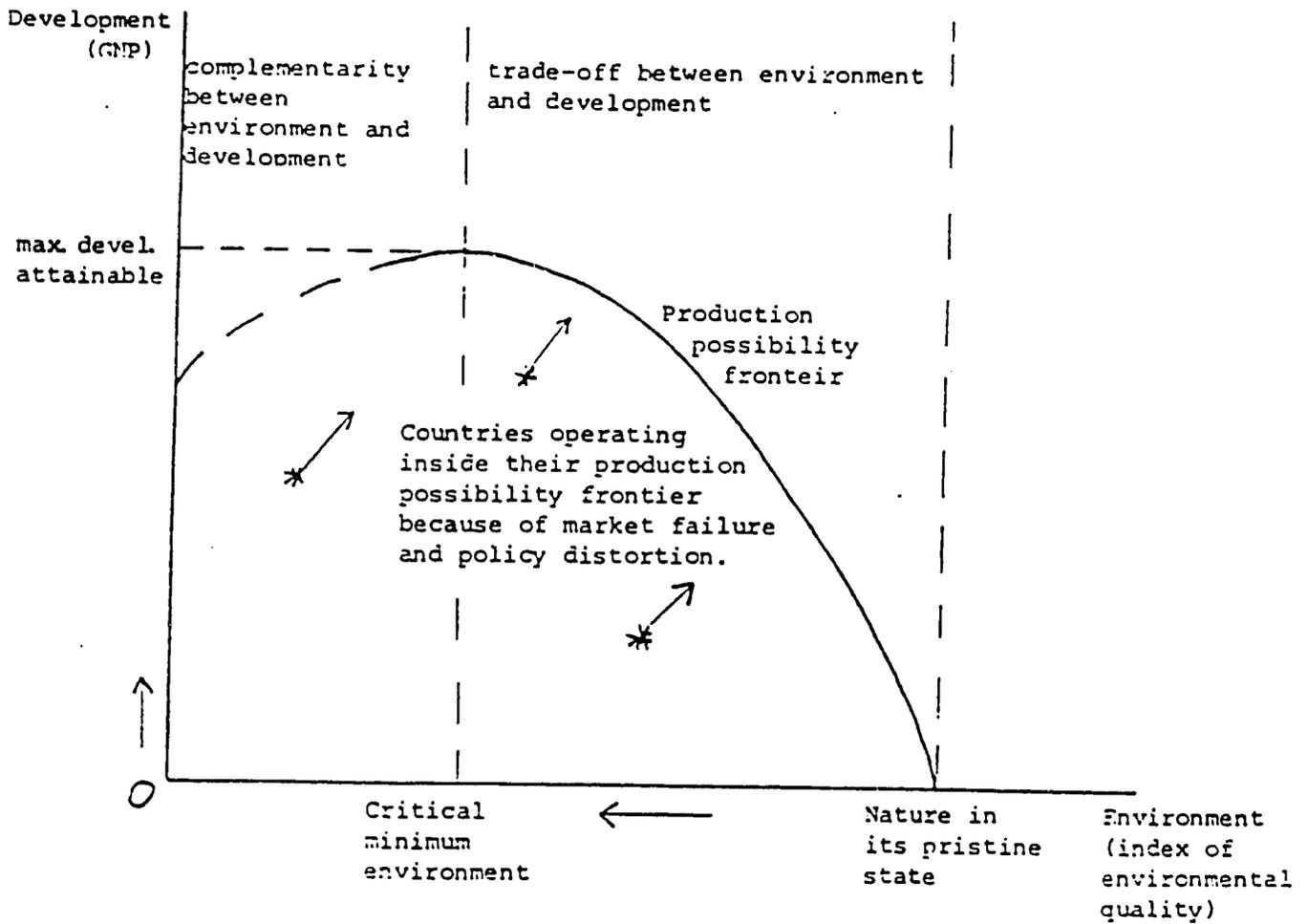


Figure 1. Environment-Development Production Possibility Frontier. Many developing countries are operating inside this frontier as a result of market failures, such as insecurity of land ownership, or policy distortions, such as pesticide subsidies, that result in both economic losses and environmental damage.

160

diversification. This policy, combined with free access to forest land and a loophole in the EEC's common agricultural policy has led to an over 100% increase of the area planted with cassava in a 7 year period. This is hardly diversification when one considers that Thai cassava exports account for 95% of the world market, and go to a single and highly uncertain market. While both the conditions of demand (EEC policy) and the conditions of supply (deforestation and soil mining) are clearly unsustainable over the long-run, the environmental effects of land degradation and soil erosion may be permanent. Had the government included these environmental costs in the export price of cassava through an appropriate tax and had titles to alienable forest land been issued, the cassava boom may have never occurred, but a more sustainable, though less spectacular, form of agriculture may have evolved.

A policy of free land frontier may sound egalitarian but its consequences are economically and environmentally disastrous. In Thailand, it has led to a deforestation of such scale that the country has been turned from a major exporter of wood into a major importer. But more significantly, it led to insecurity of land ownership for over 40 percent of agricultural land. In fact, full title deeds have been issued to only 14% of agricultural lands. Insecure ownership inhibits productivity and conservation in many ways: 1) it reduces the incentive for long-term investment in soil conservation; 2) it biases the choice of crops against perennials, tree crops and forest plantations which

are environmentally more benign than annual field crops such as maize and cassava; 3) it keeps land under inferior uses by preventing its sale, legal transfer or use as a collateral for credit. Under these conditions, it is no surprise that during 1976-1983 the area under fruits and trees grew by less than 10% compared to a 100% growth of the area under cassava. Nor is it surprising that two-thirds of the Thai cropland is severely eroded (US Presidential Mission to Thailand, 1982). Following a study that showed that insecurity of ownership leads to considerable reduction in productivity (Feder et al 1986) the Thai government with World Bank assistance is presently carrying out a land titling program that is expected to yield economic benefits, improve income distribution, generate government revenues and at the same time promote soil conservation and reduce deforestation.

Heavy pesticide use has indisputable negative environmental effects and doubtful economic benefits over the long-run. While humans, animals and fish are poisoned, the pest populations which are the targets of pesticides resurge with the elimination of their natural predators and become resistant to pesticides, necessitating the use of larger quantities of more lethal chemicals. Given their considerable externalities and long-term costs, pesticides should be taxed to raise their price to their true social costs and discourage their use. Instead, they are heavily subsidized. Repetto (1986) reports that "in a sample of nine countries, subsidies range from 15 to 90 percent of full

retail cost, with a median of 44 percent. In large countries, these are costing governments hundreds of millions of dollars per year, and the fiscal burden is growing". Pesticide subsidies distort farmers' incentives in favor of chemical pesticides and against alternatives such as integrated pest management, changes in cropping pattern and planting time, and the choice of pest-resistant varieties, all of which are economically less damaging. Considering also the large and growing costs of such subsidies, their elimination would save governments large sums of money and improve both the economy and ecology of farming.

Fertilizer subsidies ranging between 50% and 60% of retail cost are common and result in overuse and bias against organic fertilizers and soil conservation (Repetto, 1986). Excessive use of fertilizer causes water pollution that poisons fish and promotes growth of aquatic weeds that inhibit free water flow. Whatever the argument in favor of fertilizer subsidies, their environmental costs should be part of the calculus. There is no good justification for discriminating against soil conservation and use of manure, both of which restore soil structure and stability and reduce water pollution. Reduction and restructuring of fertilizer subsidies in correspondence with social costs should again improve the economics and ecology of farming as well as conserve fiscal resources.

We have alluded earlier to the use of irrigation systems as substitutes rather than complements of natural watersheds. Not only are upstream watersheds not protected, but irrigation

systems tend to displace communities that often relocate further up in the watersheds and engage in shifting cultivation that results in sedimentation of the irrigation system and reduction of its efficiency and economic life. Examples include the Upper Solo Watershed and the Karanglates and Cacaban reservoirs in Indonesia, and the Nam Pong reservoir in Thailand. This, however, need not be the case. For instance, a World Bank assisted irrigated rice project in Sulawesi, Indonesia, funds the protection and management of the 3,200 square kilometer Dumoga National Park which covers the watershed catchment area for the Dumoga irrigation system. The irrigation project derives benefits from reduced maintenance costs and increased dry season water availability. The park preserves its forests and endangered species (World Bank, 1984). This is a classic case of good economics, good ecology and sustainable development that could become a model for other irrigation systems.

Unfortunately, the rule in most irrigation systems is a combination of bad economics and bad ecology. The watershed catchments of the reservoirs remain unprotected and unmanaged while the irrigation water is made available to farmers free of charge. This leads predictably to inefficient use of water. Farmers close to the system are wasting water while more remote farmers receive inadequate and irregular supply. Land improvements for water conservation are discouraged since water is free, and the main system deteriorates for lack of funds for maintenance and protection of the catchment area. The ensuing

434

sedimentation of the reservoir leads to flooding, waterlogging and salinization. For example, in Thailand only 25% of the irrigable area is irrigated during the dry season and the overall efficiency of the irrigation systems is estimated at 15% of the potential (ADB, 1984).

Water pricing or allocation of water rights would clearly improve efficiency and equity of water use as well as generate funds for maintenance of the irrigation system and protection and management of the watershed with additional environmental benefits in terms of preservation of tropical forests and endangered species.

The list of policy distortions that are detrimental to both the economy and ecology is far from exhausted. For example, capital subsidies, tax and tariff exceptions for equipment and minimum wage laws that displace labor and force undue mechanization of agriculture or promote capital intensive industry in the face of surplus labor lead to increased pressure on marginal lands and common property resources as a last resort activity. There is no need to enumerate here all policy distortions. It should be clear by now that there are enormous economic, budgetary and environmental benefits to be derived from policy reform.

To recapitulate, developing countries can do more than their share of conservation, while pursuing their development objectives, if they implement even a part of the following agenda, which is not conventionally thought of as conservation:

a) eliminate or at least reduce policy distortions that favor environmentally unsound practices, while at the same time discriminating against the poor, reducing economic efficiency and wasting budgetary resources;

b) mitigate market failures such as externalities and open access that result in overexploitation of resources, through a system of income transfers and institutional arrangements;

c) invest in human resources and provide alternative employment to disadvantaged groups to lessen the pressure on marginal lands and tropical forests;

d) apply a broad social benefit-cost analysis to all public projects by considering all benefits and costs (economic, social and environmental) whether quantifiable or not and refrain from projects that lead to irreversible changes of the environment or foreclosure of options.

While this is a tall order to follow and requires considerable political will, any movement in this direction would be a march towards the country's possibility frontier with more of both development and conservation along the way.

A Note on Discounting and Irreversibility

You will be wondering by now whether I will touch on the hot issue of discounting of future benefits that potentially leads to such irreversible actions as extinction of species and

destruction of wilderness, not to mention climatic problems such as the greenhouse effect. First, I find it odd that those who object to discounting at rates of 3-5% (in real terms) do not particularly object to the widespread common property situation which is equivalent to discounting future benefits at an infinite rate of discount.

Second, not all economists agree that benefits accruing to future generations should be discounted. For example, Ramsey (1928) disapproved of discounting as "ethically indefensible" arising from a "weakness of imagination". Pigou (1932) argued that discounting "implies that our telescopic faculty is defective". More recently, Misham (1967), Page (1977), Pearce (1978), Daly (1979) and Hulting (1980) also raise reservations. Third, most economists who favor the use of discounting argue in favor of a social rate of discount that is much lower than the market rate of interest, and reflects the society's true time preference.

Clark (1973) has shown that a sufficiently high market rate of interest combined with low natural growth rate may lead to the extinction of species such as the blue whale. However, the lower social discount rate may not produce the same result for the whales but there may very well be species that grow at a rate below the social discount rate. Is their extinction socially acceptable? There are still two lines of defence. First, don't blue whales mean more to people than their commercial value? If they do, economics requires that we somehow take this into

account and there are economists specializing in developing methods for doing so (e.g. willingness to pay, cost of compensation, cost of replacement, contingent valuation, etc.). Considering the intangible but equally real benefits that people derive from the survival of species or the preservation of wilderness, one can rather easily overpower the modest force of social time preference. But if all else fails, there is still the last line of defence, that of irreversibility.

Consider the choice between preserving a tropical rainforest with some unique features and developing the area for logging and mining concessions. Having applied our broad social benefit cost analysis of the two alternatives with a generous valuation of intangibles and an appropriately low social discount rate, we obtained the result that the net benefits from development exceed the net benefits from conservation. What can we do? Under normal circumstances we have no option. We must choose the alternative with the highest net benefit unless political considerations dictate otherwise. But these are hardly normal circumstances: a decision for conservation is reversible; a decision for development is not.

There is a central postulate in welfare economics that says that an expansion of choice represents a welfare gain, a reduction of options implies a welfare loss (see Fisher and Krutilla, 1985). Choosing logging and mining forecloses our options; if we or future generations were to have a change of mind there would be no way to reproduce the uniqueness and

authenticity of the original tropical forests and any species that became extinct. In contrast, choosing conservation preserves our option to reverse our decision. Clearly, there is a social value or shadow price for the preservation of options, though it is difficult to estimate. However, there are reasons to favor a "high" value. On the one hand, technical change is asymmetric: it expands our ability to produce ordinary goods (the products of development) but does little to improve our ability to produce natural environments (the products of conservation). On the other hand, consumer preferences tend to shift in favor of environmental services relative to ordinary goods. In conclusion, "where economic decisions have an impact on the natural environment that is both uncertain and irreversible, there is a value to retaining an option to avoid the impact" (Fisher and Krutillam 1985).

Financing Conservation and Sustainable Development

The bulk of conservation activities and the move towards sustainable development, far from requiring financing, will themselves generate funds. For example, eliminating subsidies and other distortions will not only induce more conservation, but will save government revenues and generate additional tax revenues from expanded economic activity that can be used to finance additional conservation, e.g. creating nature reserves. Similarly, charging forest and mine concessionaires royalties and

taxes to the full amount of the resource rent through competitive bidding will not only reduce logging and mining activity but will also generate more tax revenues for use in reforestation, forest protection and landscaping. Thus, the first source of financing for sustainable development ought to come from developing countries through policy reforms that would generate a higher level of development, more conservation and more budgetary revenues.

A second source of financing is needed to address the twin problems of fluctuating commodity prices and mounting foreign debts that have severe consequences for resource conservation. There is a tendency among developing countries to follow boom-and-bust, from feast-to-famine type policies. When their commodity export prices are high, they tend to borrow heavily and spend freely often on marginal projects (many with negative environmental effects). When prices are down they are forced to exploit their resources more intensively to meet their foreign and domestic commitments. With commodity prices half as high they have to export twice as much to service their debts assuming no changes in interest and exchange rates. Changes in these may further increase the burden. Furthermore, governments have continued commitments to development projects that they began at good times. Perhaps more seriously, to maintain political stability governments try to maintain or increase the consumption levels and meet the unrealistic expectations they created during boom times, thus putting further pressure on their natural

resources, (e.g. by opening forest land for ranching, increasing logging and promoting export crops on marginal lands.) This further reduces prices. Furthermore, those who become unemployed or impoverished as a result of the depressed commodity prices are forced into marginal lands and common property resources or migrate into cities causing further environmental problems.

To solve this problem, international financial institutions could provide some form of loan to developing countries when the prices of their main export commodities are depressed to reduce the pressure to exploit resources more heavily in depressed times. The loan would be secured by a mortgage on the country's exports (a certain percentage of their long-run average value) to be retired in installments each payment being the amount secured by the commodity exported during the previous period plus accumulated interest.

Such a loan scheme, if it can be worked out, can accomplish three things: (a) it would reduce the price fluctuation of primary commodities; (b) it would reduce the surplus resources during good times and the tendency to borrow heavily and wastefully spend it on marginal projects (which are often environmentally unsound) thereby creating obligations and expectations that cannot be met on a sustainable basis; and, (c) it would reduce the pressure to exploit resources more heavily when prices are down or at any rate below their social price. For this to be done, the international institutions lending should be countercyclical rather than procyclical. In the past,

lending increased when prices were up and was reduced when prices came down. If this change cannot be made by existing institutions then a new facility needs to be created.

There is a need for a third source of financing for the developed countries, who would be the main beneficiaries of any conservation over and above that which would result from policy reform in developing countries. The creation and growth of the environmental movement in developed countries is a testimony to the fact that developed countries have a preference for additional environmental services than they have available at home. It doesn't matter if the purpose is for global ecological balance, science and education or simply preservation of wilderness. Here we have a real preference for more and better environment not just at home but also abroad. This appetite will be partially satisfied by the policy reform in LDCs which could be done with little additional funding. But developed countries would almost certainly want to preserve more rainforests and more species and wilderness than developing countries either afford to or are willing to pay for. Given their lower level of development, developing countries would prefer a different development-environment combination than high-income countries would be content with (pristine environment beyond a point is a luxury good).

True, many tropical countries have a comparative advantage in producing environmental services. Tropical forests are far richer in biological diversity and play a more important role in

ecological balance and the climate than temperate forests. But developing countries do not have the purchasing power or the willingness to buy all the environmental services they can produce in the same way they cannot buy all the copper and coffee they can produce. Developing countries demand a higher level of development than they currently have and they are willing to sacrifice part of their environment to obtain it, as the developed world has done during earlier parts of its history. Developed countries, on the other hand, have a demand for more environmental amenities than are available at home and they are presumably willing to pay for them. A classic case for international trade. The citizens of developed countries can pay developing countries to provide more environmental services by conserving their tropical forests and other unique ecosystems. This will make both groups better off.

Thus, if our demand for saving the tropical forests is genuine and widely shared, we should be able to mobilize the votes and the money to create a facility to pay for the conservation of tropical forests. Unlike other commodities traded in world markets environmental services are public goods that cannot be funded individually. And since tropical forests are international public goods the facility should be an international one with country shares analogous to those of the IMF, or World Bank. Developing countries could also make small contributions but developed countries should be the big contributors. One may argue that if this is done the developing

countries would rely on this facility to pay for conservation that is best done through policy reform. However, this is a small risk considering that a) developing countries need to make policy reforms not only for environmental but also for economic reasons; and b) the environmental services (watershed protection, soil conservation etc.) that developing countries needs are different from those of developed countries (for wilderness preservation, prevention of species extinction, etc.). Some overlap still exists but this is exactly what would ensure international co-operation between north and south. Admittedly, there is still the problem of free riding among developed countries but this is not likely to be any more serious than it is with other institutions of the UN system.

Bibliography

- ADB "Thailand Agricultural Assessment Study" Asian Development Bank, January, 1984.
- Clark C.W. "The Economics of Overexploitation" Science, Vol. 181.
- Daly, 1977 Steady-State Economics, San Francisco, Freeman.
- Fisher A.C. and J.V. Krutilla, 1985, "Economics of Nature Preservation" in Kneese V. and J.L. Sweeney (eds) Handbook of Natural Resources and Energy Economics, Vol. 1. Elsevier Science Publishers.
- Gillis M. (in press) "Indonesia Public Policies, Resource Management and the Tropical Forest" in Repetto R. and Gillis M. (eds.) Public Policy and the Misuse of Forest Resources, Cambridge University Press.
- 1984 "Multinational Enterprises, Environmental and Resource Management, Issues in the Tropical Forest Sector in Indonesia" Development Discussions Paper, No. 171, Center for International Affairs, Harvard University, Cambridge.
- Goodland R. and G. Ledec, 1985 "Neoclassical Economics and Principles of Sustainable Development", World Bank (Draft).
- Halting R. 1980 New Scarcity and Growth, Amsterdam, North Holland Publications.
- Misham E.J. 1967 The Costs of Economic Growth, London, Staples Press.
- NESDB 1982 The Fifth National Economic and Social Development Plan (1982-1986) NESDB, Office of the Prime Minister, Bangkok, 1982.
- Page T. 1977 Conservation and Economic Efficiency: An Approach to Materials Policy.
- Panayotou T. 1983 Renewable Resource Management for Rural Development in Southeast Asia: Research and Policy Issues" Paper presented at the Fifth Biennial Meeting of the Agricultural Economics Society of Southeast Asia, Bangkok, November 16-19.
- Pearce D.W. (ed.) 1978 The Valuation of Social Cost, London Allen and Unwin.
- Pigon A.C. 1962 Economics of Welfare, London, Macmillan.

Ramsey F.P. 1928 "A Mathematical Theory of Saving". Economic Journal 38.

Repetto R. 1987 Creating Incentives for Sustainable Forest Development" Ambio Vol. 16, No. 2.3.

———— "Economic Incentives for Sustainable Production" World Resources Institute, October, 1986.

TDRI, 1987 Thailand: Natural Resources Profile, Thailand Development Research Institute, Bangkok.

US Presidential Agricultural Mission to Thailand "Background Information on Agricultural Technology Generation and Diffusion in Thailand" April, 1982.

Warford J. "Environment, Growth and Development" Projects Policy Department, World Bank, March 1987.

World Bank 1984 "Wildland Management in World Bank Projects" Washington D.C., The World Bank.

Research, Extension, Infrastructure and
Productivity Change in Indian Agriculture

Robert E. Evenson
James W. McKinsey, Jr.

Productivity change in Indian agriculture has been the subject of a number of studies in recent years. Jha and Evenson (1974) reported the first compilation of productivity change by state in Indian agriculture and the first attempt to attribute investment in agricultural research as a source of growth. In this paper new estimates of productivity change by state for the 1956-7 to 1983-4 period are reported. An empirical decomposition analysis is undertaken which relates productivity growth to several variables.

Productivity change has been an important component of Indian economic development in the post independence period. A number of projections made in the mid-1960s and again in the early 1970s indicated that by the 1980s Indian agriculture would be unable to provide enough food to Indian consumers, even at the inadequate per capita levels of the 1960s. Large food imports were projected in several studies (see IFPRI, 1977). India, however, has been able to avoid this outcome. Foodgrain production has kept pace with growth in demand, and foodgrain imports have been practically eliminated.¹ Productivity change in agriculture contributed to this favorable performance.

In Section I a summary of production, inputs, and partial and total factor productivity change in Indian agriculture is provided. Section II develops the statistical model suited to an analysis of the sources of productivity change. Section III reports statistical results. The final section discusses policy implications for investment in research, extension and other public goods.

I. Production, Inputs and Productivity

A. Production

Just as crops strongly predominate over livestock, forestry and fisheries

in Indian agriculture, foodgrains strongly predominate over non-food crops. The production of foodgrains has almost tripled since Independence, from slightly more than 52 million tonnes in 1947-48 to just over 150 million tonnes in 1985-86. Only one quarter of the increase occurred during the first two decades (foodgrain output in 1967-68 was not quite 75 million tonnes), with nearly half the increase occurring in the last decade. Of the various foodgrain crops, the production of wheat (increasing from about six million tonnes in 1950-51 to about 40 million tonnes by the early 1980s) and rice (growing from about 20 million tonnes in 1950-51 to more than 55 million tonnes by the early 1980s) increased the most; and the majority of the increase in the output of those crops occurred after the middle 1960s. There were also significant increases in the output of other cereals, especially maize (whose rapid increase in output began before the middle 1960s and continued throughout the post-Independence period), jowar and bajra. The output of pulses has not exhibited substantial increases, however. Table 6.1 summarizes the production of cereals, pulses and foodgrains for the 1946-85 period.

The nutritional status of the majority of the population has not improved nearly as much as the increase in food output might suggest.² Because of the steady growth in population since Independence, the per capita availability of foodgrains in the mid 1980s was essentially no better than the per capita availability in the mid 1950s (see Table 6.2). Actual foodgrain consumption per capita had declined throughout India, in both rural and urban areas and among most classes of consumers, during the 1950 and 1960s; it has remained at its depressed level in rural areas but has risen slightly in urban areas for all but the poorest consumers during the past fifteen years. Food prices generally rose less quickly than non-food prices during the 1970s and 1980s, and the so-called Fair Price grain distribution system helped make food

TABLE 6.1

YEAR	CROP PRODUCTION (1000 tonnes)							
	RICE	WHEAT	JOWAR	BAJRA	MAIZE	CEREALS	PULSES	FOODGRAINS
1946	22,016	5,051	5,380	2,759	2,387	43,216	6,988	50,204
1947	21,587	5,659	6,067	2,858	2,470	44,441	8,385	52,826
1948	22,959	5,740	5,102	2,206	2,105	44,006	8,575	52,581
1949	23,541	6,391	5,869	2,835	2,040	46,754	8,159	54,913
1950	20,576	6,462	5,495	2,595	1,729	42,414	8,411	50,825
1951	21,300	6,183	6,077	2,346	2,076	43,576	8,420	51,996
1952	22,892	7,501	7,359	3,192	2,870	50,012	9,189	59,201
1953	21,214	8,017	8,082	4,547	3,039	59,203	14,918	69,821
1954	25,219	9,043	9,201	3,519	2,975	57,085	10,950	68,035
1955	27,557	8,760	6,726	3,428	2,602	55,805	11,045	66,850
1956	29,037	9,403	7,237	2,873	3,078	58,304	11,551	69,855
1957	25,525	7,998	8,635	3,620	3,150	54,745	9,562	64,311
1958	30,847	9,958	9,033	3,868	3,463	63,992	13,149	77,141
1959	31,676	10,324	8,579	3,493	4,073	64,872	11,799	76,672
1960	34,574	10,997	9,814	3,283	4,080	69,314	12,704	82,018
1961	35,663	12,072	8,029	3,645	4,312	70,951	1,755	82,706
1962	33,217	10,776	9,748	3,959	4,607	68,623	11,528	80,151
1963	36,998	9,853	9,198	3,878	4,561	70,569	10,073	80,642
1964	39,308	12,257	9,683	4,519	4,664	76,939	12,417	89,356
1965	30,589	10,395	7,581	3,752	4,823	62,403	9,944	72,347
1966	30,438	11,393	9,224	4,463	4,894	65,884	8,347	74,231
1967	37,612	16,540	10,048	5,185	6,270	82,950	12,102	95,052
1968	39,761	18,615	9,805	3,802	5,701	83,595	10,418	93,013
1969	40,430	20,093	9,721	5,327	5,674	87,810	11,691	99,501
1970	42,225	23,832	8,105	8,029	7,486	96,604	11,818	108,422
1971	43,068	26,410	7,722	5,319	5,101	94,074	11,094	105,168
1972	39,245	24,735	6,968	3,928	6,388	87,119	9,907	97,029
1973	44,051	21,778	9,097	7,519	5,803	94,657	10,008	104,665
1974	39,579	24,104	10,414	3,272	5,559	89,812	10,104	99,826
1975	48,470	28,846	9,504	5,736	7,256	107,995	13,039	121,034
1976	41,917	29,010	10,524	5,853	6,461	99,806	11,361	111,167
1977	52,671	31,328	12,064	4,730	5,973	114,434	11,973	126,407
1978	53,773	35,508	11,436	5,567	6,199	119,719	12,183	131,902
1979	42,330	31,830	11,648	3,948	5,603	101,129	8,572	109,701
1980	53,631	36,313	10,431	5,343	6,957	118,962	10,627	129,589
1981	53,248	37,452	12,062	5,537	6,897	121,788	11,507	133,295
1982	47,116	42,794	10,753	5,131	6,549	117,662	11,857	129,519
1983	60,097	45,476	11,919	7,726	7,922	139,480	12,894	152,374
1984	58,336	44,069	11,402	6,047	8,442	133,576	11,963	145,529
1985	64,153	46,885	10,123	3,683	6,696	137,505	12,964	150,469

TABLE 6.2

YEAR	NET AVAILABILITY OF FOODGRAINS (grams per day per capita)		
	CEREALS	PULSES	FOODGRAINS
1954	388.00	70.00	458.00
1955	372.00	71.00	444.00
1956	360.40	70.30	430.70
1957	375.00	72.00	447.00
1958	350.00	58.00	409.00
1959	393.00	75.00	469.00
1960	384.00	66.00	450.00
1961	399.70	69.00	468.70
1962	398.90	62.00	461.90
1963	384.00	59.80	443.80
1964	401.00	51.00	452.00
1965	418.50	61.60	480.10
1966	359.90	48.20	408.10
1967	361.80	39.60	401.40
1968	404.10	56.10	460.20
1969	397.80	47.30	445.10
1970	403.10	51.90	455.00
1971	417.60	51.20	468.80
1972	419.10	47.00	466.10
1973	380.50	41.10	421.60
1974	410.40	40.80	451.20
1975	365.80	39.70	405.50
1976	373.80	50.50	424.30
1977	386.30	43.30	429.60
1978	422.50	45.50	468.00
1979	431.80	44.70	476.50
1980	379.50	30.90	410.40
1981	416.20	37.50	453.70
1982	414.80	39.20	455.00
1983	396.90	39.50	436.40
1984	436.10	41.80	477.90
1985	415.90	38.10	454.00
1986	437.50	40.60	478.10

available in some urban areas to some consumers at below-market prices; the plight of the urban poor would have been even worse but for those two facts. Table 6.3 summarizes these price relationships. It should be noted that the decline in food prices relative to all commodities is the result of more rapid productivity change in the agricultural sector.

B. Inputs

The expansion of food output has been accomplished during most of human history by expanding the area of land under cultivation. India has been able to follow that pattern since Independence, as its net cropped area (abbreviated NCA, measuring the land which is planted to a crop at least once during the year) grew from less than 100 million hectares in 1947 to more than 140 million hectares by the mid-1980s (see Table 6.4). More than two-thirds of that increase occurred during the first decade after Independence and was largely responsible for the increase in output during that decade (see Figure 6.1). There has been very little further increase in NCA since 1970. Although isolated areas offer some possibility of reclamation, and some desert areas could become arable with (expensive) irrigation and fertilization, there remains scant scope for further increases in NCA in India.

A substitute for more land is to grow crops on a given piece of land during more than one season in a given year, double or triple-cropping. Gross cropped area (GCA) measures the area under crops during all seasons; a plot of land is thus counted twice when it is double-cropped. GCA has grown even faster than NCA, revealing an increasing tendency to double- and triple-cropping on Indian soil. In 1947 the value of GCA was 112.6 million hectares (13% higher than NCA), while by 1983 it had grown by 60% to the value of 180.4 million hectares (by then, 26% larger than NCA) (see Figure 6.2). The expansion of GCA has continued (and accelerated) in the 1970s

TABLE 6.3: TERMS OF TRADE

YEAR	PRICE INDEX: ALL COMMODITIES	PRICE INDEX: FOODGRANS	TERMS OF TRADE
1970	100.00	100.00	1.00
1971	108.20	108.00	1.00
1972	121.50	127.00	1.05
1973	158.00	160.00	1.01
1974	173.90	199.00	1.14
1975	162.60	146.00	0.90
1976	182.10	161.00	0.88
1977	182.70	172.00	0.94
1978	191.10	171.00	0.89
1979	232.00	192.00	0.83
1980	270.70	225.00	0.83
1981	277.10	235.00	0.85
1982	295.30	264.00	0.89
1983	321.70	267.00	0.83
1984	346.30	276.00	0.80
1985	359.30	303.00	0.84

TABLE 6.4: LAND UTILIZATION

YEAR	LAND UTILIZATION (1000 hectares)			
	NCA	GCA	NIA	GIA
1946	98,200	111,900		
1947	99,400	112,600		
1948	98,400	111,900		
1949	114,600	130,000		
1950	118,746	131,893	20,853	22,563
1951	119,400	133,234	21,049	23,180
1952	123,442	137,675	21,122	23,305
1953	126,806	142,480	21,869	24,303
1954	127,845	144,087	22,088	24,948
1955	129,156	147,311	22,758	25,642
1956	130,848	149,492	22,533	25,707
1957	129,080	145,832	23,156	26,628
1958	131,828	151,629	23,401	26,948
1959	132,939	152,824	24,037	27,454
1960	133,199	152,772	24,661	27,980
1961	135,399	156,209	24,884	28,460
1962	136,341	156,760	25,665	29,453
1963	136,488	156,963	25,888	29,707
1964	138,120	159,229	26,600	30,705
1965	136,198	155,276	26,344	30,901
1966	137,232	157,355	26,907	32,683
1967	139,876	163,736	27,193	33,207
1968	137,313	159,529	29,009	35,483
1969	138,772	162,265	30,197	36,970
1970	140,784	165,491	31,103	38,195
1971	140,040	165,194	31,546	38,431
1972	137,570	162,150	31,837	39,059
1973	143,060	169,870	32,550	40,280
1974	138,380	164,190	33,710	41,740
1975	142,224	170,994	34,491	43,363
1976	140,180	167,280	35,147	43,552
1977	141,936	172,305	36,553	46,030
1978	143,008	174,764	38,060	48,306
1979	139,015	169,657	38,478	49,178
1980	140,299	173,096	38,806	49,875
1981	142,003	177,042	39,924	51,554
1982	140,794	173,396	40,721	52,121
1983	142,744	180,361	41,955	53,937

FIGURE 6.1

NET CROPPED AREA and FOODGRAIN OUTPUT 1946-47 through 1983-84

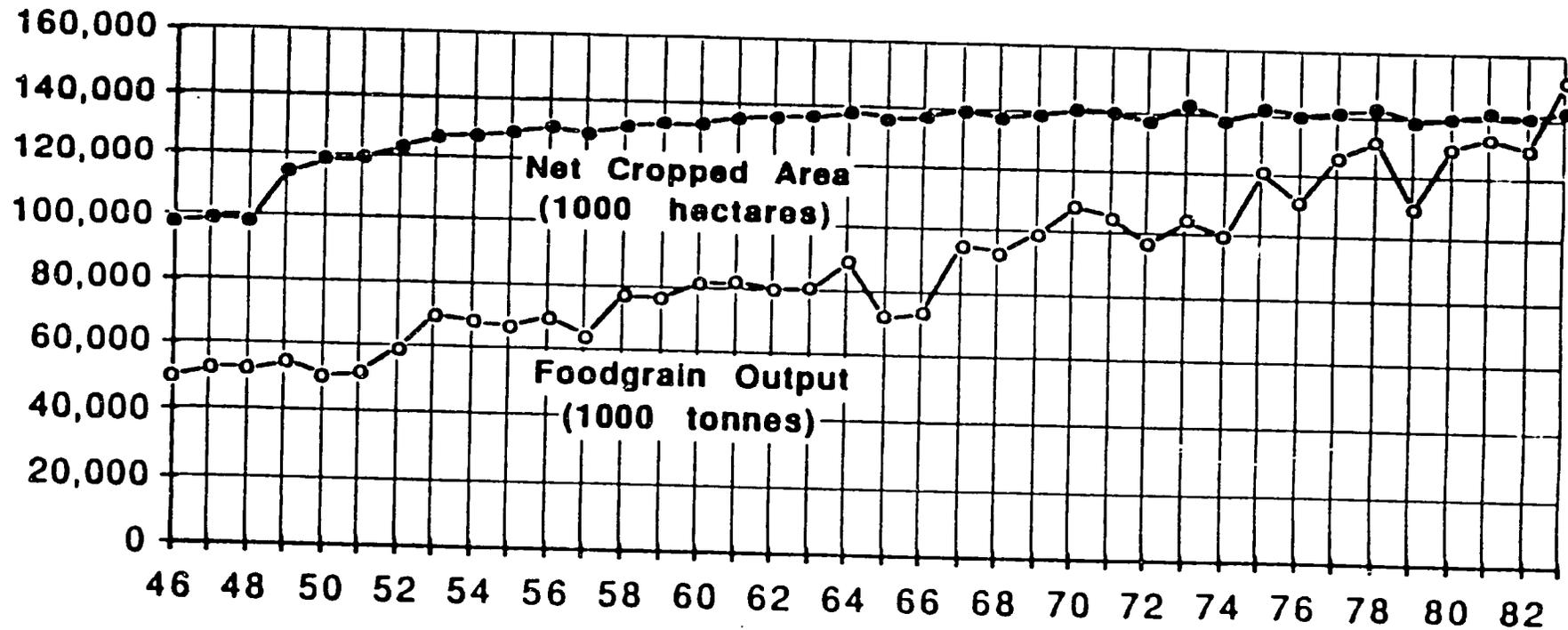
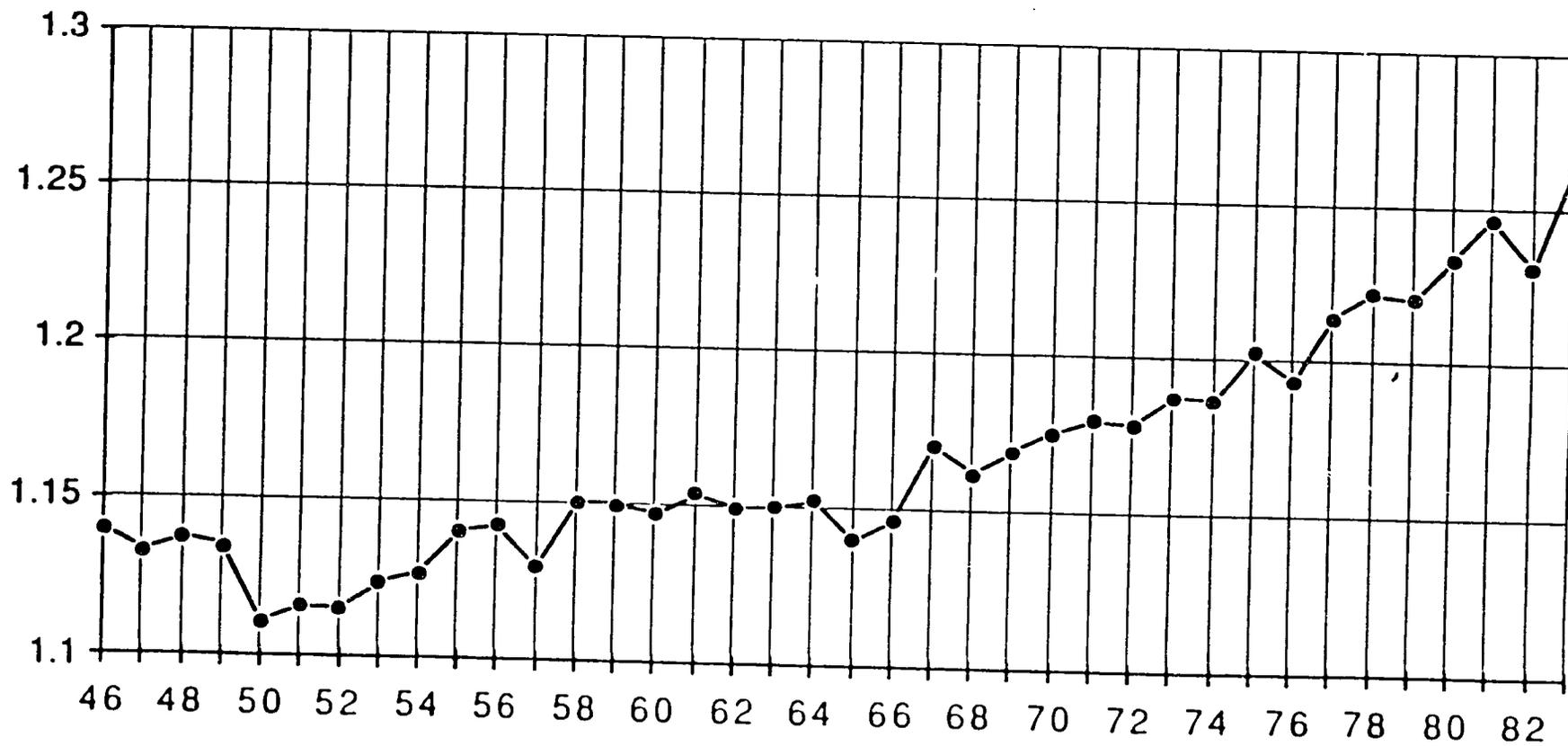


FIGURE 6.2

GCA/NCA



157

and 1980s, even after the growth of NCA had slowed, and further growth remains possible.³

Net irrigated area (NIA, measuring the area under any form or source of irrigation) has doubled from slightly more than 20 million hectares in 1950 to more than 40 million hectares by the mid 1980s. More than half of that increase occurred in a single decade, from 1966 to 1976 (see, again, Table 6.4). Not surprisingly, the growth of irrigation has been concentrated on multiple-cropped land. Gross irrigated Area (GIA), measured in the same way as GCA, has increased nearly two and a half fold, from slightly more than 22 million hectares in 1950 (barely larger than the value of NIA) to about 55 million hectares in the mid 1980s (25% larger than NIA). The growth of irrigation means that a larger share of cropped land is now under irrigation, as GIA has grown from just over one-sixth of GCA in 1951 to three-tenths of GCA by the early 1980s.

This expansion of irrigation is partly the result of a number of government irrigation projects, and partly the result of private efforts. Most government irrigation projects focus on large-scale canal and reservoir systems; private efforts primarily involve tube-wells and small tanks. Approximately one third of all NIA receives its water from government canals, the fraction declining slightly during the 1970s and 1980s. Various major and medium irrigation projects, including all the government canals, continue to account for nearly 45% of all cumulative irrigation potential and about 40% of all irrigation utilization throughout each of the Plan periods. Tanks provide a rapidly decreasing share of irrigation (falling from more than one sixth in the early 1950s to less than one tenth by the late 1970s) while the share of wells has increased even more, from less than thirty per cent to more than forty per cent.⁴

456

Of the so-called "modern" inputs, the key one is the new, higher-yielding varieties of several important food crops. These HYVs, the result of genetic research within India and at numerous international research centers, had been introduced in very small amounts (primarily for maize) during the second decade after Independence, but appeared in significant amounts only after the mid-sixties in what has been called the Green Revolution. Total area planted to HYV's of all crops was less than 2 million hectares in 1966-67; in only two decades, by 1986-87, it had increased nearly thirty-fold, with ever-increasing targets (see Table 6.5). The greatest increases were in the two main cereal crops, rice and wheat. Together they accounted for more than two-thirds of total HYV area, HYV rice area rising more than 26 times and HYV wheat area rising 35-fold.⁵

Crucial to the success of most of the new HYVs is the application of substantial quantities of fertilizer. Fertilizer use has grown from a mere 65,000 tonnes in 1951 to nearly nine million tonnes in 1986, or from just less than one half kilogram per hectare of GCA to more than fifty kilograms per hectare. Eighty per cent of that increase has occurred in the two decades after the introduction of HYVs. Nitrogen has always been the most important fertilizer by weight, providing more than four fifths of the nutrients at Independence, and nearly two thirds still (see Table 6.6 and Figure 6.3).⁶

Total labor input into agriculture has grown steadily since Independence, nearly doubling from more than 80 million workers (both agricultural laborers and cultivators) in the mid-1940s to about 160 million workers now. The mix of workers has changed somewhat in that period: at Independence, agricultural laborers constituted only slightly more than a quarter of all workers in agriculture; cultivators outnumbered agricultural laborers nearly three to one.

TABLE 6.5: AREA PLANTED TO HYVs

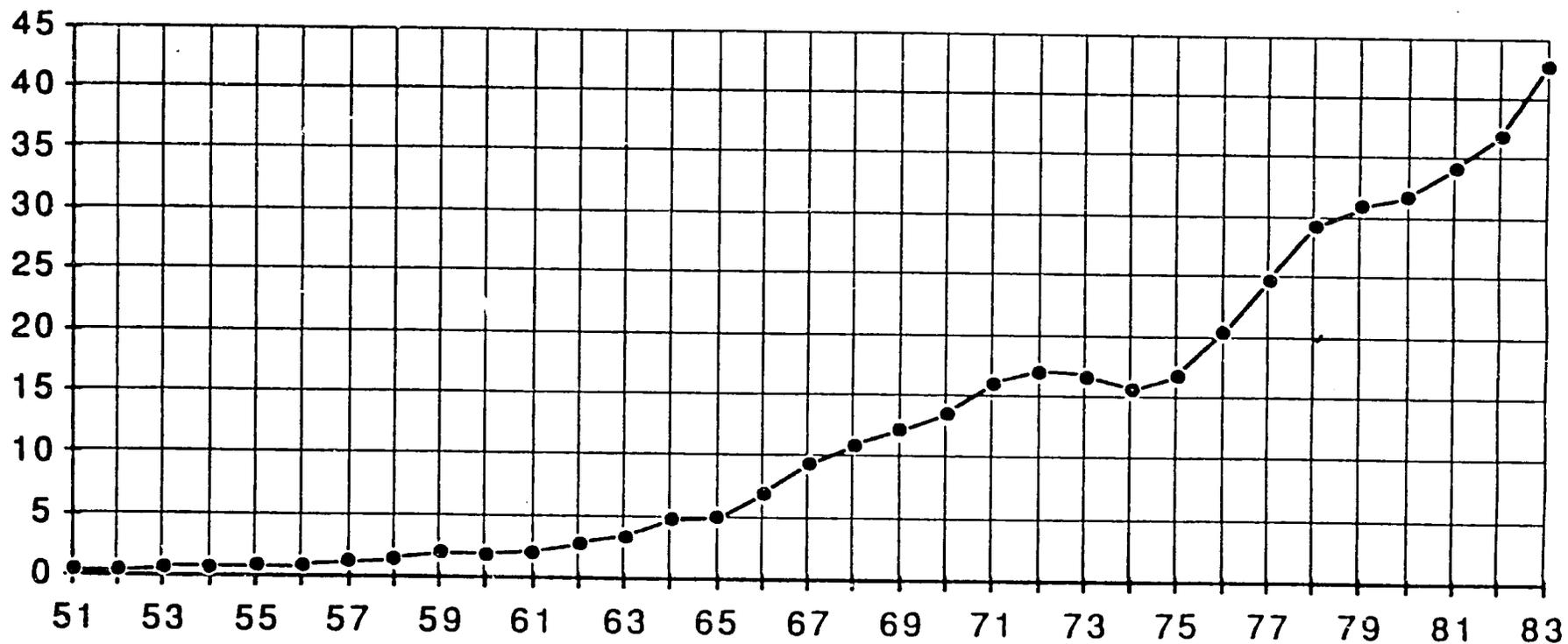
YEAR	TOTAL HYV	RICE HYV	WHEAT HYV	JOWAR HYV	BAJRA HYV	MAIZE HYV
1966	1,886	888	541	191	59	207
1967	6,036	1,785	2,942	603	419	287
1968	9,297	2,681	4,793	690	745	388
1969	11,413	4,342	4,910	555	1,155	451
1970	15,383	5,588	6,480	802	2,051	462
1971	18,173	7,412	7,861	688	1,775	437
1972	22,321	8,168	10,177	868	2,503	605
1973	26,038	9,981	11,027	1,155	3,003	872
1974	27,337	11,208	11,194	1,312	2,529	1,094
1975	31,888	12,443	13,458	1,958	2,897	1,132
1976	33,560	13,337	14,522	2,370	2,268	1,063
1977	38,930	16,122	15,803	3,140	2,631	1,234
1978	40,134	16,882	15,899	3,069	2,938	1,346
1979	38,383	15,991	15,027	3,052	2,961	1,352
1980	43,039	18,234	16,104	3,500	3,600	1,601
1981	46,491	19,687	16,751	3,882	4,573	1,598
1982	47,491	18,842	17,837	4,373	4,713	1,726
1983	53,739	21,736	19,387	5,283	5,422	1,911
1984	54,140	22,778	19,090	5,077	5,168	2,027
1985	55,422	23,374	19,175	6,082	4,992	1,799
1986	54,038	23,480	19,019	4,945	4,675	1,919

TABLE 6.6: FERTILIZER CONSUMPTION

YEAR	N	P2O5	K2O	TOTAL FERTILIZER
1951	58.70	6.90	.000	65.60
1952	57.80	4.60	3.30	65.70
1953	89.30	8.30	7.50	105.10
1954	94.80	15.00	11.10	120.90
1955	107.50	13.00	10.30	130.80
1956	123.10	15.90	14.80	153.80
1957	149.00	21.90	12.80	183.70
1958	172.00	29.50	22.40	223.90
1959	229.30	53.90	21.30	304.50
1960	211.70	53.10	29.00	293.80
1961	249.80	60.50	28.00	338.30
1962	333.00	82.80	36.40	452.20
1963	376.10	116.50	50.60	543.20
1964	555.20	148.70	69.30	773.20
1965	574.80	132.50	77.30	784.60
1966	737.80	248.60	114.20	1100.60
1967	1034.60	334.80	169.60	1539.00
1968	1208.60	382.10	170.00	1760.70
1969	1356.00	416.00	210.00	1982.00
1970	1479.30	541.00	236.30	2256.60
1971	1798.00	558.20	300.60	2656.80
1972	1839.00	581.30	347.60	2767.90
1973	1829.00	649.70	359.80	2838.50
1974	1765.70	471.50	336.10	2573.30
1975	2148.60	466.80	278.30	2893.70
1976	2456.90	634.90	319.20	3411.00
1977	2913.00	866.60	506.20	4285.80
1978	3419.50	1106.90	591.50	5117.90
1979	3498.10	1150.90	606.40	5255.40
1980	3678.10	1213.60	623.90	5515.60
1981	4068.70	1322.90	676.20	6067.80
1982	4242.50	1432.70	726.30	6401.50
1983	5204.40	1730.30	775.40	7710.10
1984	5486.10	1886.40	838.50	8211.00
1985	5815.40	2068.00	853.60	8737.00
1986	5796.00	2112.60	871.20	8779.80

FIGURE 6.3

FERTILIZER USE PER HECTARE (tonnes of N+P+K)/GCA



460

The number of cultivators increased during the 1950s but their number is not substantially different in the late 1980s from their number in the late 1950s: nearly all of the increase in labor input into agriculture since 1960 has been accounted for by a doubling of the number of agricultural laborers (see Table 6.7).

Draft power in most parts of India is available from two broad sources, each of which is emblematic of an extreme of inputs into Indian agriculture. The most important source of draft power at Independence was bullocks;⁷ they are often taken to be a symbol of the "backwardness" of the culture and the agriculture, and their numbers have increased by a scant one fifth since the late 1940s (while their factor shares in most states have fallen by thirty per cent or more). The opposite extreme, a symbol of modernity and of the vigor of agriculture in some regions of India, is the tractor. At Independence fewer than ten thousand tractors were in use throughout the nation; their numbers have increased more than fifty-fold, exceeding 470,000 by 1980, and their factor shares in most states have increased many times over⁸ (see Table 6.7).

C. Productivity - Partial

The standard productivity index used for assessing agricultural crops performance is production per hectare or yield. This is a partial productivity measure because it relates production to only one (albeit the key one) input, land. Yield increases can be obtained by the utilization of more inputs such as fertilizer and labor per hectares. Such increases can also reflect the use of improved technology. For some crops, where it is known that little change in fertilizer use or irrigation has taken place, yield changes are good indicators of gains due to better technology, infrastructure or management.

Table 6.8 summarizes crop yield trends in India, and Figure 6.4 portrays yield performance for the two major foodgrains, rice and wheat. It is clear

TABLE 6.7: POPULATION AND LIVESTOCK CENSUS

YEAR	AGRICULTURAL LABORERS	CULTIVATORS	TOTAL LABOR	BULLOCKS	TRACTORS
51	27,500,000	69,600,000	97,300,000	58,512	9,000
52	27,900,000	72,770,000	100,670,000	59,306	11,400
53	28,300,000	75,740,000	104,040,000	60,099	13,800
54	28,700,000	78,710,000	107,410,000	60,893	16,200
55	29,100,000	81,680,000	110,780,000	61,686	18,600
56	29,500,000	84,650,000	114,150,000	62,480	21,000
57	29,900,000	87,620,000	117,520,000	63,275	23,000
58	30,300,000	90,590,000	120,890,000	64,970	25,000
59	30,700,000	93,560,000	124,260,000	66,214	27,000
60	31,100,000	96,530,000	127,630,000	67,459	29,000
61	31,500,000	99,500,000	131,000,000	68,704	31,000
62	33,054,600	97,059,300	130,114,000	68,798	35,400
63	34,609,200	94,618,600	129,228,000	68,893	39,800
64	36,163,800	92,177,900	128,342,000	68,987	44,200
65	37,718,400	89,737,200	127,456,000	69,082	48,600
66	39,273,000	87,296,500	126,570,000	69,176	53,000
67	40,827,600	84,855,800	125,684,000	69,409	69,000
68	42,382,200	82,415,100	124,798,000	69,642	85,500
69	43,936,800	79,974,400	123,912,000	69,875	103,125
70	45,491,400	77,533,700	123,026,000	70,108	117,000
71	47,046,000	75,093,000	122,140,000	70,341	135,000
72	47,891,400	76,836,000	124,728,300	70,574	156,000
73	48,736,800	78,579,000	127,316,600	70,707	180,000
74	49,582,200	80,322,000	129,904,900	70,840	208,000
75	50,427,600	82,065,000	132,493,200	70,974	242,000
76	51,273,000	83,808,000	135,081,500	71,107	279,000
77	52,118,400	85,551,000	137,669,800	71,240	314,000
78	52,963,800	87,294,000	140,258,100	71,507	367,000
79	53,809,200	89,037,000	142,846,400	71,774	404,950
80	54,654,600	90,780,000	145,434,700	72,040	442,900
81	55,500,000	92,523,000	148,023,000	72,307	480,850
82	56,345,400	94,266,000	150,611,300	72,574	518,800
83	57,190,800	96,009,000	153,199,600	72,841	559,760
84	58,036,200	97,752,000	155,787,900	73,108	598,312
85	58,881,600	99,495,000	158,376,200	73,374	636,984
86	59,727,000	101,238,000	160,964,500	73,641	675,801

TABLE 6.8: CROP YIELDS

YEAR	RICE	JOWAR	BAJRA	MAIZE	WHEAT	BARLEY	RAGI	MILLETS	CEREALS	GRAM	OTHER			FOODGRAMS
											TUR	PULSES	PULSES	
1946	8.60	3.50	3.20	6.80	5.00	8.60	7.20	4.70	6.00	5.30	4.20	3.00		
1947	8.30	4.10	3.40	7.20	6.70	8.70	7.10	4.70	6.40	5.80	4.70	3.30		
1948	7.80	3.40	3.00	6.20	6.30	7.20	6.90	3.90	5.80	5.60	4.90	3.50		
1949	7.70	3.80	3.10	6.30	6.50	7.10	7.00	4.20	5.90	4.50	4.50	3.50		
1950	6.70	3.50	2.90	5.50	6.60	7.60	6.50	3.80	5.40	4.80	7.90	3.30		
1951	7.14	3.81	2.46	6.27	6.53	7.50	6.00	4.00	5.57	4.96	7.50	3.40	4.48	5.36
1952	7.64	4.20	2.96	7.96	7.63	9.00	6.00	3.80	6.08	5.80	7.10	3.20	4.63	5.80
1953	9.02	4.55	3.73	7.85	7.50	8.40	8.00	4.40	6.78	6.06	7.70	3.40	4.89	6.40
1954	8.20	5.27	3.10	7.94	8.03	8.70	7.20	4.40	6.64	6.08	7.20	3.50	5.00	6.31
1955	8.74	3.87	3.02	7.04	7.08	8.20	8.00	3.90	6.39	5.04	8.10	3.40	4.76	6.05
1956	8.00	4.51	2.55	8.19	6.95	8.10	7.90	3.90	6.64	6.44	8.70	2.90	4.95	6.29
1957	7.90	4.99	3.24	7.72	6.82	8.10	7.40	3.60	6.30	6.38	8.70	2.90	4.24	5.87
1958	9.30	5.03	3.33	8.12	7.89	8.10	7.70	4.20	7.07	6.97	6.90	3.80	5.41	6.72
1959	9.37	4.84	3.27	9.78	7.72	8.00	7.70	3.90	7.13	5.44	7.00	3.70	4.75	6.62
1960	10.13	5.33	2.86	9.26	8.51	8.80	7.30	3.80	7.53	6.74	8.50	3.70	5.39	7.10
1961	10.28	4.40	3.23	9.57	8.90	9.50	7.90	4.10	7.63	6.09	5.70	3.80	4.85	7.05
1962	9.31	5.29	3.61	9.92	7.93	8.00	8.20	4.00	7.33	4.83	6.50	3.60	4.75	6.80
1963	10.34	5.01	3.49	9.95	7.30	7.30	8.20	4.40	7.57	4.81	5.60	3.40	4.16	6.97
1964	10.78	5.36	3.83	10.10	9.13	9.20	7.90	4.30	8.16	6.51	7.70	3.80	5.20	7.57
1965	8.62	4.29	3.14	10.05	8.27	8.00	4.90	3.40	6.75	5.27	6.80	3.30	4.38	6.29
1966	8.63	5.11	3.65	9.61	8.87				7.07	4.53			3.77	6.44
1967	10.32	5.45	4.05	11.23	11.03				8.40	7.21			5.34	7.83
1968	10.76	5.28	3.16	9.97	11.69				8.43	6.07			4.90	7.81
1969	10.73	5.22	4.26	9.68	12.09				8.65	7.15			5.31	8.05
1970	11.23	4.66	6.22	12.79	13.07	10.90	8.72	4.20	9.49	6.63	7.10	3.90	5.24	8.72
1971	11.41	4.60	4.32	9.00	13.80	10.50	9.11		9.36	6.42	7.18		5.01	8.58
1972	10.70	4.49	3.33	10.94	12.71	9.71	8.26		8.86	6.51	7.95		4.74	8.13
1973	11.51	5.44	5.40	9.65	11.72	8.95	8.78		9.18	5.28	5.32		4.27	8.27
1974	10.45	6.43	2.90	9.48	13.88	10.87	8.67		9.07	5.70	7.25		4.55	8.24
1975	12.35	5.91	4.96	12.03	14.10	11.40	10.60	4.10	10.41	7.07	7.90	3.80	5.33	9.44
1976	10.89	6.67	5.44	10.60	13.87	10.46	8.19		9.85	6.80	6.72		4.94	8.94
1977	13.08	7.39	4.26	10.51	14.80	11.55	11.02		11.00	6.78	7.35		5.10	9.91
1978	13.28	7.68	4.89	10.76	15.68	11.72	11.83		11.36	7.45	7.19		5.15	10.22
1979	10.74	6.99	3.73	9.79	14.36	9.17	10.41		9.82	4.81	6.43		3.85	8.76
1980	13.36	6.60	4.58	11.59	16.30	12.70	9.60	4.60	11.42	6.57	6.89	3.30	4.73	10.23
1981	13.06	7.27	4.70	11.62	16.91	11.50	11.30	4.30	11.57	5.90	7.40	3.60	4.83	10.32
1982	12.31	6.57	4.69	11.45	18.13	12.60	9.20	3.50	11.51	7.15	6.80	3.70	5.19	10.35
1983	14.57	7.25	6.53	13.52	18.43	13.00	11.50	4.70	12.96	6.63	7.70	4.20	5.48	11.62
1984	14.17	7.15	5.69	14.56	18.70				12.85	6.61			5.26	11.47
1985	14.11	6.41	5.45	11.72	20.32				13.32	7.43			5.44	11.84

that Indian agriculture has enjoyed major gains in yield performance in most crops. Wheat yields have grown most. Figure 6.4 illustrates this yield performance well for the two major cereals. It shows that from 1955 to 1964 yields of both rice and wheat increased slowly. The early Green Revolution period, 1967-71, shows major gains for wheat. After 1975 or so further substantial gains have been realized for both wheat and rice, but wheat yields have risen faster. Few countries in the world have been able to realize this rate of yield increase for wheat or any other crop since 1964.

The yield story for the pulses, on the other hand, is less bright. Virtually no increases in yields for pulses have been realized since 1959 or so.

Table 6.9 reports a simple growth accounting exercise in which growth rates in production, area, and yield are estimated utilizing district data for 10 states for three sub-periods and for the entire 1956-83 period. These growth rates are estimated as the parameter b in the following regression:

$$\ln(x) = a + b \text{ YEAR} + c \text{ YEARRAIN} + d \text{ JUNERAIN} + e \text{ JUAURAIN} \quad (6.1)$$

+ State Dummy Variables

where x is area, yield or production, YEARRAIN is total rainfall for the crop year, JUNERAIN is total rainfall for June, JUAURAIN is total rainfall for July and August.

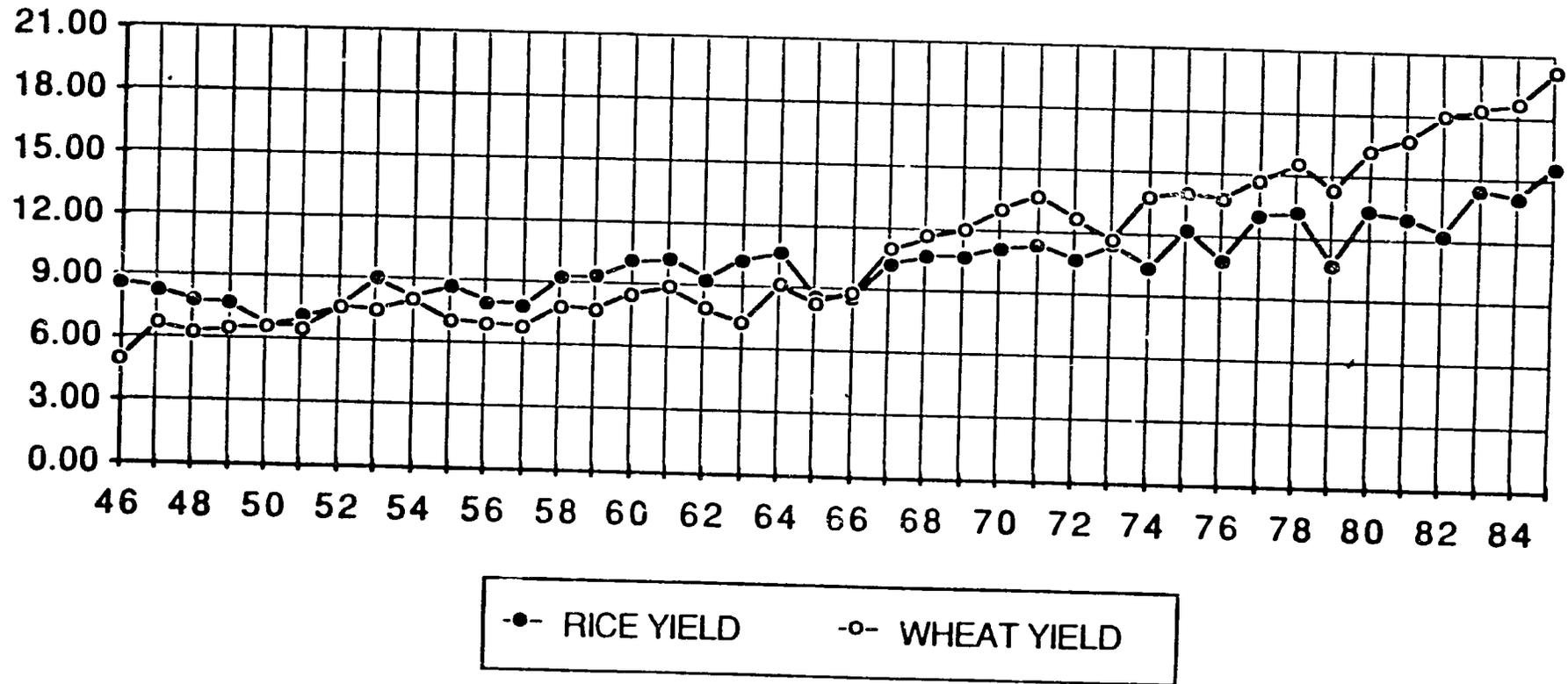
This procedure attempts to correct for some of the weather effects in the data by using the rainfall data. Districts with minor production of the crop were excluded from the regressions. Total production growth can be accounted for by area growth plus yield growth. The proportion accounted for by yield growth has generally increased over time. It is of interest to note that productivity growth rates for the early Green Revolution period, 1963-73, are exceptionally high only for wheat. Note that area growth in this table

Table 6.9: Estimated Trends in Area, Production and Yield
For Major Crops in India: Selected Periods

<u>Period</u>	<u>Rice</u>	<u>Wheat</u>	<u>Jowar</u>	<u>Bajra</u>	<u>Maize</u>	<u>Sugar</u>	<u>Cotton</u>	<u>Pulses</u>
<u>1956-63</u>								
% change in area	.0423	-.0070	-.0164	-.0502	.0315	.0301	-.0076	-.0201
% change in yield	.0204	.0210	.0116	.0313	.0528	.0211	.0111	.0023
% change in production	.0626	.0141	-.0047	-.0189	.0843	.0512	.0035	-.0224
<u>1963-73</u>								
% change in area	.0115	.0305	-.0079	.0194	.0338	.0022	.0002	-.0087
% change in yield	.0233	.0506	.0124	.0118	-.0030	.0319	.0210	.0199
% change in production	.0348	.0811	.0044	.0312	.0308	.0341	.0212	.0112
<u>1973-83</u>								
% change in area	.0120	.0296	-.0027	-.0308	.0066	-.0043	-.0193	.0248
% change in yield	.0253	.0101	.0149	.0158	.0299	-.0148	.0209	-.0191
% change in production	.0373	.0397	.0121	-.0150	.0365	-.0190	.0016	.0058
<u>1956-83</u>								
% change in area	.0146	.0208	-.0108	-.0026	.0190	.0143	-.0036	.0044
% change in yield	.0172	.0281	.0166	.0158	.0115	.0158	.0189	.0011
% change in production	.0318	.0489	.0058	.0132	.0306	.0301	.0153	.0055
% attributed to yield	54	57	86	119	38	52	123	20
1983 Share GCA	.153	.153	.117	.085	.030	.018	.061	.107
1993 percent HYV	.591	.768	.317	.447	.223	na	na	na

FIGURE 6.4

RICE AND WHEAT YIELD 1946-47 through 1985-86 (quintals per hectare)



Yolo

includes growth in multiple cropping. Even with multiple cropping growth included in the area growth these data show that yield increases have dominated production growth in all commodities except the pulses. For the two major foodgrains, rice and wheat, they account for 54 and 57 percent of total production growth. Jowar and bajra area has declined. (This is also the case for cotton.) It is relevant to point out that area itself responds to the availability of new technology, and this responsiveness limits the relevance of this type of productivity accounting.

Table 6.10 reports these yield trends by state and crop for the entire period. It shows that the Punjab recorded the highest yield trends in three of the five of the major food grains; rice, jowar and bajra. These yield trends are not very meaningful for states where production shares of the commodities are low. The reader should interpret these with this in mind. It is easier for a state to raise average yields for crops with relatively low levels of production.

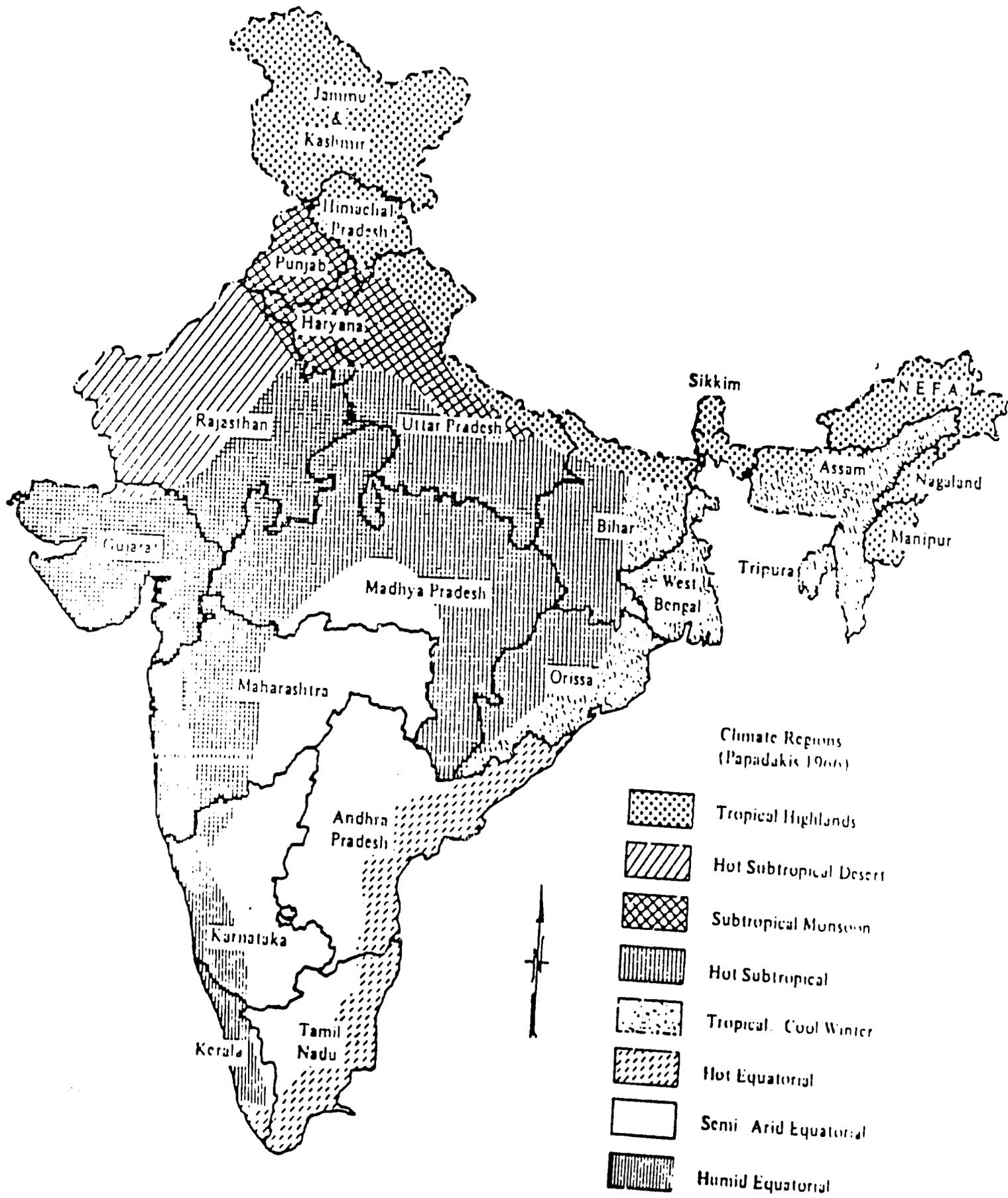
D. Productivity - Total

The Total Factor Productivity Index is a more general measure of productivity. The methodology for the construction of this measure is set forth in the introduction to Section II of this volume. The Appendix to this chapter provides details on the measurement of outputs and inputs at the district level for 227 districts in 10 states (see Figure 6.5 for the location of the states). A Fisher's Chained Index number for crop outputs and for crop inputs was constructed for each district. (The Fisher's Chained Index is a "superlative" index number (Diewert, 1925) and approximates the Divisia Index.) Five major crops (rice, wheat, jowar, bajra, and maize) and ten minor crops were included in the output index. Farm harvest prices were used to aggregate outputs. Input data covered land, irrigation, labor, animal labor, tractors,

Table 6.10: Estimated Trends in Yields by Major Crop: by State
Indian Agriculture 1956-83

<u>State</u>	<u>Rice</u>	<u>Wheat</u>	<u>Jowar</u>	<u>Bajra</u>	<u>Maize</u>	<u>Sugar</u>	<u>Cotton</u>	<u>Pulses</u>
ANDHRA PRADESH	.0206	.0460	.0079	.0086	.0399	-.0096	.0565	.0181
HARYANA	.0265	.0312	.0183	.0216	-.0148	.0112	.0058	-.0029
MADHYA PRADESH	-.00009	.0238	.0029	-.00006	.0084	.0016	-.0051	.0027
MAHARASHTRA	.0259	-.0182	.0172	.0195	.0600	.0323	.0137	-.0145
KARNATAKA	.0271	.0619	.0445	.0285	.0732	.0080	-.0181	.0154
PUNJAB	.0537	.0445	.0520	.0501	.0123	.0283	-.0035	-.0052
TAMIL NADU	.0133	na	.0073	.0227	.0116	.0161	.0293	.0041
UTTAR PRADESH	.0163	.0313	.0096	.0086	-.0051	.0143	.0135	.0018
GUJARAT	.0192	.0552	.0333	.0394	.0106	.0024	.0311	-.0144
RAJASTHAN	.0118	.0217	.0156	.0021	-.0059	.0686	.0152	-.0002
TEN STATES	.0172	.0281	.0166	.0158	.0115	.0158	.0189	.0011

Figure 6.5



489

and fertilizer. Farm rental prices were used to aggregate inputs.

Table 6.11 reports the mean values of the production, input and total factor productivity (production/inputs x 100) indexes by year for the 10 states. Table 6.12 reports estimated rates of change in the TFP index by state for selected periods. (These trends were estimated in the same way that the yield trends were estimated.) Table 6.11 shows that TFP has grown at a steady rate over time with significant weather variations; no growth occurred in the drought years 1965, 1966 and 1979. The variation in the index is clearly in production or output. Input levels change relatively slowly and smoothly over time.

Rates of change by state (see Table 6.12) clearly show the Punjab to be the leading state with Haryana second. The TFP growth rate of these two states (note that both had extraordinary growth rates in the Green Revolution period, 1963-73) in excess of 2.5 percent rank high by world standards. (Only a few U.S. states have performed this well over the same period. Average TFP growth in U.S. agriculture is slightly below 2 percent for this period [Evenson 1989].)

Gujarat and Rajasthan produced modest rates of TFP growth (1.5-2.0 percent). Uttar Pradesh, Karnataka and Andhra Pradesh experienced low rates of TFP growth (1.0 - 1.4 percent). Maharashtra, Tamil Nadu and Madhya Pradesh recorded poor growth at less than one percent per year.

II. Productivity Decomposition: Methods and Specificity

A substantial body of studies utilizing statistical methods to infer causation from program investments to productivity change have been undertaken. Typically statistical methods are used when no direct measures of inventions adopted or of the invention-productivity link are available. They rely on estimating the link, not between inventions (research output) and productivity,

Table 6.11: Annual Crop Production, Crop Inputs and Total Factor Productivity: Indian Agriculture

	<u>Production</u>	<u>Inputs</u>	<u>Total Factor Productivity</u>
1956	100	100	100
1957	95	101	95
1958	116	102	114
1959	112	103	109
1960	119	104	116
1961	128	105	122
1962	122	107	115
1963	119	108	111
1964	141	110	128
1965	112	111	102
1966	116	114	102
1967	141	116	122
1968	130	119	111
1969	148	122	123
1970	174	125	142
1971	168	127	135
1972	145	128	115
1973	173	130	135
1974	159	130	124
1975	199	132	153
1976	181	134	138
1977	208	136	155
1978	212	142	153
1979	170	146	118
1980	200	151	136
1981	221	157	145
1982	221	163	140
1983	253	169	156

Table 6.12: Estimated Rates of Change in TFP by State

<u>STATE</u>	<u>1956-63</u>	<u>1963-73</u>	<u>1973-83</u>	<u>1956-83</u>
ANDHRA PRADESH	.0161 (.0072)	.0138 (.0055)	.0029 (.0066)	.0112 (.0014)
HARYANA	.0263 (.0106)	.0555 (.0087)	.0094 (.0138)	.0268 (.0025)
MADHYA PRADESH	.0119 (.0066)	.0108 (.0049)	.0104 (.0048)	.0034 (.0011)
MAHARASHTRA	.0108 (.0069)	-.0252 (.0061)	.0045 (.0066)	.0091 (.0016)
KARNATAKA	.0330 (.0065)	.0141 (.0077)	-.0037 (.0078)	.0126 (.0017)
PUNJAB	.0231 (.0066)	.0419 (.0062)	.0157 (.0065)	.0320 (.0013)
TAMIL NADU	.0266 (.0068)	.0128 (.0074)	-.0028 (.0117)	.0042 (.0023)
UTTAR PRADESH	.0212 (.0041)	.0151 (.0031)	.0284 (.0076)	.0133 (.0008)
GUJARAT	.0556 (.0108)	.0166 (.0091)	.0163 (.0093)	.0179 (.0021)
RAJASTHAN	-.0062 (.0129)	.0484 (.0111)	-.0162 (.0088)	.0162 (.0023)

but between investments (i.e., inputs) in research, extension, and schooling and productivity. Statistical analysis requires variables measured for a unit of observation. The unit may be a farm or an aggregate of farms. Production, prices and factors of production must be measured for each observation. This is usually straightforward. The key problems of statistical productivity analysis are the measurement of research, extension and related investment variables for the unit of observations. This requires attention to:

- 1) Functional form questions;
- 2) Simultaneity of investment and productivity changes;
- 3) Time-shapes, i.e., the timing between investment and productivity impact;
- 4) Spatial relationships between the location of the investment and the location of production in the unit of observation;
- 5) Deflators.

The general TFP decomposition specification relates TFP to the following variables: human capital (schooling of farmers, public sector extension); technology (public research, private sector research, public sector extension); and infrastructure (geo-climate factors, weather variables, government policy).

A. Functional Form Issues

Three decisions are required in this regard for TFP decomposition. The first is whether the dependent variable should be in the form of an annual rate of change or in the form of a cumulated rate of change from a base period. The second is whether the base should reflect cross-section variation in productivity or efficiency. The third concerns the actual specification, i.e., logarithmic, quadratic, etc. The determination of the specification of the dependent variable will, of course, influence the specification of the independent variables.

On the first question there is a strong argument for the cumulative specification based on error cancellation. Suppose that weather errors are affecting productivity measures. The annual rate of change measure for $t-1$ to t incorporates two errors. The first is due to weather in period t . The second is due to the previous period's weather. The cumulated index has only the current error term.

Let M_t be measured TFP in t , P_t be true TFP and e_t be the weather error. Then the annual rates of change are:

$$M_{t+1} - M_t = P_{t+1} - P_t + e_{t+1} + e_t \quad (6.2)$$

$$M_{t+2} - M_{t+1} = P_{t+2} - P_{t+1} + e_{t+2} - e_{t+1}$$

$$M_{t+3} - M_{t+2} = P_{t+3} - P_{t+2} - e_{t+3} - e_{t+2}$$

$$M_{t+n} - M_{t+n-1} = P_{t+n} - P_{t+n-1} + e_{t+n} - e_{t+n-1}$$

The cumulated index thus includes only the current error term

$$M_{t+n} - M_t = P_{t+n} - P_t + e_{t+n} \quad (6.3)$$

There are actually two grounds for preferring the cumulative index. The error to noise ratio is lower (as noted above) and the specification of weather variables is simpler. One has only to specify a current period weather variable(s).

The second issue is more problematic. In the previous section, efficiency indexes or TFP indexes were reported for districts. These indexes are all expressed relative to the base year in each district. It is possible to construct such indexes relative to a state or national average base. If all outputs and inputs were measured in constant quality units this would be a true cross-section index. Unfortunately, it is difficult to make the case for such measures, and such measures will not be attempted for India.

The issue of the appropriate functional form is not one where a strong appeal to an underlying model can be made for the TFP decomposition

474

specification. (However, for meta-function studies, there are strong model implications for the functional form. See Chapter 9.) The public and private investments in research and extension are the result of complex political decisions and investment analysis. There is little reason to suppose that a maximizing process is taking place to such an extent that standard cross-equation and related restrictions should be imposed on the estimates.

The fact that the TFP measure is a dimension free measure, however, has implications for the deflator used for research, to be discussed below.

B. Simultaneity Between Investments and Productivity.

Simultaneity in economic models occurs when the independent variables in a regression are not exogenous in the model. If research investment, for example, was made in response to productivity change the causality between research investment and productivity change would be confounded. Two factors are relevant to question of simultaneity in TFP decomposition. The first is that different "actors" are producing the TFP and the investment data. Farmer actions produce the TFP data. Individual farms have no control over the investments in research, etc. (They do control their own investments in experimentations and information purchase, but these variables are not considered in this study.) This does not mean that the public sector investment does not respond to productivity change. (See Otsuka, 1979 for an analysis.)

Perhaps more importantly, there is a substantial time lag between the relevant investments and productivity change. In the case of research investment this may be ten years or longer. Given this time lag, a recursiveness argument can be made. Even if research investment is responding to productivity change this response is for current investment. However, it is past investment that is affecting current productivity change. A recursiveness

argument is relied on in this chapter as the basis for inferring causality between investment and productivity.

C. Timing

Most of the variables affecting TFP do so with a time lag that is typically "distributed" over time with different time weights. These time weights will depend on the variable and on the form of the TFP measure.

A research project may begin at time t . If it is directed toward the invention of new technology and is successful, new technology will be developed in one or more periods later than t . The technology then requires testing, further modification and release to farmers. Farmers will then experiment with the new technology and fit it into their production activities. There may then be a further period of learning by farmers before the full impact of the research investment will be realized. Some research projects are unsuccessful. Some produce new technology, but also produce new intellectual capital that enhances further research projects. Some are not designed to produce technology per se, but have pre-technology science objectives.

Furthermore, technology once adopted by farmers may experience a real depreciation in value or TFP impact. This stems from two sources. The first, and probably most important in agriculture, is through real deterioration from exposure to pests and pathogens. This is a common problem with new crop varieties and to some extent with animal improvements as well. The second is through replacements with incomplete additivity. New inventions are continuously replacing older inventions because the new inventions are superior. In some cases they build upon or add to the older invention. In these cases the TFP impact of the older replaced invention does not deteriorate, but is an actual part of the new invention. However, this additivity may not be complete. The new invention may have emerged from a

different technology core or sequence of inventions. In this case it will not contain the full effect of the replaced invention.

From the perspective of specifying a research variable to be associated with TFP change in a given time period one must look backward in time and include the research investment or activities that are effectively contained in the TFP index. If the TFP index is in the form of an annual change this can include negative weights.

In this study five alternative time weights were constructed. Minimum mean square error criteria were used to estimate the optimal weights. The segment a is the years of rising weights, b the years of constant weights, and c the years of declining weights. The mean square error test called for set 5 as the best.

<u>Set</u>	a	b	c
1	3	3	3
2	3	3	6
3	3	6	6
4	6	6	6
5	9	9	9

Extension programs also have a time lag, but it differs considerably from the research lag. Extension programs have direct and relatively quick impacts because of direct contact with farmers. Because of an education and learning process, these impacts will have a rising component over time. They will also have a falling component because there are good substitutes for public extension programs. Markets supply information to farmers; private firms also supply information. Much of the public extension effect is to enable the processing and conversion of technical and price information into managerial decision-making to occur earlier and more effectively. Alternative sources of information are of the replacement with incomplete additivity type. Hence, much, perhaps most, of the extension impacts deteriorate within a relatively short period.

Given the burden of estimation of other parameters in this study the extension time weights were not estimated. Instead they were imposed to last only 3 periods with time weights of .5, .25 and .25. Literacy impacts were specified to be permanent.

D. Spatial-Geo-climate Dimensions (Spill-in of Technology)

Since the unit of observation is productivity in a specific time period, for this study research, extension and other variables must be matched with the unit of observation. For some variables it may be argued that there is no appreciable spatial issue, because the variable is closely associated with farm producers. This is the case for schooling and also for extension, but not for research.

If one could actually measure technology in use by farmers directly, one could possibly trace it to its origins. For example, technology in use in a given state may have originated (i.e., been invented) in another state or even in another country. If so, it can be said to have spilled-in to the state in question and spilled-out of the origin state. Using this spill-in and spill-out information, one could attribute the value of technology to its originating institution.

Some technology spills far and wide. For example, a chemical herbicide may be more valuable than the next best alternative in every Indian state. In economic terms it is the best technology in a broad range of locations. If all agricultural technology had this characteristic one would specify a single national (or international) research stock utilizing the time shape weights noted above. But most agricultural technology does not spill far and wide. Spilling is inhibited by soil, climate, and even economic factors. The biological performance of a variety of corn, for example, is inhibited by changes in day length and length of growing season.

As crop and animal husbandry priorities were developed, husbandry selection modified many crop and animal species through selection for economically valuable characteristics. Considerable improvement in economic species occurred over the centuries prior to the modern agricultural research period. Some of the natural inhibitors were reduced in scope and importance so that economic species exhibited much less fine tailoring to small niches than non-economic species. Nonetheless, the basic pattern of tailoring through location specific husbandry selection was maintained.

With the advent of modern plant breeding and research practices, further selection to reduce inhibiting effects has taken place (e.g., modern high-yielding rice varieties in Asia have been selected for lower photoperiod sensitivity). At the same time, the existence of inhibitions (sometimes referred to as geno-type-environment intervention (see Herdt, Kauffman, et al.)) has become a central feature of the organization and design of agricultural research systems (Englander, 1987). In the Indian system this principle, which can be thought of as a factor on the supply side of research, has combined with demand factors to encourage the development of state stations and branch or sub-stations.

Of course, some technology spills in directly from one state to another. This is particularly true for agrochemical technology. Were it the case, however, that all technology spilled broadly across soil and climate inhibitors, only a few of the state programs would be productive. The technology tailoring that states do engage in productively attests to limited direct spill-in, but much of this activity can be thought of as indirect spill-in.

The procedure used to deal with this problem was to define research variables for the geo-climate regions portrayed in Figure 6.4. This was done

by allocating public sector research on a commodity in a state to the regions in the state based on the proportion of production in the region. States were summed across to obtain a research stock variable for the geo-climate region. This variable was then assigned to each district in the geo-climate region. These variables were not deflated for the PFP (partial productivity analysis) reported below.

E. Commodity Spill-in and the Deflator for TFP Analysis

Since the TFP indexes to be analyzed are available only for aggregate crop production, the matching research stock variables must also be aggregated over crop research categories. In addition, since the TFP measures are measured in rate of change or index number form, state research (and extension) stocks should be consistent with this specification. This requires a deflator that effectively deals with the size issue, i.e., that makes a small state comparable to a large state and that also deals with geo-climate and aggregate commodity heterogeneity.

Consider the case where a single commodity is being produced in a single homogenous region with no spill-in. In this case a research stock should not be deflated at all (as in the PFP analysis). The form of the productivity specification would depend on whether the dependent variable was measured as a rate of change or as an absolute quantity (e.g., output-inputs). It would not matter, however, how large the homogenous region in question was.

Now suppose that the region is not homogeneous, but that there are sub-regions in it and that there are two states each with a different number of sub-regions. Each state has a station that seeks to tailor technology to each sub-region. How can a meaningful research stock variable be defined for the two states?

Consider two extremes. One is that the sub-region characteristics do not

100

inhibit technology spilling from one region to the other. In this case the sub-regions would not matter. At the other extreme, no significant spill-over even indirectly takes place between sub-regions. In this case each sub-region would require a separate research program and the aggregate program research stock could be defined as:

$$\sum_i S_i R_i \quad (6.4)$$

where S_i is the share of production in the i th sub-region. This deflated aggregate research stock presupposes not only that no spill over between sub-regions occurs, but that the system is optimally allocating research between sub-regions in proportion to the size of the sub-regions.

Because the Indian regions are not homogeneous, each commodity stock was deflated by the Gross Cropped Area in the state. This commodity variable can then be expressed on a state or geo-climate region basis. Aggregation over crops used district share weights.

F. Specifications and Variable Means

The Appendix to this chapter provides a detailed discussion of all variables. Table 6.13 reports a summary of means and a brief variable description for the variables used in the PFP and TFP analysis.

III. Partial Factor Productivity Decomposition

Two alternative specifications for the partial productivity decomposition analysis are presented. Table 6.14 summarizes the basic specification; Table 6.15 reports a slightly more complex specification in which interactions between the HYV variable and the IADP, public research, extension, private research and irrigation variables are reported. HYV variables have been incorporated in this analysis (and in the TFP analysis in the next section). It should be noted that these variables capture the genetic improvement component product of the research system, but do not capture other

Table 6.13: Variables Definitions and Means

Variable and Definition	All India	Wheat	Rice	Jowar	Bajra	Maize
LOUTIN - log of output per unit input	.1582	-	-	-	-	-
LYIELDI - log of yield indexed on 1956-58	-	.3366	.1220	.0740	.1640	.1090
PHYV - Proportion of area under high yielding varieties (weighted by crop shares for All India)	.1263	.2773	.1800	.0620	.1360	.1110
IGGRES5 - log of public research expenditures in geo-climate neighbors with time weights 9, 9, and 9.	2.6369	8.9312*	8.3290*	3.7480*	4.2050*	14.8810*
LSTRES5 - log of public research expenditures in the state with time weights 9, 9, and 9.	2.3981	8.4814*	-	-	-	-
LEXT - log of extension expenditures per farm	.7431	.7464	.8180	.6660	.7560	.9680
LITERACY - proportion of rural males who are literate	.3085	.2988	.3170	.3020	.3080	.2870
NIA1 - ratio of net irrigated area to net cropped area	.2383	.2322	.2540	.2140	.2570	.2850
LPOWERCHM - log of private research expenditures	2.5289	2.6108	2.5690	2.5380	2.4220	2.7470
MKIS - number of regulated markets in the district	10.6607	10.9465	11.4410	10.5560	12.0470	11.0550
ROADL - kilometers of surfaced roads (indexed on 1956-58 in all India data)	1.7357	1600.73	2119.57	2013.06	2141.19	1722.57
IADP - dummy = 1 if district was an IADP district	.0352	.0336	.0350	.0270	.0150	.0190

*Not in log form

**Table 6.14: PFP Decomposition Estimates:
Simple Specification**

Dependent Variable: ln Commodity Yield Index

<u>Independent Variables</u>	<u>Wheat*</u>	<u>Rice</u>	<u>Jowar</u>	<u>Bajra</u>	<u>Maize</u>
Proportion HYV	.3847 (14.18)	.5493 (17.34)	.5983 (9.63)	.4416 (9.87)	.3791 (6.10)
Public Research (GC)	.0038 (4.47)	.0398 (6.99)	.0138 (2.78)	.0125 (2.96)	.0222 (8.63)
Extension Per Farm	.0444 (3.54)	.0631 (4.51)	.0464 (2.79)	.1240 (6.56)	.0326 (1.34)
Literacy Rate	.4164 (5.10)	-.1083 (1.32)	.0024 (.02)	-.3398 (2.81)	.0031 (.02)
NIA/NCA	.1635 (3.71)	.2512 (5.92)	-.1734 (3.05)	.3182 (5.34)	-.1346 (2.31)
Private Research	.0324 (3.80)	-.0112 (1.27)	.0281 (2.54)	-.0210 (1.75)	-.0578 (4.32)
Markets	.0070 (7.55)	.0063 (7.57)	-.0018 (1.69)	.0093 (7.87)	.0030 (2.16)
Roads	-.000113 (21.89)	-.000005 (1.24)	-.000014 (2.86)	-.000006 (1.11)	-.000005 (6.16)
IADP (Dummy)	.0949 (2.85)	-.0359 (1.07)	-.0069 (.15)	.1106 (1.68)	.0747 (1.43)
N Obs	4974	5450	5013	4035	3411
R ²	.3956	.2823	.1554	.1985	.2351
F	129.54	88.92	38.25	41.38	43.37

*For this regression the public research stock is the stock research stock. The GC stock was also included with a coefficient of -.0105.

198

Table 6.15: PFP Decomposition Estimates:
Complex Specification

Independent Variables	Dependent Variable: ln Commodity Yield Index				
	Wheat*	Rice	Jowar	Bajra	Maize
Proportion HYV	.3625 (4.10)	.5631 (4.43)	1.6408 (4.54)	.2845 (1.33)	-.5356 (2.62)
Public Research (GC)	.0044 (4.87)	.0339 (5.17)	.0139 (2.80)	.0173 (3.80)	.0138 (4.39)
Extension Per Farm	.0238 (1.60)	.0828 (5.36)	.0569 (3.28)	.0748 (3.57)	.0161 (.65)
Litaracy Rate	.4054 (4.95)	-.1492 (1.80)	.0301 (.28)	-.3678 (3.02)	.0415 (.31)
NIA/NCA	.2842 (5.15)	.3037 (6.31)	-.2013 (3.41)	.3548 (5.38)	-.0464 (.76)
Private Research	.0272 (3.13)	-.0139 (1.56)	.0297 (2.69)	-.0178 (1.47)	-.0550 (4.08)
Markets	.0071 (7.59)	.0067 (7.93)	-.0011 (1.03)	.0101 (8.41)	.0039 (2.74)
Roads	-.0001 (22.25)	-.000002 (.53)	-.00001 (2.92)	-.00001 (1.81)	-.00005 (5.75)
IADP (Dummy)	.0101 (.24)	-.0454 (1.08)	-.1334 (2.67)	.1261 (1.64)	.1258 (2.17)
IADP x Proportion HYV	.2390 (3.12)	.0462 (.49)	2.0124 (7.07)	-.0951 (.31)	-.2554 (1.26)
Proportion HYV x Public Research	-.0115 (3.34)	.0217 (3.28)	-.0568 (3.03)	-.0274 (2.77)	.0100 (2.69)
Proportion HYV x Extension	.0678 (2.24)	-.1734 (3.89)	.1908 (1.52)	.2578 (3.78)	-.0199 (.15)
Proportion HYV x Private Research	.0369 (1.75)	.0182 (.69)	-.2175 (2.62)	.0022 (.04)	.1950 (3.20)
Proportion HYV x NIA/NCA	.3241 (3.64)	-.2038 (1.81)	.2162 (.62)	-.2488 (1.12)	-.5930 (2.18)
= Obs	4974	5450	5013	4035	3411
R ²	.3990	.2863	.1679	.2065	.2497
F	109.41	74.97	34.67	35.94	38.80

*For this regression the public research stock is the state research stock. The geo-climate stock was also included with a coefficient of -.0035.

contributions of the public research system. The geo-climate and state research variables then should be interpreted as capturing these additional effects. Note that these equations included intercepts, geo-climate and ICAR dummies, time trend (YR and YR²) and weather variables (YEARRAIN, JUNERAIN and JUAURAIN).

The basic estimates will be discussed in some detail by independent variable and then the interaction in the second specification will be commented on.

Proportion HYV: The results for this variable are remarkably strong and consistent. HYVs explain an important part of yield growth in all 5 crops. The marginal impact ranges from .38 for maize and wheat to .59 for jowar.

Public Research: In spite of the fact that HYVs are highly significant, public research appears to be contributing significant additional productivity gains in all crops. (The wheat results are probably not very reliable because the GC research term had a negative sign.) The impact is highest for rice, next highest for corn.

Public Extension: As with public research, the estimates show a consistent extension impact on PFP in all crops. They are weakest for corn, but taken together they indicate a strong extension impact.

Literacy: These results are less consistent and probably should be taken to show little or no literacy effect on productivity.

NIA/NCA: Irrigation effects are, as expected, strongest in rice and wheat, the irrigated crops. The negative impacts for jowar and maize could be due to inducing farmers to produce these crops on lower quality land, i.e., they irrigated their best land and convert it to wheat or rice.

Private Research: The results for this variable do not show consistency.

Markets: Somewhat surprisingly, this variable does show a consistent

125

positive impact on crop productivity.

Roads: This variable is not showing consistent effects. Measurement of real road infrastructure is difficult because of the effects of terrain, mountains, lakes, etc. This measure is probably quite poor.

IADP: The Integrated Area Development Program was implemented in selected districts (one in each state) in 1960 and provided significant additional extension and credit resources to farmers. There is weak evidence that it had a long run effect on yields of wheat, bajra and maize.

Table 6.14 reports the interactions in the more complex specification. There are several salient points from this extension. IADP-HYV interactions are positive for rice, wheat and jowar, but do not indicate that IADP programs had a large impact on HYV effects. Public research - HYV interactions are positive for rice and maize indicating complementarity between research activities and HYVs. For wheat, the high impact content of HYVs can be seen as a substitute for Indian research. Extension-HYV interactions are mixed. On balance they suggest that the production of HYVs may substitute for extension programs. Private research-HYV interactions are also mixed, though positive for wheat, bajra and maize indicating a concentration in these crops of private input supplying firms. Irrigation-HYV interactions, contrary to popular belief, are generally negative. An increase in irrigated area appears to stimulate a larger yield increase for non-HYV regions than for HYV areas.

IV. Total Factor Productivity Decomposition

TFP decomposition entails aggregation across commodities. It provides a fuller test of the effectiveness of research and related programs. Table 6.16 reports the results of the basic and interaction forms of the TFP decomposition specification for the 10 Indian States. The only difference between this specification and the PFP specification, other than the form of the dependent

variable, is the inclusion of both geo-climate and state public research variables. Since this is with a more aggregate measure of productivity it is reasonable to suppose that a district will benefit both from its state's research program and from spill-in from similar geo-climate research in other states. A little more insight into the IADP effects is obtained in the interactive specification by interacting the roads and markets variable with the IADP dummies.

The estimate for the TFP decomposition analysis by and large confirm and strengthen those for the PFP analysis. HYV (weighted by crop shares) impacts are large. The coefficient for TFP (.3359) is lower than in the PFP regression, as expected, but is nonetheless large and important. The HYV interactions are positive with public research and weakly positive with irrigation.

Public research impacts are large. Districts benefit both from their own state's research and from spill-in from similar geo-climate regions. Public research produces most of the HYVs in Indian agriculture⁹. Public research complements HYV production. Public extension programs have a large impact on TFP. They do not complement HYVs.

Literacy has little direct impact on TFP. (It does, however, have an inducement effect; see Chapter 10.)

Irrigation contributes to TFP growth over and above the normal attribution inherent in the construction of TFP indexes (see the Appendix). Only a small part of this is due to complementarity with HYVs.

Private sector R&D in chemicals and farm machinery produced TFP increases in agriculture. These are a type of spill-over benefit that occurs because private firms capture only a small part of the "real" value of improved products in the form of higher prices to farmers.

Markets enhance TFP growth. Roads do not enhance TFP growth except in IADP districts. (It is possible that this variable may not be measuring what it was expected to.)

Table 6.16 also reports the basic specification for five northern and five southern states. These comparative results show the following. HYV impacts are slightly higher in the South. Public research effects are primarily from state research in the North. More spill-in occurs in the South. Overall the impact is similar. Extension has a high impact in both regions. Private R&D is important in the South, not in the North. Irrigation is more important in the North than in the South, while markets are more important in the South.

Overall these results are consistent with the PFP results. They are also consistent with and stronger than earlier estimates by Jha and Evenson, 1974.

V. Investment Implications

The positive estimates of PFP and TFP for public research, extension, private research and markets indicate that these programs produce benefits. The estimated magnitude and timing of these benefits can be compared with the program costs to obtain a return to investment measure.

Consider first public sector research. This research has produced both HYVs and non-HYV research findings. Some of the HYV component is attributed to imports. The value of the HYV contribution is huge. By 1983-4, the final year included in the data set, the percentage of HYVs had risen to approximately 40 percent of GCA. The added production stream because of this HYV development was $.4 \times .336$ or 13.4 percent of production. Even one-half of this income stream alone is more than enough to justify all public sector research expenditure in India.

In addition, the research variable elasticity can be converted to a marginal product, and this can be converted to an internal rate of return. The

Table 6.16: TFP Decomposition Estimates

<u>Independent Variables</u>	<u>Dependent Variable: ln Output Per Unit Input</u>			
	<u>All India Simple Specification</u>	<u>All India Complex Specification</u>	<u>North India Simple Specification</u>	<u>South India Simple Specification</u>
Weighted Proportion HYV	.3359 (8.38)	-.1510 (.80)	.2624 (4.47)	.3364 (6.29)
Public Research (GC)	.0412 (2.70)	.0332 (2.05)	-.00068 (.03)	.0402 (2.07)
Public Research (State)	.0557 (5.21)	.0579 (5.35)	.1073 (6.18)	.0589 (4.17)
Extension per Farm	.1233 (12.95)	.1232 (11.75)	.1210 (7.80)	.0982 (7.12)
Literacy Rate	-.0028 (.05)	.0177 (.30)	.7323 (7.51)	-.4511 (5.94)
NIA/NCA	.2782 (8.44)	.2410 (6.26)	.2859 (6.44)	.1839 (3.16)
Private Research	.0288 (4.92)	.0306 (5.14)	-.0095 (1.01)	.0483 (6.44)
Markets	.0033 (5.39)	.0029 (4.68)	-.0020 (.99)	.0051 (6.71)
Roads	-.0082 (3.11)	-.0076 (2.87)	-.0049 (.40)	-.0046 (1.74)
IADP (Dummy)	.0204 (.86)	-.0768 (1.73)	-.0778 (2.26)	.1442 (4.16)
IADP x Proportion HYV		-.2182 (1.49)		
IADP x Markets		.0044 (1.30)		
IADP x Roads		.00003 (2.99)		
Proportion HYV x Public Research (GC)		.1390 (2.48)		
Proportion HYV x Extension		-.0011 (.02)		
Proportion HYV x Private Research		-.0037 (.14)		
Proportion HYV x NIA/NCA		.1932 (1.66)		
n Obs	6324	6324	2992	3332
R ²	.2562	.2589	.2939	.1871
F	86.75	68.69	61.83	38.11

marginal product of public research (Table 6.17) is evaluated at mean levels. Given the time weights used, this implies a marginal internal rate of return of 65 percent based only on the non-HYV research contribution. The contribution of HYVs has been larger than the non-HYV contribution since 1970. Attributing half to Indian research would raise the internal rate of return to Indian research to above 100 percent.

The return to extension is also high. The marginal product of 1 Rs. of extra spending is approximately 12, implying an internal rate of return in excess of 100 percent. The returns to market development are also high.

Finally, it may be noted that private sector R&D spill-overs are large. Even though private firms capture a return on their own research, the spill-over impacts on agriculture are probably as high as they are for public research.

FOOTNOTES

- 1.
2. This section is based heavily on Evenson (1986).
3. The expansion of multiple cropping has not progressed evenly across all of India's states.
4. The growth of irrigation, just as the expansion of multiple cropping, has progressed at different rates with different degrees of success in various states.
5. The geographic distribution of HYV adoption is even more uneven than is the distribution of irrigation.
6. There is a rather high correlation between the geographic distribution on HYV adoption and the geographical distribution of fertilizer use; see Chapter 4 for details of the latter.
7. And other animal power, primarily buffaloes, which were important in some areas.
8. State-level factor share data was obtained from C.H. Shah, Towards Modernisation, (Bombay: unpublished manuscript, March, 1982).
9. A small proportion of HYVs are imported. Most germplasm, i.e., parent genetic material, is imported, but most breeding and selection is done in India.

REFERENCES

- Diewart, W.E.
- Englander, S. 1987.
- Evenson, R.E., 1986. "Food Consumption, Nutrient Intake and Agricultural Production in India", USAID/India Occasional Paper No. 3.
- Evenson, R.E., 1989.
- Herdt, R.W.
- International Food Policy Research Institute, 1977. Food Needs of Developing Countries. Projection of Production and Consumption to 1990, Washington, D.C.
- Jha, D. and R.E. Evenson, 1974. "The Indian Agricultural Research System and Its Contribution to Agricultural Production", Indian Journal of Agricultural Economics.
- Otsuka, K., 1979. "Public Research and Price Distortion: Rice Sector in Japan", Ph.D. dissertation, University of Chicago.
- Papadakis, J., 1986. Agricultural Climates of the World, Buenos Aires.

492

APPENDIX A: Variables in the Data Set

This Appendix describes the variables which are contained in the data set: their definitions, units, sources, any transformations which they underwent, and any special treatment which they required. The variables are presented in five groups in this Appendix: Coverage, Outputs, Variable Inputs, Other Inputs, and Productivity Measures. Appendix B contains a list of the districts which are covered by the data set; Appendix C is a list, in order of their appearance in the set, of all the variables, their means and their standard deviations; Appendix D is a description of the physical form of the data set and its magnetic medium.

I. Coverage

The data set covers nearly all the districts [for a total of 227 districts] within ten of the States of India:

Andhra Pradesh
Gujarat
Haryana
Karnataka
Madhya Pradesh
Maharashtra
Punjab
Rajasthan
Tamil Nadu
Uttar Pradesh

These ten States constitute the three primary Northern Wheat and Northern Rice producing states [viz., Haryana, Punjab and Uttar Pradesh], two Northwestern Bajra-producing states [Gujarat and Rajasthan], as well as all of the Semi-Arid Tropic States as specified by ICRISAT. The major agricultural states which are absent from the data set are Kerala, at the southern tip of the subcontinent, and the four Eastern states of Orissa, West Bengal, Bihar and Assam, for which recent district-level data was not available.

During the period covered by the data set, there have been numerous adjustments in the boundaries [and even existence!] of some of the districts. These changes have occurred, for example, upon the division of the former Punjab into Punjab, Haryana and Himachal Pradesh; in the division of certain districts into two or more smaller districts in many places; or in the transfer of parts of one district to another. Insofar as possible, the data set preserves the original district boundaries: where districts have been broken up, values for the resultant districts in later years have been summed to yield values appropriate to a "shadow" consolidated district. [However, the data set treats Haryana's districts as though they always belonged to a State named Haryana even though, before 1966, they were part of the original Punjab.]

495

Some districts which currently exist will not appear in the data set, therefore, because they have been combined with other districts to create aggregations which approximate historical boundaries. Other current districts may not appear for other reasons, primarily because of dearth of agricultural activity [e.g., Bombay, a few Himalyan districts of northwestern Uttar Pradesh, or a few desert districts of Rajasthan] but occasionally because very little data is available for them.

Each district is assigned a unique identification code in the data set, composed of a two-digit State code [in the variable STATE] and a two-digit district code [in the variable DISTRICT]. In addition, the variable STNAME contains the name of each state, or its abbreviation. Appendix B contains a list of districts and their identification codes.

The data set contains observations for each of the variables for the agricultural years 1956/57 through 1983/84. The agricultural year 1956/57 is denoted by 1956 in the variable YEAR in the data set; the agricultural year 1983/84 is denoted by 1983; and so forth. With the exception of three of the rainfall variables [which are clearly identified to refer only to a few specified months during the given year], all variables are expressed as annual flows or average annual stocks or average annual levels.

II. Outputs

The data set contains data pertaining to five "major" and ten "minor" crops, enumerated below:

Major Crops

BAJRA
JOWAR
MAIZE
RICE
WHEAT

Minor Crops

BAR (Barley)
COTN (Cotton)
GNUT (Groundnut)
GRAM
OPULS ("Other" Pulses, other than Gram)
POTAT (Potato)
RMSEED (Rapeseed and Mustard)
SESA (Sesamum)
SUGAR
TOBAC (Tobacco)

494

For each of the so-called minor crops the data set includes:

Area Planted [1000 hectares; A followed by crop code]
 Production [1000 tonnes; Q followed by crop code]
 Farm Harvest Price [Rupees per quintal; P followed by crop code].

For the five major crops, the data includes the three variables listed above plus:

{ Area irrigated under the crop [1000 hectares; I followed by the crop code]
 Area planted to HYV in each crop [1000 hectares; H followed by an abbreviated crop code].

The primary sources of data on Area and Production include:

Area and Production of Principal Crops in India, GOI
Crop and Season Reports of the various States
Statistical Abstracts of the various States
Agricultural Situation in India, GOI.

Beginning in 1954 and extending until the late 1960's, the Directorate of Economics and Statistics published Area and Production in two Parts: Part I contained All-India and State-wide data, while Part II (Detailed Tables) contained District-level data. Typically each issue of Part I would cover three years or so, while Part II would appear less frequently and cover a longer time span. But no Part II has been published for nearly twenty years. Therefore, recently, the most convenient source for Area and Production data has been the monthly Agricultural Situation. This creates two small problems. The first is practical: One must cull through twelve issues each year, finding usually no more than three or four crops' data presented in any one issue.

The second, and far more significant, problem is substantive: the district-level estimates of Area and Production presented in Agricultural Situation are called "Final" estimates, and usually are the first estimates to be published. But so-called "Final" estimates are still subject to change, to be superseded by what are called "Revised" estimates. No such changes are reported in Agricultural Situation so there is no way to know whether such revisions have even been made without consulting sources other than Agricultural Situation. Seldom are the revisions large, however, so this data set relies heavily upon estimates from Agricultural Situation throughout much of the 1970's and 1980's.

Whenever it was possible, the Statistical Abstracts and/or Crop and Season Reports of any States for any of the years covered by the data were used for the estimates of Area and Production. In addition, those sources were especially valuable in providing data, for the major crops, on Area Irrigated under each crop and Area planted to HYVs in each of the crops, although lately Agricultural Situation has begun to include that data as well.

117

District-level Farm Harvest Prices are easily available from Farm Harvest Prices of Principal Crops in India, published every four years or so by the Directorate of Economics and Statistics. The prices are reported in Rupees per quintal. [Both wholesale and retail prices of all crops are also available, published regularly in Bulletin on Food Statistics, in Agricultural Prices in India, and elsewhere. Retail prices would be appropriate, for example, in a study of consumption behavior or poverty. Wholesale prices would be of interest, for example, in studying government grain procurement policies or interstate food movements. But the obvious prices of interest to this study are Farm Harvest Prices, because it is on the basis of those prices, or farmers' expectations of their future values, that farmers determine their behavior.]

III. Variable Inputs

The data set includes three categories of variable inputs: labor, fertilizer, and power.

A. The variables relating to labor include:

Rural Population:	[the total population of the district, male and female, residing in areas classified as rural: RURPOP]
Agricultural Labor:	[the number of rural males whose primary job classification is agricultural labor: AGLABOR]
Cultivators:	[the number of rural males whose primary job classification is Cultivators: CULTIVAT]
Total Farm Labor:	[a weighted sum of Agricultural Labor and Cultivators: QLABOR]
Wages:	[weighted annual labor cost: WAGE]

The first three variables are obtained from the decennial population census, which reports the job classifications of all persons enumerated as well as many population totals. The population census has been conducted in India for more than a century and is widely deemed to be highly accurate. Census results are published in an extensive series of volumes for each state; the district-level values of the rural population and job classifications are reported in the Primary Census Abstract, and are re-printed frequently in Statistical Abstracts as well as many other sources. The data set is based on the reported values for the census years 1951, 1961, 1971 and 1981; the values of RURPOP, AGLABOR and CULTIVAT for the other years in the data set are linear interpolations [for 56 through 60, 62 through 70, and 72 through 80] and linear extrapolations [82 and 83] of the reported data. Interpolating population values is probably benign: such variables change in relatively regular and consistent ways. The numbers of agricultural laborers and cultivators often change substantially within a decade, so linear interpolations between census years may mask more volatile behavior. Unfortunately, however, the values of the population variables are not measured during any inter-censal years, so no better data could exist.

The Rural Population values appear in the data set exactly as they had been recorded. The Cultivator and Agricultural Labor values, however, measure a stock: the number of people who claim those activities as their primary job. The economically appropriate variable is a flow: the amount of labor performed during the year by such workers. The number of Agricultural Laborers and Cultivators are added, and their sum is multiplied by the average number of days worked in the State by farm workers [as obtained from various Farm Management Surveys; see below] in order to compute the appropriate flow of labor services variable: QLABOR.

<u>State</u>	<u># of days worked by farm workers</u>
Andhra Pradesh	230
Gujarat	215
Haryana	244
Karnataka	217
Madhya Pradesh	239
Maharashtra	240
Punjab	244
Rajasthan	215
Tamil Nadu	293
Uttar Pradesh	210

Agricultural Wages are obtained from Agricultural Wages in India, published by the Directorate of Economics and Statistics every two or three years, reporting daily wages and normal daily working hours for each of the twelve months from reporting centers in most districts for different farming activities. Whenever it was possible, the wages of a male ploughman were recorded; if a district did not record such a wage, the wages of a male field laborer or male "Other Agricultural Labour" were selected instead. An average annual wage was constructed from the monthly wages, weighting June and August more heavily than other months because of the intensity in those months of field work in most cropping patterns and most states.

B. The variables relating to fertilizer include the quantities of nitrogen, phosphorous and potassium fertilizers [in tonnes: denoted NITRO_TQ, P205_TQ and K2O_TQ] and the prices of the three fertilizers [in Rupees per tonne of nutrient: NITRO_TP, P205_TP, K2O_TP]. The fertilizer data source is Fertilizer Statistics, published annually by The Fertilizer Association of India. Quantity data is given by district, by nutrient, and often by season; only yearly data is included in the set. Prices of fertilizers are strictly controlled by the Central Government, so the only cross-section price variation arises from the cost of transportation from the railhead to the field; the prices of the nutrients in the data set, therefore, exhibit no cross-section variation, but are based on reported maximum sale prices of common fertilizer compounds adjusted for the proportion of the nutrient present in each compound. Prices are not reported for all nutrients for all years; prices for intervening years are estimated based on movements of the fertilizer price index during those years.

C. Farm power is obtained from two primary sources: bullocks and tractors. The quantities of both are enumerated in the quinquennial Livestock Census. The results of each Livestock Census are published in two Parts: Part I contains All-India and state-wide data, while Part II contains district-level data. Part II has been published for the Censuses of 1956, 1961, 1966, 1972 (the census which had been scheduled to occur in 1971, according to the former sequence, had to be postponed to 1972) and 1977, but district-level data is not yet available for the census of 1982. [The publication backlog seems to be increasing. The 1977 district-level data were released in December, 1987, so 1982 district-level data will likely be unavailable during the next four or five years.]

Bullocks [QBULLOCK], as recorded for the data set, refer to castrated (male) cattle, over the age of 3 years, which are used in rural areas for work only. Tractors [QTRACTOR] are four-wheel [not tracked, nor walk-behind two-wheeled] machines.

The numbers of bullocks and tractors in the inter-censal years (1957-1960, 1962-1965, 1967-1971 and 1973-1976) are estimated by linear interpolation. For years after 1977, for which no district-level data have yet been published, the data set contains estimates computed by extrapolating the 1977 observations at a rate equal to the percentage change in the state values from 1977 to 1982.

Tractor prices do not vary across India: a single tractor price therefore appears for all districts in any given year. The tractor price is constructed as follows: The price index for Agricultural Machinery and Transport Equipment from 1954 through 1985 was compared to observed prices for Eicher 24-horsepower tractors during selected months from 1978 to 1987. [The Eicher prices were collected by P. C. Bansil of the Techno-Economic Research Centre, New Delhi.] Movements in the price index mirrored movements in the Eicher tractor prices almost perfectly. So the Eicher price series was extended back to 1956, on the basis of proportional changes in the Agricultural Machinery and Transport Equipment price index. Eicher commands more than 50% of the market of tractors in the 1 to 25 horsepower range, which is the largest segment of the tractor market in India, but larger tractors command a higher price, so the Eicher 24-horsepower tractor's share in the total value of tractors is smaller than its share in the number of tractors. Thus the average price of a tractor would be larger than the price of an Eicher 24-horsepower [an "average"?] tractor. To adjust for that, the estimated Eicher price series was multiplied by 1.66 [a number based on data showing the difference in prices for Escort tractors of various horsepower ratings in the early 1970's], producing a tractor price series which is consistent with both the movements of the price index and independent data on the prices of actual tractors. The resulting tractor price series was finally multiplied by one-fourth to derive an annual tractor cost variable [PTRACTOR]. The value of one-fourth, or 25%, represents both the depreciation and debt service on the investment, as well as the rate of return which is required for tractors to be bought in the first place. Thus the annual tractor cost variable represents a sort of shadow rental cost of a tractor, in the appropriate flow form.

The data set contains three bullock prices, reflecting the physical differences in bullocks in different parts of India. Each price series is based on retail price indices reported in various issues of Agricultural Prices in India, published by the Directorate of Economics and Statistics, in which bullocks are identified by state (e.g., Bihar, Gujarat, Haryana, and Uttar Pradesh). The so-called Haryana price was applied to bullocks in Haryana and Punjab; the Gujarat price was applied to bullocks in Gujarat, and the more prevalent Uttar Pradesh price was applied to bullocks in all other states. Rental fees for bullocks are very difficult to obtain. The annual bullock cost variable [PBULLOCK] was obtained by multiplying each bullock price by 0.50, representing both the substantial annual flow of expenses entailed in breeding, raising and feeding bullocks, as well as the necessary rate of return on their ownership.

In closing the discussion of the variable inputs, it is interesting to note that the values of these prices and quantities are "realistic" in the sense that they imply input cost shares which are consistent with the range of cost shares obtained in earlier research.

IV. Other ("Z") Inputs

The data set contains additional "inputs" which cannot be considered to be subject to the control of farmers in the short run. Some of this class of inputs, such as rainfall, are for all practical purposes beyond the influence of any human agency. And some, such as certain forms of irrigation, and perhaps literacy, can be influenced by farmers' decisions and behavior only over a substantially long period of time. Others, such as research and extension, are in part the result of governmental decisions, possibly in response to a diffuse and highly-lagged "demand" from farmers which is as much political as economic. Although not variable in the traditional sense, these "other" inputs do significantly influence agricultural output and productivity.

These "other" inputs can be classified as members of three sub-groups: Agro-climatic, Public, and Socio-economic.

A. Agro-climatic inputs:

The inputs which are classified as agro-climatic pertain to the most basic agricultural inputs: soil and water. Two of them measure the use of land: Gross Cropped Area [GCA] and Net Cropped Area [NCA]. Net Cropped Area is the total geographic area on which a crop has been planted at least once during the year. Gross Cropped Area is the total area planted to crops during all the growing seasons of the year; if any land has been double-cropped it will appear only once in Net Cropped Area, but twice in Gross Cropped Area. Both GCA and NCA are measured in units of 1000 hectares.

Water is supplied in two forms: naturally, as Rainfall, and artificially, as irrigation. Data relating to irrigation are reported in several forms: area irrigated by source (e.g., by canal or tank or tubewell), area irrigated under certain crops, or total areas irrigated. The data set includes two variables in the latter form: Net Irrigated Area [NIA] measures the total geographic area which has received irrigation (from any source) during the year, and Gross Irrigated Area [GIA] measures the total area under crops which has received irrigation during each of the growing seasons of the year. As was true for NCA and GCA, if any irrigated land has been double-cropped it will appear only once in Net Irrigated Area, but twice in Gross Irrigated Area; again, the variables are measured in units of 1000 hectares.

Estimates of Gross and Net Cropped Area, and of Gross and Net Irrigated Area, are available from the annual Indian Agricultural Statistics which are published in two volumes: Volume I presents All-India and State-wide data, while Volume II contains District-wide data. This data is also available in most states' Crop and Season Reports and Statistical Abstracts, and has been published in the Agricultural Situation in India since the early 1980's.

Two additional variables have been computed, converting NCA and NIA into measurements in units of acres, rather than in units of 1000 hectares. They are, respectively, QLAND and QIRR.

The data set includes two land price variables: the price of all arable land [PNCA] and the price of irrigated land [PNIA]. The prices are reported in terms of Rupees per acre; thus the transformations noted above creating QLAND and QIRR. Both PNCA and PNIA are based on estimates of land prices as of June, 1971, which were reported by R. P. Pathak in The Journal of Income and Wealth (5:153-166, # 2, July 1981). The 1971 values were extended to earlier and later years on the basis of movements in the index number of prices of all agricultural outputs, and converted into an annual flow variable which can be interpreted as a rental rate.

Rainfall is measured every month in most districts in India at so-called "meteorological observatories" established by the India Meteorological Department. The district data are aggregated into approximately three dozen so-called "sub-divisions", which range from parts of a State (such as Coastal Karnataka, North Interior Karnataka and South Interior Karnataka) to an entire State (such as Orissa or Punjab). The monthly sub-divisional data are then published in a number of sources, including Agricultural Situation in India. Annual sub-divisional data are reprinted in many sources, most conveniently in Fertilizer Statistics. District-level (that is, non-aggregated) data are also published in some states' Crop and Season Reports, Statistical Abstracts, and in some specialized meteorological publications such as the occasional Climatological Tables of Observatories in India; a number of states augment the India Meteorological Department's data collection (and publication) with data collected by their own means.

The data set contains four rainfall variables. The first, YEARRAIN, is the total rainfall in the given year: it is the sum of the rainfall in each of the twelve months. The other three rainfall variables measure rainfall in only one or a few months, at periods crucial to crop production: rainfall in June, at the beginning of the monsoon [JUNERAIN], in July and August, during the remainder of the monsoon in most parts of India [JLAGRAIN], and rainfall in September through December [AUTMRAIN].

B. Public Sector Inputs:

The public sector provides physical infrastructure which facilitates agricultural production. Some of the infrastructure helps to transport inputs (and information) to the farm and outputs to market: the variable ROADS measures the length of paved (sometimes classified as "surfaced" or "metalled") roads in the district divided by the district's Gross Cropped Area, and is thus a measure of the accessibility of the district's farms. Road lengths are reported in a number of publications; the Ministry of Shipping and Transport's Basic Road Statistics and the various state Statistical Abstracts are often the most convenient sources for district-level data, but state-wide data are easily available in many sources.

The Government has established (and continues to oversee) a number of Regulated Markets throughout India, which offer several advantages including standardized weights and measures, freedom from the potentially-monopolistic behavior of local traders, and easier access to modern inputs. The variable MARKETS measures the number of Regulated Markets in each district: state-wide data are published in the Bulletin on Food Statistics; district-level data were obtained by researchers in the Economics Group, Resource Management Program of ICRISAT from unpublished data at the Directorate of Marketing for 13 years between 1959/60 and 1984/85; district-level estimates for other years have been computed on the basis of changes in the corresponding state-wide series.

One of the most important inputs into agriculture provided by the public sector is research results, in the form of new seeds, or improved implement design, or improved management practices, or any number of other forms. Research activities are undertaken by all of the states as well as by numerous Central schemes and projects, focussing on practically every crop grown in India as well as many inputs and all of the basic agricultural sciences. The specification of a valid and appropriate research variable is difficult, for a number of familiar reasons. Budget data are seldom available in a form which allows the separation of the accounts of research units from their parent organizations; even the unsatisfactory budget data that exists is flawed in that it is seldom obvious how to separate the current from the capital, and the researchers from the other staff. Even if one could confidently measure staff and expenditures, it is difficult to measure research output, especially if one recognizes the problems posed by quality differences, the almost-stochastic nature of most research efforts, and well-known vintage issues.

In constructing the research variables for this data set, therefore, special efforts have been made to address those problems as fully as possible. The research variables are based on three sets of data. First is the indigenous State agricultural research expenditures series, covering the years 1953 through 1971, which was reported in R. Mohan, D. Jha and R. Evenson, "The Indian Agricultural Research System" Economic and Political Weekly (vol VIII, # 13, 31 March 1973). Second is a data set which contains the number of articles reporting research results which were abstracted in Indian Science Abstracts from 1950 through 1979. This data set provides crop-specific [for the crops wheat, rice, maize, jowar, bajra, cotton, sugar, for "other" crops, and for "general" agricultural research] and State-specific [including Delhi] data measuring the output of the research activity; the editorial authority exercised by the abstractors in imposing and enforcing quality thresholds for inclusion in the Indian Science Abstracts makes this set particularly useful. Third is recent state budget information regarding research spending, especially at the State Agricultural Universities during the late 1970's and the 1980's. These three were combined to create commodity-specific expenditures data series for each of the states from 1950 through 1983, multiplying each year's research expenditures by the ratio of the number of publications abstracted for that commodity in that state to the total number of commodity-level (that is, not "general") publications in the state. In addition, for each state a "general" expenditures data series was created by multiplying the year's research expenditures by the ratio of "general" abstracts to the total publications. [This procedure obviously uses the proportion of abstracted publications in each crop to allocate the total research effort, as measured by expenditures, among the various commodities.]

For each state and each commodity a research "stock" variable was then defined by cumulating past research activity utilizing several patterns of time-shape "inverted V" weights as first used in Evenson (1968). The inverted V has three regions. The first, sloping upward, refers to the number of years between the first appearance of the research result and its full effect, during which the research outcome has successively-greater impact. In this region more-recent results are multiplied by smaller fractions, while moderately-distant results are multiplied by larger fractions, until at the top of the upward-sloping region the weights become one. The second region, a horizontal plateau, refers to the number of years during which the research output can continue to contribute at "full strength", during which time the weights remain equal to one. The third region, sloping downward, represents a sort of "decay" in the research contribution, due perhaps to biological changes or merely being supplanted by later, superior discoveries. In this region earlier (that is, more distant in the past) research contributions are multiplied by successively-smaller weights.

522

The data set contains six measures of public research, which differ in the time pattern of the three sets of weights. The table below lists the six state-wide crop research variables, followed by the number of years specified in their upward-sloping, horizontal and downward-sloping regions, respectively:

STRES1	3	3	3
STRES2	3	3	6
STRES3	3	6	6
STRES4	6	6	6
STRES5	9	9	9
STRES6	6	9	9

[In order not to lose early observations because of the lengthy lag structure, research activity in years prior to 1950 was set equal to one half of the activity in 1950.]

Finally, each of the STRES variables was weighted by the share of the crop in the total value of output, summed across districts, and by the Gross Cropped Area planted to that crop in the state.

The data set also includes a variable measuring private research activity [PRIVRES], which has increased in importance markedly during the past two decades. This variable is based on data collected by Prof. Carl Pray, measuring research spending by private firms in the seed, fertilizer and machinery industries. From this expenditure data three research stock variables were constructed using a linear five-year lag structure with no decay. The stock was defined as one-fifth of the previous year's spending plus two-fifths of the spending two years ago plus three-fifths of the spending three years ago plus four-fifths of the spending four years ago plus the sum of all spending five years ago and earlier. The lag structure obviously reflects the time required for a research program to produce economically meaningful results: from inception of spending to invention to innovation to manufacture to marketing to full diffusion.

From the three input-specific private research stocks was then created the variable PRIVRES, measuring the local contribution (or potential) of this private research knowledge within each district, by adding the year's stock of seed research multiplied by the district's input share of land, plus the year's stock of fertilizer research multiplied by the district's input share of fertilizer, plus the year's stock of machinery research multiplied by the district's input share of bullocks and tractors.

The extension variable [EXT] is based on three sets of information. The first is data measuring the size of the extension service staff in 1975, 1980, 1983 and 1986 in each state, based on surveys by the World Bank. The second is the number of villages in each state. And the third is data published in various years'

annual Reports of the Department of Community Development of the Ministry of Agriculture [during some years the Ministry of Food, Agriculture, Community Development and Cooperation], covering the years 1955 through 1972, which report the number of Community Development Blocks in each state which were classified as Stage I, Stage II or Stage III. A Stage III block (strictly speaking, the blocks were called "post-Stage II") is the most advanced, not only denoting more contemporary extension activity but also resulting from the success of past and current extension activity. The expectation was that a block would remain in Stage I for about five years, and in Stage II for another five years, so to some extent the variability in Stages reflects the staggered onset of extension activity in the various blocks. (By the middle 1970's practically 100% of all blocks had progressed beyond Stage II.)

The staffing data were interpolated to obtain estimates for the years 1976 through 1979, 1981 and 1982. Then the staffing data were divided by the number of villages (in units of hundreds) to obtain a measure of the number of extension workers per hundred villages, interpreted as an indicator of extension presence. This variable was then extended backward, from 1975 to 1956, as follows: First, the Stage data were combined into a single weighted variable by multiplying the number of Stage I blocks by two-fifths, adding the number of Stage II blocks multiplied by four-fifths, adding the number of Stage III blocks, and dividing the final sum by the total number of blocks. (The coefficients 0.4 and 0.8 are admittedly a bit arbitrary; they were chosen to reflect the lower intensity of extension activity in the earlier Stages.) The resulting quotient is necessarily a positive fraction, which can be interpreted as the degree to which the extension effort has reached the norm.

Under the assumption that the extension effort had reached the norm by 1975, the weighted Stage variable would equal one for 1975 (because all blocks are assumed to have reached Stage III, the numerator contains only one term, the number of Stage III blocks, and the denominator equals the numerator, since all the blocks are in Stage III) and the 1975 staffing level can be taken to represent the "normal" staffing. Thus for years before 1975 the estimated extension variable is computed as the product of the 1975 staffing levels times the weighted Stage coefficient, interpreted as the level of staffing which would prevail at the particular "sub-norm" level of extension activity which the pattern of Stages discloses.

C. Socio-Economic Inputs:

The variable LITERACY, obtained from the decennial population census, measures the proportion of rural males who are classified as literate, which is defined as "the ability to read and write in any language". Census enumerators, beginning with the 1971 Census, were required to observe each individual's ability to read and write before classifying him or her to be literate. As is true for all census variables, values for the inter-censal years were obtained by linear interpolation. Literacy rates change so slowly and so regularly that this procedure seems amply justified.

54

V. Productivity Measures

Simple yield measures (output divided by Gross Cropped Area) have been computed for the five major crops, as well as for cotton, sugar, and "pulses" [PULSES: GRAM plus OPULS]. These variables are denoted by the letter Y followed by the crop code. In addition, index numbers of each of the yield variables have been computed, denoted by the letters YI followed by abbreviated crop codes.

Finally, Fischer's Chained index numbers, using 1956 values as the base and thus equal to one, have been computed for price and quantity aggregates of all outputs [PCROPS and QCROPS] and all variable inputs [PINPUT and QINPUT]; the ratio of QCROPS to QINPUT, called OUT_IN, is a measure of Total Factor Productivity.

AGRICULTURAL MARKETING IMPROVEMENT STRATEGIES PROJECT

Under contract to the Agency for International Development, Bureau for Science and Technology, Office of Rural Development
Project Office 4250 Connecticut Avenue, N.W., Suite 500, Washington, D.C. 20008 • Telephone: (202) 362-2800 • Telex: 312636

ENCOURAGING AGRIBUSINESS DEVELOPMENT IN ASIA AND THE NEAR EAST

FEBRUARY 1989

Prime Contractor: Abt Associates Inc., 4250 Connecticut Avenue, N.W., Suite 500, Washington, DC 20008 • (202) 362-2800

Subcontractor: Postharvest Institute for Perishables, University of Idaho, Moscow, Idaho 83843 • (208) 885-6791

Deloitte Haskins & Sells, 1001 Pennsylvania Avenue, N.W., Suite 350, Washington, DC 20004 • (202) 879-5600

506

**ENCOURAGING AGRIBUSINESS DEVELOPMENT IN
ASIA AND THE NEAR EAST**

Mark D. Newman
Director, International Trade & Agribusiness Research
Abt Associates, Inc.
4250 Connecticut Avenue N.W. Suite 500
Washington, D.C. 20008
U.S.A.

DRAFT
February 18, 1989

For Presentation at
Agriculture and Rural Development Officers (ARDO) Conference
Rabat, Morocco
February 20-25, 1989

Asia Near East Bureau
Office of Technical Resources
Agriculture and Rural Development Division
Agency for International Development

This presentation includes contributions from Richard Abbott of the Postharvest Institute for Perishables; Liana Neff, Joanne Yeager, Merle Menegay of Abt Associates, and David Hughes, and Jim Brown of Deloitte, Haskins + Sells through a buy-in to the Agricultural Marketing Improvement Strategies (AMIS) Project.

**ENCOURAGING AGRIBUSINESS DEVELOPMENT IN
ASIA AND THE NEAR EAST**

Mark D. Newman

ABSTRACT

Agribusiness offers important potential as a contributor to AID's objectives of economic growth and rural income and employment in the countries of Asia and the Near East (ANE). Agro-Processing Development, Trade and Market Development are ranked as high priorities in the ANE Bureau's Strategy for the 1990's. This presentation offers a systems perspective on agribusiness and identifies seven critical areas of attention for programs aimed at fostering agribusiness growth. These include: A regulatory climate conducive to investment; markets for potential products; infrastructure and maintenance; technology and agribusiness scale; labor and human capital; finance; and raw materials. Experience of AID, the World Bank and private agribusinesses are discussed. The presentation raises some issues for reflection and discussion, including "Ten Lessons for Planning an ANE Agribusiness Strategy."

1.0 Introduction

This presentation has three objectives:

- 1) Explain Agribusiness in the context of the Agency for International Development (AID) Asia - Near East Bureau's (ANE) strategy proposals, and provide some preliminary observations on what it takes to make agribusiness work, with examples of donor projects and programs, and private agribusiness experience;
- 2) Discuss the range of AID agribusiness development and support activities from which Agriculture and Rural Development Officers (ARDOs) can choose, what the Agricultural Marketing Improvement Strategies (AMIS) Project Agribusiness Strategy Study is doing to evaluate them; and identify insights we hope to gain from the experience of people attending the conference; and
- 3) Suggest some major issues for discussion related to agribusiness strategy and ARDO's role, including "Ten Lessons for Planning an ANE Agribusiness Strategy."

1.1 What is Agribusiness? A Food System Perspective.

Agribusiness involves the chain from input producer/suppliers, through producers, assemblers, processors, distributors to consumers, as well as financial, regulatory, research and development and related services, such as transportation and storage, that facilitate their activities. In general, ARDO's have the most experience in working with one component of agribusiness in the food system: the entrepreneurial producers who participate in the market. In addition, ARDO's have varying degrees of experience with input producers, suppliers, agricultural credit, commodity imports, marketing and policy analysis, and off-farm employment.

The success of past AID projects in increasing crop production in the ANE region is in part a reflection on ADO understanding of complex production systems, permitting the design of technological packages and extension programs that will increase yields and production, and also be adopted. Likewise, an understanding of the broader agribusiness system is critical to AID's ability to assure that there are markets for what is produced, and there are incentives for private capital to invest in rural employment generating agro-processing and distribution activities.

Our focus in the current study is on useful lessons contributing to AID's ANE strategy with special emphasis on input distribution, processing, marketing and distribution.

1.2 Why look at agribusiness?

Everyone here can probably cite examples of projects aimed at increasing production of an agricultural commodity where the technical conditions for success appeared to be met, but nothing happened.

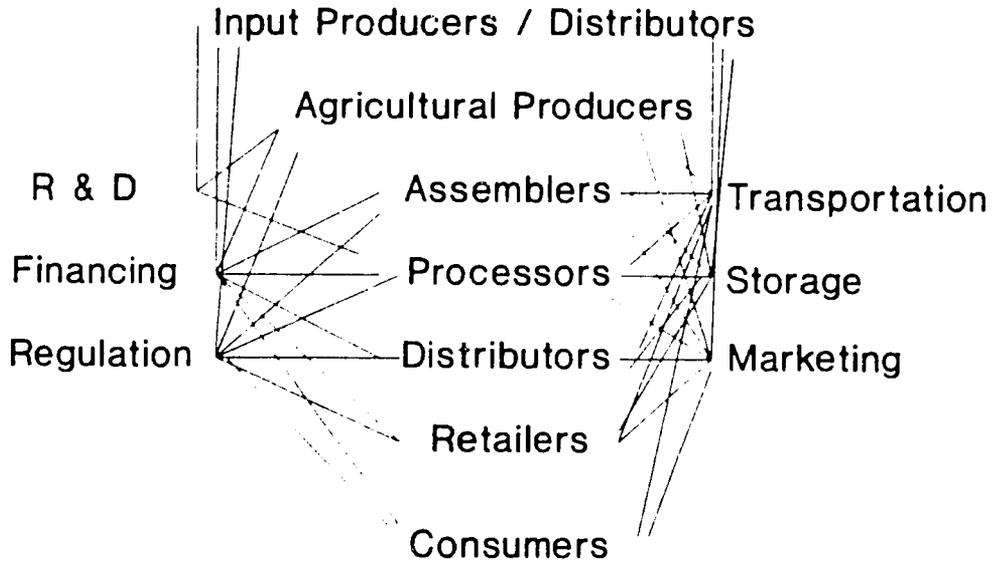
Sometimes the availability of seeds, fertilizer or chemicals at appropriate times can be blamed. Sometimes a remunerative market outlet for the product didn't exist. Often, fear that these activities, left to the invisible hand of the market, would be botched, or lead to exploitation of farmers by middlemen, lead to the creation of a costly parastatal that botched things on its own - seeds or fertilizer too late to plant; or offers to take products from producers with "trust me" as the short term substitute for payment. These and other factors are behind current donor emphasis on developing a public sector / private sector partnership for agricultural development.

AID's overall strategy for agribusiness includes privatization of state owned enterprises (SOEs) as well as private sector development through financial and technical assistance for growing and processing food and other agricultural commodities.

Agribusiness, as distinct from business in general, offers certain unique opportunities and challenges as a component of an economic development strategy:

AGRIBUSINESS

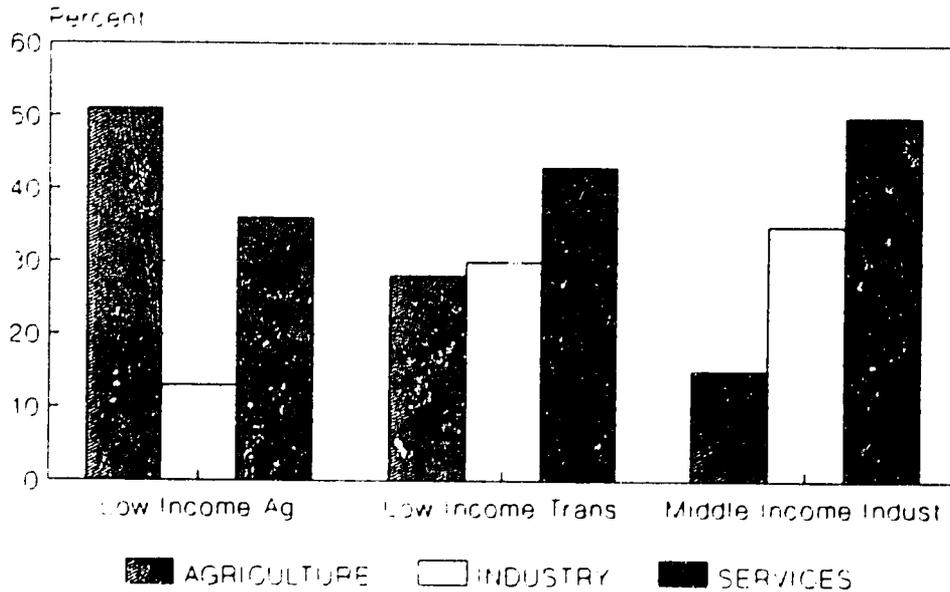
A Food System Perspective



Abt Associates Chart

Figure 1. Agribusiness: A Food System Perspective

Agriculture, Industry and Services in ANE Gross Domestic Product (1985)



Source: BRD

Figure 2. Composition of GDP by Level of Development

Among the opportunities:

- o Agribusiness lends itself to decentralization, moving jobs and other income generating opportunities toward rural areas. It can slow the massive migration to and growth pressure on urban areas.
- o While production agriculture may shrink as a share of employment and GNP as countries grow, the importance of industry, including upstream and downstream agribusiness is likely to increase (see Figure 2). As incomes increase, and demand for more processed products increases, local agribusiness processing industries can provide import substituting products, while creating jobs and other economic benefits - contributing to small scale transportation, distribution and related enterprises.
- o Linkages between specific projects and the rest of the local economy can lead to important multiplier effects on growth of the country concerned.

The challenges arise from:

- o The need for a policy environment conducive to investment;
- o New demands on infrastructure, human and financial capacity that influence the economic interest of entrepreneurs in a given project or region; and
- o The need to structure incentives and in some cases provide for public programs that contribute to broad distribution of the benefits of investment and growth.

Agricultural processing industries require access to roads, electricity and water supplies, waste disposal facilities, transportation, communications, health care and educational facilities. Entrepreneurs must evaluate costs associated with securing such facilities and services, as well as risks associated with uncertain supplies or quality. They are less likely to find investment in a particular project attractive when more certain alternatives are available.

Countries around the world sometimes offset disadvantages caused by inadequate infrastructure with easy financing, advantageous tax treatment of earnings and investment, favorable tariff treatment of imported inputs and exports, and a variety of other mechanisms. AID has contributed over the last several decades with project assistance that addressed specific portions of this package. ARDOs face the challenge of how best to apply the limited resources at their disposal to meet this challenge.

The ANE region has most of the world's poor. While a rising tide makes it easier for all boats to float, and overall growth may make it easier to improve the well being of the poorest in the ANE region, not all boats are equally buoyant, so not all benefit from economic growth.

The challenge for AID's programs in the 1990's is to promote a public / private partnership that can stimulate economic growth and investment while structuring

incentives, and in some cases, contributing directly to the development of marketable skills and other factors that will permit the benefits of growth to be broadly distributed.

1.3 Agribusiness in ANE's Strategy Statement

ANE Bureau's "Rural Economic Growth Strategy for the 1990's," summarized in Appendix 1, proposes that AID programs in the region reflect countries' level of economic development. Different priorities are presented for Low Income Agricultural Economies (Bangladesh, Burma and Nepal); Low Income Transitional Economies (Egypt, India, Indonesia, Morocco, Pakistan, Philippines, Sri Lanka and Yemen); and Middle Income Industrializing Economies (Jordan, Oman, Thailand and Tunisia).

The strategy paper ranks priorities for AID development interventions as:

1. Increased Staple Cereal Production
2. Agro-Processing Development
3. Trade and Market Development
4. Human Capital Development
5. Infrastructure Planning and Management
6. Agricultural Policy and Planning
7. Natural Resource Management
8. Institutional Development
9. Agricultural Input Supply
10. Capital Market Development

Detailed presentations of possible programs by economic grouping are provided. Discussions of "Trade and Development" and "Agro-Processing Development" of greatest interest for the current study are summarized in appendix 1.

As pointed out in the strategy document, agribusiness sophistication varies as one moves across the ANE region in geographic or economic terms. Each country and geographic subregion has unique conditions and requirements to consider. Likewise, levels of development and income affect options and opportunities. Thus, it is appropriate that AID's strategies and priorities take these variations into account.

Some useful lessons can be drawn from experience in individual economic subgroups. At the same time, as one moves from a Seed Production and Export project in the Low Income Agricultural Economy of Nepal to a study of Wine Export Prospects for the Middle Income Industrializing Economy of Tunisia, many aspects of issues surrounding identification of market niches, processing and packaging are similar, so that despite important differences, some factors will be of general value.

1.4 The AMIS Agribusiness Strategy Study

This presentation is based on preliminary results of applied research to identify and rank the most appropriate interventions to support private sector agribusiness development in ANE countries.

Under an agreement effective January 17 and continuing through August, 1989, the AMIS project will assemble and analyze information on experiences and lessons learned from public and private agribusiness development activities and projects in ANE countries, including AID and World Bank projects. The study's terms of reference are included in Appendix 2.

During the course of this conference we hope to receive extensive input from AID missions. We have been asked to use the results to contribute to the development of an ANE agribusiness development strategy, and to identify resources that may be useful in implementing the strategy. A report is to be produced in August.

Progress to Date

To date, we have made progress on three fronts:

AID policy, program and project review. We have had AID's Center for Development Information and Evaluation (CDIE) conduct a search of projects, reports, and other literature with potential agribusiness content in ANE countries. We have reviewed centrally funded projects in S&T and PRE. We have assembled a broad range of project papers, evaluation reports, and case study documents. We also sent a cable to all missions, and contributed to the ANE newsletter. Table 1 presents a summary of our findings on the types of AID projects supporting agribusiness in the region since 1980.

World Bank contacts. A member of our team, the former World Bank agroindustry adviser has provided insights into findings of a review of the World Bank's agroindustry portfolio, summarized in table 2. We have also benefitted from access to a 1988 analysis of World Bank experience in Agricultural Marketing. Additional contacts are being developed for insights into current World Bank activities with respect to Agribusiness.

Agribusiness contacts. On the basis of our own network of agribusiness contacts in the U.S. and internationally, as well as written material, contacts with AID missions, and miscellaneous other contacts, we have begun the process of developing case studies of agribusiness experience in ANE countries. To date, we have partial information on about 25 companies involved in input production and distribution, production and processing. Some firms operate wholly owned operations, others are involved in joint ventures, licensing and franchising arrangements. Findings are summarized in Tables 3 - 6.

Getting Insights from ARDOs

Our initial review of projects, documentation and evaluation provides a first perspective on AID experience. Available resources will not permit visits and interviews in all of the 15 ANE countries. A cable was sent to individual missions, asking for assistance identifying agribusiness ventures worthy of further investigation. This conference is to serve as an important vehicle for collecting information on individual ARDO perspectives and experiences. We can use help in three areas:

- 1) Specific insights into AID or other donor experience with agribusiness, especially your analysis of what worked, what didn't and why. On a country specific basis, is the information we have collected correct? Are there omissions?
- 2) Suggestions for follow up contacts within AID, and with agribusinesses in the U.S., ANE countries, and elsewhere, that can provide us with insights into how to make AID agribusiness projects and interventions most effective
- 3) Overall comments on what ARDO's can and should be doing as priorities in the agribusiness area. Observations on how ARDO's work with others in AID and other U.S. agencies and agribusiness groups. What opportunities for cooperation should be explored? Who can best do what?.

2.0 What does it take to foster Agribusiness?

A view of the entire agribusiness system is critical to understanding the components that will lead to successful interventions to support and promote agribusiness in ANE countries. Every AID activity cannot address all elements of the system, but a mental picture of the system can help the person in charge of a country strategy assure that the essential components are brought together successfully.

The presentation that follows includes an overview of essential considerations and selected experience gleaned from reviews of activities of the World Bank, AID and private firms. Critical components required to encourage agribusiness include: a regulatory climate conducive to investment; markets for potential products; infrastructure and maintenance; technology and agribusiness scale; labor and human capital; finance; and raw materials.

o **A regulatory climate conducive to investment**

AID's focus on policy dialogue with host countries indicates recognition of its importance. A broad range of policies affect the incentives to mobilize private investment, including: regulation of who is permitted to operate in markets, restrictions on transportation of agricultural and food products, regulations of prices and margins, grades and standards encouraging product quality, laws governing salaries and employment, exchange rates, tax and tariff treatment of imports and exports, which affect inputs, competing products and outputs; tax treatment of profits, rules governing ownership and repatriation of capital investment and earnings, and arbitration procedures.

Monitoring procedures and regulatory controls of agribusiness activities will be required to satisfy government authorities that they can control fraud and avoid exploitation of agricultural producers, government or consumers. Anti-trust laws may have to be examined.

World Bank structural adjustment lending programs have increasingly made reform of regulations affecting incentives for private investment a major condition for

loans. Pricing and incentives have been major factors in loans to Morocco and Tunisia, for example.

USAID projects and programs throughout the region are directed at aspects of policy reform: deregulating the agricultural sector in Egypt, contributing to conditions conducive to expanding and diversifying the agricultural sector in Indonesia, revising the investment code in Tunisia, removing licensing constraints in Jordan, and removing fertilizer subsidies in Pakistan.

Corporate experience with regulations in ANE regions is mixed. Certain barriers are genuine impediments to investment, and companies could work with AID or its analysts to identify options for improving them. At the same time, it is clear that once they understand the system, some firms gain competitive advantage from being among the few that are able to operate successfully.

Our survey of AIDs ANE and centrally funded projects since 1980, summarized in Table 1, identified 33 projects with components directed at improving the investment climate for the private sector, 24 projects with investment promotion components, and 63 projects aimed at improving analytical capacity, some of which are directed at improving host governments' ability to evaluate the potential impact of alternative regulatory reforms.

In its pursuit of regulatory reform, AID has achieved gains from coordination of efforts with other donors and financial institutions. While some missions are more successful in this respect than others, AIDs resource limitations make it important to achieve leverage where possible. Coordination can also help ARDO's to stay abreast of policy analysis and initiatives of other donors.

o Markets

Agribusiness is generally approached initially as a mechanism for finding outlets for what is being produced, or for what a project plans to produce. Often it would be more productive to begin with the consumer. What does the market want in terms of products, quality, timing? Who are the competitors? What kinds of developments are likely to influence market opportunities over the first several years that a project comes on line?

Where a range of production possibilities exists, attention to market research can avoid major headaches. Options that can be examined include processing for import substitution, outlets for new products in domestic and regional markets, and broader export opportunities in a range of developed country markets.

Sometimes product choice revolves around varietal choices for specific market niches or processing characteristics. Other choices are more dramatic:

Will the European Community market for fresh or processed fruits and vegetables remain a viable option for exporters in ANE countries once Spain is fully integrated into the EC in 1991 and the single European market of 1992 arrives?

Will agreements in the Uruguay Round of GATT negotiations effectively eliminate markets for such feed ingredients as manioc? Will other market

513

opportunities be opened or closed by the negotiations? Should individual ANE countries be taking a more active role, or at least evaluating their self-interest?

Will export crop promotion projects of development assistance agencies result in 23 countries flooding a single market with green beans in a single week?

These types of questions are critical to evaluating the potential success of an agribusiness project.

It is currently in vogue to focus marketing analyses on export market prospects, especially opportunities for exports to North America and Europe. These potentially lucrative markets offer consumers with large incomes and opportunities to earn foreign exchange. They are also highly competitive, very costly to enter with new products, and as such, very risky for a new venture seeking to develop an outlet for fresh produce or a branded product. Nontariff trade barriers (NTBs) must also be investigated early in the market research process.

If regular supplies cannot be guaranteed to marketers over a long period of time, there will be little interest in the kind of promotional expenditures required to launch a new product. For fresh products, brokers and wholesalers may only be willing to fill in after marketing for their regular clients. Among the alternatives that should be considered initially for such markets is to link up as a supplier to a firm with a well established branded presence in a given market.

Regional and domestic markets for fresh and processed agricultural products should not be overlooked in the market research process. Where the distance to market is short, the ability to evaluate progress is increased, and the risks involved in making mistakes reduced. While foreign exchange considerations may suggest pursuit of certain markets, and potential multinational involvement may focus on specific export markets, some ventures will find that the opportunities for success lie closer to home.

At one time it was standard for donor and financial agencies to assume that if production could be achieved, markets would take care of themselves. A review of recent experience indicates that this is no longer the case.

Of 960 agro-industry components of World Bank projects worldwide during 1972-83, 169 components focused on markets - export markets, domestic markets, instability of production as it affects markets, and market research.

AID has had 63 projects since 1980 with components aimed at improving analytical capacity in countries throughout the ANE region, with some specifically focussing on markets. For example, joint U.S. - India research on agricultural processing and pollutants; Studies of the business climate in Egypt, and marketing studies focusing on export markets for Jordan and Tunisia.

Overall, our survey identified 14 ANE and centrally funded projects that focus on agricultural markets. Some of these, such as the centrally funded

Agricultural Marketing Improvement Strategies (AMIS) Project under which the current study is being conducted, involve buy-ins with multi-country operations.

o Infrastructure and Maintenance

As noted above, public investments in improved infrastructure can lower costs to private market participants. As a result, activities that would not be profitable without such infrastructure attract investments of private capital. Over the last several decades AID and other donors and financial institutions have provided support to countries of the ANE region for infrastructure development such as roads, public utilities, transportation systems, warehouses and storage facilities, health and educational service facilities.

Although infrastructure development appears to be declining in importance overall, AID is financing feeder road maintenance and improvement in Bangladesh, and a variety of irrigation projects.

While major strides have been made, the job is not completed. Where satisfactory infrastructure has been developed, maintenance and upkeep are often an issue. An evaluation of World Bank agribusiness projects found that unreliable power supplies, leading to brown-outs and requiring costly investments in auxiliary generators, were the most commonly identified problem in this area, followed by inadequate water supplies and waste disposal facilities.

One U.S. agribusiness interviewed, indicated that it routinely assumes that it will have to cover the costs of power generation and water supply when it evaluates projects in the region. In general, U.S. agribusiness takes a conservative approach to investment in agribusiness in LDCs. They are generally unwilling to get involved in projects which involve infrastructure investment. Exceptions are the US fruit companies, which are involved in some activities in conjunction with AID in the Philippines to promote such activities as improved water management for shrimp production, erosion control and health and educational facilities improvement.

Of the AID projects in ANE countries directed at agribusiness, only 11 involved infrastructure development. Other projects aimed at infrastructure alone probably show up separately. If AID is decreasing its direct investment in infrastructure, it should not be assumed that infrastructure problems no longer exist. The ability of ANE countries to mobilize private capital for agribusiness investment will be strongly influenced by available infrastructure, and required costs of bringing it to acceptable levels. Identification of innovative ways to stimulate investment in infrastructure may be an alternative where AID's ability to finance directly is limited.

o Technology and Agribusiness Scale

When is technology "appropriate?" Evaluation of World Bank financed projects through 1985 concluded that most were overly ambitious in terms of scale and sophistication of required skill levels relative to the available work force. Local repairs, maintenance and spare parts availability must all be addressed if a project is to succeed.

As one looks at the mix of micro enterprise and agro-industrial promotion in a country's agribusiness development strategy, it is essential to think back to the issue of markets. Excess sophistication is counterproductive. At the same time, product quality and presentation will be critical, whether the market targeted is import substituting, responding to new demand, or an export market. When small and medium scale enterprise development is the goal, it need not necessarily imply use of primitive technology. For example, AID financed work on low-cost extrusion cookers has led to a joint venture in Sri Lanka that produces supplementary infant foods, primarily from local agricultural products.

Where state-owned enterprises are in the process of privatization, as is the case in several ANE countries, AID may be able to stimulate the development of joint ventures, especially where major processing facilities could benefit from the technology and marketing expertise of a foreign partner.

AID can also usefully support trade linkages between local and foreign agribusiness firms which involve some transfer of technology. These links can grow into joint investments and guaranteed export markets for local firms.

Partnerships involving a mix of small medium and large scale enterprises can be developed, but will require skillful analysis and structuring of incentives if they are to succeed. An example based on one of the companies interviewed provides a useful illustration.

A U.S. company, lets call it PNB, Inc., has a joint venture in the Philippines to produce canned pork and beans. Under an arrangement with the previous government, tariffs are low and imported beans are used. The product is sold on the domestic market.

In order for a processing plant to operate efficiently, a regular supply of raw materials, in this case, beans, is required. While beans could be produced, dried and sorted in the Philippines, the U.S. and local partners find it simple and cost effective enough to continue to import. Assuring a quality local supply would require production credit, extension services, research on varieties and the development of drying, sorting and grading facilities, etc.

As a result of the ability to import, and control its supply of raw materials, PNB invested in a modern facility. Yet, there are apparently no incentives for it to develop its own local supply. If, however, tariff concessions had been provided initially with the proviso that they would gradually be phased out, the investment might have been made, but there might have been further interest in working with local small and medium enterprises to develop local supply capacity.

Considerable care must be taken in structuring the incentives to invest so that efforts to achieve development objectives, such as small scale enterprise development, don't eliminate the incentives for the initial investment.

It cannot be assumed that because a processing facility is built, local supplies will develop to keep it running. A U.S. firm built a modern tomato paste

facility for a local firm in the Philippines several years ago, but it has never operated. Many U.S. agribusinesses have little or no experience with operations in third world economies, and are unwilling to take much risk. Large fruit companies that have succeeded often develop self-contained, enclave operations that are totally vertically integrated, or at least involve vertical contracting arrangements.

There are ways that foreign firms can operate other than bricks and mortar. One firm interviewed provides technology for poultry production on a franchise basis. Franchisees pay for everything with a letter of credit, so there is little or no risk, but technology is transferred. Operations such as this may be supported by revolving funds and credit guarantee programs.

In addition to continuing work with trade and investment promotion organizations in ANE countries ARDOs may want to encourage U. S. and other foreign companies to take a more aggressive approach by networking with selected firms and associations in the U.S. Contacts with the U.S. agribusiness community under this project should point the way by learning more about how AID could act as catalyst in promoting joint investments with local investors in the ANE region.

o Labor and Human Capital

Availability of reliable skilled and unskilled employees, as well as local management personnel is critical to the success of agribusiness ventures. Private agribusinesses in ANE countries are often family owned, and where markets are opening up, these are often the middlemen who have operated on the fringe of legality. Taking on an expanded role will require that middle management be developed.

Where skilled labor is in short supply, agribusinesses may find that their trained employees have a broad range of opportunities, leading to turnover problems and increasing costs to the business. Options to reduce employee turnover, such as more attractive benefits, social services and Employee Stock Ownership Plans (ESOPs), can be considered, but must reflect productivity if the business is to remain competitive.

Rigidities in labor laws may encourage agribusinesses to be less efficient than possible, increasing costs and reducing the competitive position of its products. For example, flour mills in Tunisia would like to introduce mechanical bagging equipment. They would have difficulty because the government is unlikely to let them eliminate the jobs of people currently filling the bags. Retraining programs financed by AID and other donors could ease the transition of displaced low skill workers, and actually make the creation of additional jobs more attractive.

All AID Missions in the region have programs directed at improving analytical capacity. AID in the Philippines has proposed a rural development training program to provide skills and training for middle and senior level officials and private entrepreneurs. AID programs in Indonesia focus on human resource development, especially for management. AID's centrally funded Entrepreneurs

International program plans to bring entrepreneurs from eight ANE countries to the U.S. for training with U.S. agribusinesses and other firms.

Despite some experience, AID may find it easier to support training for a civil servant than an employee of a private firm. Where rigidities in labor laws make it difficult to encourage investment, a combination of efforts in regulatory reform and vocational training may be useful.

Projects in AID's S&T Bureau Employment and Enterprise Development Division are providing ANE countries with technical assistance in evaluating management and vocational training needs, some of which supports agribusiness.

o Finance

Financing is probably the most frequently cited constraint to agribusiness development. It definitely requires attention, but management shortcomings should not be confused with financial constraints.

Agribusiness financial requirements are often different than those of general industry. In many cases, dealing with parastatals has been much easier than will be financing a competitive private sector which will see profits and losses.

AID is making initiatives to facilitate investments in agribusiness through revolving fund credit, credit guarantees, promotion of debt for equity swaps, and other efforts at equity and capital market development. Debt-Equity swaps generally imply privatization of the assets of a parastatal, but that need not necessarily be the limit of their usefulness.

There are 19 ANE country projects and three centrally-funded ones identified that focus on capital markets or credit. A proposed AID grant to the Philippine Agribusiness Industrial Investment Company (PAIICO) would provide technical assistance and partial capitalization so that PAIICO could mobilize private capital to "turn around" financially distressed agribusinesses, invest in parastatals slated for privatization and new or existing agribusinesses. A grant to a Venture Capital fund to support small to medium sized enterprises in areas of high growth potential has been proposed for FY 1990. Other projects support rural financial services and credit in Egypt, Indonesia, Jordan, and Tunisia. There are projects to support stock exchanges in Sri Lanka and the Philippines.

Beyond availability of capital for initial investments, operating capital requirements, which often exhibit huge seasonal swings for processing operations, may require innovative approaches to financial institutions' lending. Where parastatals have had an almost open line of credit on the national treasury for agricultural purchases, private agribusiness probably cannot expect similar treatment.

Multinational trading firms sometimes extend a degree of financial flexibility to parastatal organizations in the certainty that the good faith of the national government means that they will eventually get paid. Where private firms take

over from a parastatal, the implicit government guarantee does not necessarily follow, making access to credit more difficult.

Training and risk reduction are two areas in which AID can facilitate agribusiness financing. Training that helps financial institutions to better understand how others handle the unique aspects of agribusiness lending as an economy becomes more market oriented could be a useful service. ARDOs that have been especially successful may want to share their experience with others in the region. AID programs that provide credit guarantees can also help to reduce the risk to financial institutions, encouraging them to increase their private agribusiness lending.

o **Agricultural Raw Materials**

Availability of agricultural products that meet requirements in terms of quantity, quality and seasonal availability has a major impact on the costs and potential returns of an agribusiness project. To assure that requirements are met, management of agribusiness projects may have to assume a role in research and extension activities, input supply, credit and assembly operations.

Of the agribusinesses studied thus far in our project, 16 percent conduct some sort of research, and 40 percent are involved in extension activities. Almost half attempt to assure supplies through some sort of mechanism: imports, integrated production - processing arrangements, or vertical linkages through contracts or other procedures. Contract farming, whereby an agribusiness firm provides inputs, extension services and guarantees prices can have the impact of mutual risk reduction.

Price incentives may be used to encourage deliveries early and late in the processing season, reducing required investment in capacity for peak processing periods and storage facilities. Research and extension services may encourage production of a range of products that can be processed at the same facilities, increasing initial investment requirements, but reducing the average cost per unit processed.

Innovative arrangements whereby entrepreneurs are assured supplies to operate their processing plants and local producers and small entrepreneurs are encouraged to share in the benefits of agribusiness represent an ideal combination of AID's development goals and entrepreneurs profit motives. Such arrangements can be developed through careful structuring of incentives. They may happen if left purely to chance. However, AID supported training and capacity development can improve the odds in this process.

ARDOs experience with a broad range of production projects can be an extremely valuable resource in working with agribusiness to assure that agricultural raw materials of required quantity and quality are available in a timely fashion. At the same time, working with agribusiness to assure supplies of other raw materials required for processing, such as tin plate, bottles or other containers, labels, etc. will represent new areas for ARDOs. An important consideration in planning a strategy is to figure out how much responsibility ARDOs want and are prepared to accept in these dimensions of agribusiness.

3.0 Some Preliminary Thoughts on Issues and Implications

Much World Bank and AID experience in support of agribusiness has actually involved working bilaterally through government and parastatal agencies. The World Bank reported this to be the case 97 percent of the time through 1983. This implies the need to develop new networks of contacts if there is to be a shift toward direct relations with private firms.

The importance of a systems perspective, even when addressing one or more component parts of the system, is important in improving one's ability to predict consequences of a given action.

A recent World Bank review of marketing activities has pointed to the specific marketing skills required. It argues that economics degrees are imperfect substitutes for marketing training, suggesting a combination of increased training and staff resources. While AID is often ahead of the World Bank in a number of strategic respects, some examination of staff training needs and desired may be useful.

3.1 Ten Lessons for Planning an ANE Agribusiness Strategy:

1. **Policy Reform is Critical** - Don't forget that a carrot is not necessarily a carrot - incentives differ between AID and host government - they also differ within AID.

The tendency among international donors and financial institutions is to be in a hurry for reforms to be adopted. In contrast, local officials may be quick to accept the general principle of benefits of policy reform, privatization and an increased role for private agribusiness. Agreement on the procedures to attain this end may take time, with considerable interest in protracted study of details and implications.

It is essential to recognize that individual incentives, and the costs of making a mistake, differ among the participants in a policy dialogue. Local officials may assume that the AID representative will be rewarded based on the amount of money distributed, so concessions on their side may be difficult to come by. At the same time, the risks of a failed change in policy are much lower for the AID representative, than for his or her local counterpart. Clear and unbiased analysis of potential implications - benefits, costs and risks of specific policy reforms - may be the best route to the kinds of reforms necessary to encourage private investment.

2. **Don't forget Domestic and Regional Markets** - U.S. and European markets offer many opportunities, they are also highly competitive and often protected by nontariff barriers. Getting "bugs" worked out close to home is often less costly than far away. AID can (and does) support market research and feasibility analyses that reflect this.

3. **A general strategy statement for a "region" as diverse as ANE can be a good starting point for planning.** The focus on planning by economic subgroups is likely to be useful as a guide. Don't forget objectives articulated through national government development plans and in other fora. Don't let project design teams pull you into the 1990's designer fashion in projects if it isn't what is needed. For example, the local ARDO, together with local institutions, may be best placed to evaluate whether a stock markets make sense.

4. **ARDOs aren't the only ones interested in Agribusiness.** Can ARDO's be in all lines of business? Corporate finance, venture capital? Figure out how to coordinate with and use others within AID, (PRE, for example), other U.S. government agencies, (Trade and Development Finance, OPIC, USDA, Commerce), others in the development business (World Bank, CIDA), and business organizations and development groups (Chambers of Commerce, etc.)

5. **As a bilateral donor, AID has more experience working with the private sector through governments than in dealing directly with private sector operators.** Another paper being presented will address the skill requirements implied by ANE's draft strategy. One of the objectives of this study is to identify information sources and networks that may be useful to ARDO's in developing a country agribusiness strategy. Two way training may also help - helping ARDOs deal with firms, and firms deal with AID. Regional or subregional specialists may be means to offset some of the short term skill and experience limitations.

6. **Development and Profit objectives don't automatically mesh.** Without careful analysis of incentives, agribusiness will contribute to AID's development objectives only by accident. Partnerships involving large, medium and small scale (micro) enterprises can be developed, but will require skillful analysis to make them work. Large investments will not be made if assurance of timely availability of quality inputs cannot be assured. Reinforcing recipient country capacity to analyze and structure incentives is important. This will require additional and different skills than AID is currently supporting through most policy projects, often with reinforcement of capacity in different parts of host governments.

7. **Finance, the most frequently cited constraint to agribusiness development requires attention, but management shortcomings should not be confused with financial constraints.** Agribusiness financial requirements are different than those of general industry. In many cases, dealing with parastatals has been much easier than will be financing a competitive private sector which will see profits and losses. Training and risk reduction are two areas in which AID can contribute.

8. **Labor and Human Capital development will present new challenges to AID.** Private agribusinesses in ANE countries are often family owned, and where markets are opening up, these are the middlemen who have operated on the fringe of legality. Taking on an expanded role will require that middle management be developed. AID may find it easier to support training for a civil servant than an employee of a private firm. AID support of vocational

and managerial training in support of agribusiness should receive renewed attention.

9. Infrastructure development, while a lower priority on AID's agenda, will still be critical to mobilization of private capital for agribusiness investments. While not all "public" services need to be provided by the state, capital investments will be required. If not financing directly, AID should consider innovative approaches to stimulate required investments.

10. Agribusiness partnerships between U.S. and local firms will not spring up overnight. Many of the relationships, joint ventures, licensing, franchising, distributorships have developed as a climate of mutual trust is developed. What begins as a marketing, distributorship arrangement in Europe or the U.S. may lead to capital investment. With AID personnel rotations, the need for a longer term, systems perspective is critical. He (or she) who starts the ball rolling may not be there to see it achieve its objective. At the same time shorter term achievements are possible.

3.2 Resources available to help ARDOs develop skills, contacts and initiatives in agribusiness

One of the objectives of the AMIS Agribusiness strategy study is to identify resources available to support ARDO efforts in the agribusiness area.

We are in the process of compiling a list of projects, including Centrally funded projects and IQCs that can be used to support specific mission requests.

Centrally funded projects often offer a range of information sources that can be useful to ARDO's at little or no cost. For example, studies of export market opportunities and local agribusiness ventures developed under the AMIS project. Studies of privatization under the Agricultural Policy Analysis Project (APAP), and studies beginning under the second phase of APAP on the potential implications of the Uruguay Round and European Community's 1992 for AID programming.

AMIS partners are making contacts with a range of agribusinesses in the U.S. and abroad as part of this study. As part of this process, we are identifying potential speakers, participants in roundtable discussions, etc. Through Deloitte, Haskins + Sells network of international consulting and auditing offices, and Abt Associates' Policy Projects we have the ability to obtain an entre to follow up analyses of specific opportunities and constraints on a country and line of business specific basis.

Table 1. USAID Interventions in Agribusiness in the ANE Region, 1980 to present*

SELECTED PROJECTS IN AGRIBUSINESS 1980 to Present	Number of Projects	Commodity Imports	Infra-structure Development	Privatization of State Run Enterprises	Off Farm Employment & Rural Enterprise	Small & Micro Enterprises	Development of Capital Markets	Private Sector Investment Climate/Policy Reform	Agricultural markets	Development of Analytical Capacity	Investment Promotion
LOW INCOME AGRICULTURAL ECONOMIES	13	23%	38%	15%	15%	8%	8%	8%	15%	54%	0%
LOW INCOME TRANSITIONAL ECONOMIES	44	7%	9%	14%	27%	23%	32%	30%	11%	59%	27%
MIDDLE-INCOME INDUSTRIALIZING COUNTRIES	18	6%	11%	22%	17%	28%	22%	56%	33%	72%	33%
CENTRALLY AND REGIONALLY FUNDED PROGRAMS	26	0%	0%	4%	8%	15%	12%	35%	4%	65%	23%
OVER ALL TOTAL	101	7%	11%	13%	19%	20%	22%	33%	14%	62%	24%

* There are cases where multiple interventions were entered for individual projects. Due to this fact, percentages do not add up to 100%.

** This is a preliminary survey of USAID project interventions related to Agribusiness.

Table 2. World Bank Experience in Agribusiness Lending

	Production	Transport	Storage	Processing (percent)	Marketing
Asia - Near East*	6.7	6.5	13.7	22.8	12.6
Total	14.6	11.1	27.5	41.6	29.7

*Components of loans approved by the World Bank 1972-83
Regional definition only approximates that used by USAID

**Percent of 960 total components, data add to more than 100%
because two activities listed for 243 components

Source: derived from J. Brown. Review of Agroindustrial Operations

Table 3. Country and Regional Experience of Agribusiness Firms Studied*

	Number of Companies -----
Low Income Agricultural Economies -----	2
Bangladesh	1
Nepal	2
Burma	1
Low Income Transitional Economies -----	20
India	8
Sri Lanka	3
Pakistan	5
Indonesia	5
Yemen	1
Morocco	4
Philippines	12
Egypt	7
Middle Income Industrializing Nations -----	14
Thailand	14
Tunisia	1
Jordan	2
Oman	1

* Some firms operate in multiple countries

Table 4. Commodity Experience of Agribusiness Firms Studied*

	Percent of Companies -----
Inputs	35
Production Output	17
Processing	74

 *Total percentage is greater than 100 because companies are involved in more than one commodity area.

Table 5. Ownership Experience of Agribusiness Firms Studied*

	Percent of Companies -----
Licensee/Franchise	13
Joint Venture	57
Wholly Owned	65

 *Total percentage is greater than 100 because companies are involved in more than one ownership arrangement.

Table 6. Other Activities of Agribusiness Firms Studied

	Percent of Companies -----
Research	17
Extension Services	48
Supply Linkages	48

Appendix 1. Agribusiness in ANE's Strategy Statement

ANE Bureau's "Rural Economic Growth Strategy for the 1990's" proposes that AID programs in the region be adjusted on the basis of countries' economic structure, primarily on the basis of per capita income. Countries fall into three groups:

- 1) Low Income Agricultural Economies: Bangladesh, Burma and Nepal;
- 2) Low Income Transitional Economies: Egypt, India, Indonesia, Morocco, Pakistan, Philippines, Sri Lanka and Yemen; and
- 3) Middle Income Industrializing Economies: Jordan, Oman, Thailand and Tunisia.

As countries move from group 1 to group 3, the World Bank's estimates of per capita income rise from \$161 to \$978 (1985); annual GDP growth rises, the share of agriculture in GDP declines, while industry's share rises. Labor in agriculture declines, while urban consumer demand shifts to greater reliance on higher protein and more processed, as opposed to bulk agricultural products. As labor moves out of agriculture, the importance of food processing and marketing is thought to increase.

The strategy lays out somewhat different priorities as a function of level of development. For Low income agricultural economies, the strategy calls for much of AID's recent package of programs: Research and Technology diffusion; Input supply, with reduction in subsidies and an increased role for the private sector; Public Services and Infrastructure, with emphasis on irrigation; improved policy analysis; a focus on natural resources, and a focus on human and institutional capital development, especially for research, analysis and management.

Proposed programs for Low Income Transitional Economies focus on improvement of the management of existing resources as a source of growth. Strengthening Agricultural Policy Analysis; emphasis on technical innovation to offset recent slowdowns in yield increases; increased emphasis on Agro-Processing - development of infrastructure and services to promote agro-processing investments; Trade Liberalization; emphasis on Natural Resources; and investments in human and institutional capital development in support of policy analysis, agro-processing, export promotion and crop diversification are among key areas identified.

The strategy for Middle Income Industrializing Economies assumes that food self-sufficiency is no longer a problem - either as a result of production or imports. Institutional capacity is also assumed to be developed, with some need for further strengthening domestic and international networks. The strategy sees highly trained nationals taking a role in regional affairs.

The strategy paper proceeds to a ranking of priorities for AID development interventions, including:

Increased Staple Cereal Production
Agro-Processing Development

Trade and Market Development
Human Capital Development
Infrastructure Planning and Management
Agricultural Policy and Planning
Natural Resource Management
Institutional Development
Agricultural Input Supply
Capital Market Development

Detailed presentations of possible programs by economic grouping are provided, with emphasis in discussions of "Trade and Development" and "Agro-Processing Development" (pp 36-41) of greatest interest for the current study. Suggested priorities in the strategy include:

Agro-Processing Development

Low Income Agricultural Countries

Develop host country capacity for market analysis

Low Income Transitional Countries

- 1) improve market analysis capacity in order to help define private sector investment role, also do market testing of new products
- 2) establish product standardization & quality control agencies
- 3) expand private sector marketing and advertising capacity
- 4) re-focus ag research on products with market potential
- 5) Adjust import restrictions to allow freer import of supplies for processing industries
- 6) create quasi-public agency to oversee infrastructure development
- 7) strengthen private investment promotion programs, such as tax breaks, legal provisions for joint foreign-local investment
- 8) interest rate policy adjustment

Middle Income Industrializing Countries

- 1) expand analytical capacity to identify/promote expansion of exports of processed products
- 2) improve export licensing procedures
- 3) assist processors to improve product quality, management, cost control

4) help establish links with foreign firms for market outlets or joint ventures

5) provide access to foreign technology/expertise

Trade and Market Development

Low Income Agricultural Countries

1) Support expansion/upgrading of input marketing systems and encourage price competition between government and private suppliers

2) Use commodity import programs to lever greater involvement of private sector in input distribution

3) Monitor input distribution systems to determine where government intervention is required and analyze subsidy adjustments

4) establish analytical units to monitor domestic and international cereal prices

5) assist in establishing public cereal stocks at least cost levels, encouraging shift to market-driven systems (floor & ceiling prices)

6) support programs encouraging private sector investment in input and output storage facilities and processing facilities related to cereals, including adjustments in licensing procedures, credit, and testing of low-cost storage techniques

Low Income Transitional Countries

1) Restructure state trading agencies - disengage from non-cereal markets

2) Promote private investment in domestic food supply through changes in investment and tax policies, and by the use of market interest rates to mobilize domestic capital (offset by tax breaks to target specific industries)

3) Improve analytical capacity in domestic trade policy, in such areas as streamlining the licensing of trading activities and promoting investment in trade, in order to encourage expansion of agro-processing industries

Middle Income Industrializing Countries

1) Support establishment of trade development office to increase access to foreign markets and earning of foreign exchange to finance imports. Functions would include: monitoring changes in world markets, identifying new markets, and balancing trade flows with major trading partners

Appendix 2. **Agribusiness Food Marketing Systems Study**

Statement of Work

The AMIS project will provide a team or consultants to conduct applied research contributing to ANE Bureau's ability to identify and rank the interventions that are most appropriate to ANE countries' private sector agribusiness food marketing system development. Mark Newman, Abt Senior Agricultural Economist and Director of Agribusiness Research will serve as Team Leader for the study.

Activities:

AMIS project consultants will: 1) assemble and analyze information on experiences and lessons learned from public and private agribusiness development activities, projects, etc in ANE countries; and 2) contribute to the development of an ANE agribusiness development strategy, and identify resources that may be useful in implementing the strategy.

I. Assessment of Agribusiness Experiences and Lessons Learned that are important in developing an ANE Bureau Strategy

This component of the project will include a review of selected experiences with public and private sector agribusiness activities supported by AID and other donors or financial institutions or undertaken independently within the ANE region. It will identify the range of opportunities to support agribusiness in the ANE region that should be considered in developing an ANE Bureau strategy, and assess interest and experience of AID and private sector representatives through interviews.

Activities

- a. Develop an approach to evaluating agribusiness activities, projects, etc. so that the topic becomes more manageable and intelligible to a broad public and private sector audience with a wide range of backgrounds, training and experiences.
- b. Identify and begin to evaluate written materials regarding public and private sector agribusiness projects, initiatives and activities in ANE countries, including those underway during the 1980's and planned for the future. Sources of information will include AID/W library resources, USAID Missions and the World Bank. For selected cases, obtain additional information on cases where support to private sector agribusiness activities has been especially successful or unsuccessful.
- c. Interview people in the Washington area, as well as at the Rabat meeting of ADOs, regarding relevant projects, programs and experiences.
- d. Contact and interview representatives of 10-20 private sector agribusiness firms that have either been active in the ANE area or have considered such activity since 1980. On the basis of interviews and available written material develop several case studies that identify and analyze factors affecting success or failure of private agribusiness investments and related activities in ANE countries. Cases could be selected to provide an example from each of ANE's sub-regions.

2. Contribution to ANE Agribusiness Strategy Development

On the basis of interactions with AID and the private sector, as well as the analysis discussed above, this component of the study will develop an analytical approach and propose elements of an ANE agribusiness development strategy that exploits the strengths of both the private and public sectors, and reflects the unique aspects of individual ANE countries. Identify resources that might be used in implementing such a strategy.

Activities:

- a. Design or adapt an analytical framework for categorizing types of interventions that can be used to support or encourage private agribusiness development in the ANE region.
- b. Summarize lessons learned since 1980 and identify implications for ANE Bureau agribusiness strategy. Develop a ranked list of promising agribusiness interventions and/or support activities that can form the basis for designing an ANE Bureau agribusiness strategy.
- c. Identify resources that can be of use to the ANE Bureau in implementing its agribusiness strategy, including public and private sources of expertise and information that could be used for such purposes as identifying, evaluating and supporting agribusiness interventions most appropriate to individual ANE countries.

Deliverables:

1. By January 15, 1989, meet with representatives of ANE Bureau to finalize planning for addressing elements of scope of work.
2. February 17-23, 1989, Presentation to ARDO conference in Rabat, Morocco explaining the approach, summarizing initial findings of the assessment of agribusiness experience in the ANE region and identifying the range of opportunities that the assessment suggests. The conference will also serve as the primary opportunity for the contractor to discuss ANE mission interests, experience and priorities.
3. May 15, 1989, Draft Analytical/Strategy paper: ANE Agribusiness Experience and Strategy Considerations for the 1990's.
4. August 15, 1989. Finalize Analytical/ Strategy paper.
5. Provide resource person to make one or more workshop presentations at sessions to be organized by ANE Bureau, and which may include participation by representatives of leading agribusinesses.

Level of Effort:

See attached budget

Appendix 3. USAID Projects by Category (Preliminary)

COMMODITY IMPORTS -----	Inputs which contribute directly to an agribusiness project. Commodities which may affect agricultural production or food supplies are not included in this survey.
Bangladesh Egypt Nepal Pakistan	Bulk importation of fertilizer from USAID (280,000MT) to meet the need for fertilizer supply, beyond local production levels. Reduced risk to private fertilizer distributors, and allowed for 40% reduction in fertilizer subsidies. Private Sector Commodity Import Program - Unspecified commodities Import/Market support for fertilizer delivery Private sector distribution of fertilizer
INFRASTRUCTURE DEVELOPMENT -----	Buildings, Factories, Irrigation Systems, Canals, Roads Physical improvements which facilitate the development of agribusinesses. General infrastructure projects which were not planned in relation to an agribusiness or private sector development effort are not surveyed in this study.
Bangladesh Philippines Sri Lanka Thailand	Construction of urea factory, Fertilizer storage and distribution infrastructure Roads to facilitate farmer access to production inputs, credit and markets. Rehabilitation of markets in medium sized cities Mahaveli region, canal construction, water systems Assisted in building of national vegetable seed center and peanut center
PRIVATIZATION OF STATE RUN ENTERPRISE -----	Efforts to move ownership from the public ownership (parastatals - government owned stock) to private ownership. Includes private sales, public share offerings, liquidations, liberalizations. Privatization activities listed here can be ANE and/or PRE supported.
Bangladesh Egypt Jordan Morocco Oman Pakistan Philippines	Fertilizer distribution shift away from government dealers to private dealers Privatization of government-owned farm input supply systems Fruit and vegetable processing centers in the Jordan Valley -- mission exploring selling at least one of two modern but idle processing centers to an int'l food processing company Capital participation privatization of three fisheries and four sugar companies. Public Share Offerings for Oman Flour and a fisheries company. Liberalization of ghee plant PRE developed plans for privatization of National Food Authority and Philippines Dairy Corporation.
OFF-FARM EMPLOYMENT AND RURAL ENTERPRISE -----	Interventions which are specifically aimed at supporting employment opportunities other than traditional farming enterprises. Rural based, not urban based.
Bangladesh Indonesia Morocco Philippines Sri Lanka Thailand	Support of small-scale enterprises with backward linkages to agriculture Encouraging off-farm employment and expanding the role of the private sector Small farm credit to the Agricultural Credit Bank. Project seeks to increase private sector agribusiness and rural manufacturing investments in the Bicol region. Improved cooperative marketing systems to agricultural commodities produced by small farmers. Philippines is particularly strong in support of off-farm enterprises. Support of rural industry Rural Industries project to expand off-farm employment outside of the metro Bangkok area.
SMALL AND MICRO ENTERPRISES -----	Support of medium-small-micro level private enterprises included. Interventions Entries in this category may have small business development listed as a project goal or component focus to support private sector development. Focus on employment generation in small scale business development especially in rural areas.
Egypt India Indonesia Morocco Philippines Sri Lanka Thailand	Support to micro & small scale farmers to increase ag investment Grower's cooperatives Private Sector Devt project starts from the bottom and works up, indentifying entrepreneurs who have the capacity to expand a particular section of the ag industry Creation of pre-export financing facility for small businesses. Small & Medium Enterprise Devt seeks to accelerate growth of labor intensive small medium enterprises Development of the Sri Lanka Business Development Center - Final evaluation recommendation that the SLBDC focus on new, small and medium scale enterprises. Supports small and medium sized firms; agro-industry seen as the most promising area for small enterprise rapid development.

USAID Projects by Category, continued

DEVELOPMENT OF CAPITAL MARKETS

Includes both the development of institutional capital markets, as well as credit and financing.

Bangladesh	Rural Finance Experiment Project - improve credit systems for farmers
Egypt	Improved financial services to private sector enterprises, resulting in expanded investment
Indonesia	Improving rural financial intermediation; support of lending for export led production
Jordan	Strengthen financial markets, mobilize and allocate venture capital. Provide seed capital to improve technology financing, trade financing program for US capital goods.
Philippines	PVO programs to offer credit to small and medium scale enterprises Encourage development of a self-sustaining rural financial system.
Sri Lanka	Consider constraints limiting the development of securities markets, strengthen Securities and Exchange Commission, facilitate mobilization of capital investment. Mobilize private term capital for investment
Tunisia	Support to the development of dynamic capital markets, long-term capital Assist in strengthening the Securities Council & Stock Exchange Private sector development looks at capital markets

INDUSTRIAL TRADE AND POLICY REFORM

Policy dialogue which addresses government policies which restrain free market growth. ie. unnecessary formal licensing procedures & other pricing barriers to moving ag commodities from areas of production markets, licensing procedures for establishing agro-processing facilities, pricing structure, import restrictions.

Bangladesh	Policy dialogue with emphasis on strengthening the role of agricultural private sector
Egypt	Support of deregulation of agricultural sector; Strong AID policy reform efforts in Egypt
Indonesia	Policy agenda aimed at reducing constraints to expansion and diversification of ag sector
Jordan	Remove constraint on licensing of new industries and protectionist policies
Pakistan	Balance of payments support, encouraging ag policy reforms, remove fertilizer subsidies
Sri Lanka	Policy reforms sought to encourage diversification, technological innovation and upgrades
Tunisia	Support of economic policy reforms and structural adjustments to the ag sector

AGRICULTURAL MARKETS

Efforts to extend agricultural markets, distribution and sales.
Also to identify and analyze existing or potential markets.

Bangladesh	Encourage fertilizer use/market for fertilizer. Create new private sector marketing system
Jordan	Ag Marketing Project, aimed at improving marketing orientation and skills in agribusiness
Philippines	Decrease public sector involvement in marketing process. Development of strongest growth sectors, rather than focusing of the most depressed areas
Tunisia	Improvement of market management and operations Structural Adjustment to encourage private sector role in marketing of farm inputs & products.

DEVELOPMENT OF ANALYTICAL CAPACITY

Training, Technical Assistance, Research, Surveys, Institutional Development
Development of university curriculum, US study tours

Indonesia	Particularly strong institutional development program
All Countries	Across the board, these activities are interventions.

INVESTMENT PROMOTION

Promotion of foreign investment, joint ventures, trade mission, investment opportunity surveys

Egypt	FY89 plans to launch a Business Development Center, primary object, Investment Promotion
India	Joint US/India ventures in technological innovations research in agro-processing
Jordan	Creation of Business/Exporters Association, US/Jordanian ventures
Oman	Encouragement of commercial fishing and Omani private sector investment in fisheries.
Philippines	Support of regional and national trade fairs, product display centers, trade missions Support to a for profit investment banking and financial services company - to act as a broker to identify investors/buyers to provide new capital
Sri Lanka	Sri Lanka Business Development Center addresses investment promotion
Thailand	Investment surveys, Trade missions had minimal success, Encouraging strong US/Thai bilateral trade by developing investment promotion service through the American Chamber of Commerce in Bangkok
Tunisia	Industrial Promotion Agency to regulate and promote investment.

DRAFT
December 20, 1988

LESSONS FROM DEVELOPMENT ASSISTANCE:
IMPLICATIONS FOR AGRICULTURAL AND RURAL DEVELOPMENT

Vernon W. Ruttan
Regents Professor
Department of Agricultural and Applied Economics
University of Minnesota

Paper prepared for the 50th Anniversary Volume
Indian Journal of Agricultural Economics

LESSONS FROM DEVELOPMENT ASSISTANCE:
IMPLICATIONS FOR AGRICULTURAL AND RURAL DEVELOPMENT

Vernon W. Ruttan*

Foreign aid as an instrument through which a government attempts to strengthen the economy of another country is a relatively new phenomenon. The Marshall Plan, initiated in 1948, was the first major foreign assistance program. Put together hastily to revive the war-torn economies of Western Europe, the Plan distributed \$13 billion over a period of four years. It succeeded beyond the greatest hopes of its initiators. This was followed by the commitment, in President Truman's 1949 inaugural address, to a "bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas".

By the early 1950s, it was apparent that the Western European economies had achieved such large gains that they would maintain rapid rates of economic growth through their own efforts. By that time, however, the development efforts of the newly independent countries of Asia and the Middle East were attracting attention. It became evident that it was in the interest of American foreign policy to see those development efforts succeed.

In this paper I present some of the generalizations about the impact of development assistance, including the impact of assistance to

*Regents Professor, Department of Agricultural and Applied Economics, University of Minnesota

agriculture and rural development, that can be drawn from post-World War II development assistance experience.¹

Lessons from Macroeconomic Assistance Policy

Concessional assistance has typically represented less than 2 percent of the developing countries' GNP. It would be unreasonable to expect that assistance of this magnitude would have a dramatic impact on living standards throughout the developing world. Development assistance has, however, played a critical role in sustaining and enhancing growth rates and improvements in living standards in particular countries during crucial periods in their development process.² It is also clear that the effectiveness of development assistance depends on the policies pursued by both the donor agencies and the recipients.

The Influence of Domestic Economic Policy on the Effectiveness of Donor Economic Assistance

The effectiveness of economic assistance has been strongly conditioned by the economic policy environment of the host country. It is now generally conceded that economic assistance to Korea and Taiwan was much less effective in generating income growth during the 1950s and early 1960s when these countries were pursuing import substitution policies than after they made the transition to export-oriented industrial policies. The contrasting role of domestic economic policy on the effective use of development assistance is illustrated in a particularly striking way in the case of Ghana and the Ivory Coast. Following independence, Ghana chose a policy of socialism and state control. The Ivory Coast adopted a more modest role for the state, viewing its role as influencing and guiding rather than replacing private sector decision making.

It would be a mistake to view the contrast between Ghana and the Ivory Coast as simply too much or too little planning or too much or too little direct public participation in economic affairs. The intervention of the Ivory Coast in its sugar industry was almost as damaging as the intervention of Ghana in its oil palm industry. The contrast is between (a) a misguided attempt to determine and control the supply and demand of private goods across a wide spectrum of economic activity in Ghana and (b) a program that provided reasonable incentives for private economic activity along with investment in physical infrastructure and services directed toward enhancing the productivity of the private sector. In addition, Ghana's failure to correct its increasingly overvalued exchange rate, its repression of producer prices of agricultural output, and its establishment of parastatal enterprises in industry distorted its domestic infrastructure investments and led to excessively high capital output ratios in infrastructure, agricultural, and industrial development projects.

Our review of country experience has demonstrated in particular the close linkages between trade policies and the effectiveness of development assistance. There is firm evidence that an export-oriented strategy and rapid growth of exports have been integrally associated with rapid economic growth. There are three reasons for the positive impact of an export-oriented strategy. First, it permits countries to take advantage of comparative advantage, whether based on resource endowments or technology development. Second, it prevents some of the costly mistakes that are often associated with import substitution or other restrictive trade and

industrial development strategies. Third, it forces governments to adopt policies that lead to better economic performance by the private sector.

External development assistance has at times been very important in providing the economic and technical assistance needed to facilitate the transition to export-oriented policies. Aid-financed infrastructure has also been important in permitting economies such as Korea, Brazil, Taiwan, and Turkey to respond to the incentives that were designed to encourage the transition to an export-oriented economy. Economists associated with both bilateral and multilateral development assistance agencies were also, at times, influential in the policy analysis and discussions that led to the policy reforms.

It is also true that foreign assistance, particularly when motivated by noneconomic policies, has provided countries with the resources needed to perpetuate inefficient economic policies. This was clearly the case in South Korea during the 1950s. The 1950s period, a time when U.S. economic assistance was essential to Korea's political and economic viability, was characterized by a chaotic multiple exchange rate system, import licensing, and pervasive controls in every sector of the economy. The relatively poor performance of the Korean economy in the 1950s, despite massive aid, was in large part a result of inappropriate trade, exchange rate, and other domestic policies. When these policies were altered in the 1960s, growth accelerated despite lower levels of assistance. American monetary experts, financed by the U.S. aid agency, played an important role in the discussion that led to the monetary and fiscal reforms of the mid-1960s.

The conclusion that the effectiveness of assistance in generating economic growth is severely weakened in the absence of appropriate economic

policy on the part of the recipient country poses several policy problems for the donor community. A variety of assistance activities can be effective in an environment characterized by a favorable policy regime and substantial administrative capacity. The absence of these conditions severely limits the range of effective assistance activities. These deficiencies are, however, often more severe in the poorest countries where there may be strong equity arguments for providing development assistance even if it is less than fully effective. In such situations assistance should focus on selected sector development activities that will establish the foundations for growth at a time when it becomes politically and economically feasible for the recipient country to adopt more growth-oriented development policies.

Policy Dialogue and Aid Effectiveness

The effectiveness of economic assistance is influenced by (a) the degree of convergence in the views of aid donor and recipient countries concerning the latter's economic policies and (b) the importance of economic development objectives relative to other donor motivations in decisions concerning the nature and allocation of economic assistance. A convergence of views on the recipient's economic policy can occur only in the context of a donor-recipient aid dialogue. The issue of how much impact policy dialogue associated with development assistance negotiations actually has on host country development policy is extremely difficult to determine. The impact may be quite large during a period when the host country is experiencing economic or political stress, as in Bangladesh immediately after independence, or during a period when both the donor and host governments share common political and economic objectives.

Policy dialogue between assistance agencies and the government of Turkey during the late 1960s was very influential in bringing about policy reforms that avoided an extreme crisis. French technical assistance personnel played an important role in guiding both macroeconomic and sector economic policy in the Ivory Coast along relatively efficient lines. In the case of Korea, the major impact of donor-host policy dialogue came as the level of donor assistance began to decline.

India is often cited as a country in which attempts to use donor leverage to induce policy reform has been counter productive. In the early 1960s the World Bank proposed and the government of India accepted a comprehensive study of the causes of the slow pace of Indian economic development. The study produced by the Bell mission was critical of Indian agricultural policy and of the quantitative controls on imports and foreign exchange. The study was followed by a controversial devaluation of the Rupee in 1966. Within India the devaluation was interpreted as an unwarranted attempt by the Aid India Consortium to interfere in domestic policy.³

A number of criteria appear to play an important role in the effectiveness of donor agencies' efforts to exercise constructive leverage on recipient country macroeconomic policy. One is that both the donor and recipient country bring substantial professional capacity and experience to the policy dialogue. A second is that the donor agencies be in a position to provide substantial program aid during the period of transition to the new policy regime.

There is clear evidence that a "donor interest" model is more effective than a "recipient need" or "global resource allocation model" in

explaining the flow of bilateral donor resources. It is also our impression that donor strategic, political, and trade interests are playing an increasingly important role in the allocation of assistance resources. When donor interests strongly influence the flow of aid resources, the effectiveness of policy dialogue is reduced. Donors find it extremely difficult to utilize policy dialogue as a lever to induce better policy in the recipient country when the representatives of that government are aware that the security or trade interests of constituencies in the donor country carry more weight than the policy reform objective. These conflicting pressures create a very difficult environment for the officials in the development assistance bureaucracies of the donor countries.

During the 1980s discussions of donor influence and leverage has been carried out in a more constructive environment than in the 1960s and 1970s. Both donor and host country political leadership and constituencies seem to be more aware than in the past that policy dialogue and influence are inherent in the donor-recipient relationship. It is also possible that as a result of past experience some bilateral donors have a more sophisticated understanding of the economic costs of using the limited leverage of development assistance to pursue ideological or political objectives in the recipient country. Nonetheless, noneconomic factors still are an important element of bilateral programs. As a consequence, there is a presumption that multilateral aid, which is not as burdened with these constraints, is likely to be a more effective vehicle for a policy dialogue and for supporting economic development.

The Influence of Assistance on National Economic Growth

The macroeconomic impact of development assistance represents a continuing theoretical and empirical puzzle. It seems clear that there are relatively few instances where the flow of development assistance has been large enough to significantly influence aggregate growth rates. This conclusion holds even if rates of return to the resources transferred in the form of development assistance are several multiples of the rates of return that the same investments would earn in the country providing the assistance. It is possible that the literature we have reviewed has underestimated the impact of development assistance on growth; however, the evidence to support a conclusion that development assistance has accounted for major intercountry growth differences is not available.

Generalizations regarding the effects of economic assistance on national economic growth are complicated by the complex economic and political objectives of both the donor and the host country. Where donor country political objectives have dominated economic development objectives, as in the case of U.S. assistance to Korea in the early 1950s and recent U.S. assistance to Egypt, expectations regarding the impact of assistance on economic growth should be relatively modest. It seems apparent that this conflict in objective is a major source of the difficulty in drawing generalizations regarding the impact of development assistance on growth rates.

A second reason why it has been so difficult to develop empirical evidence on the impact of development assistance on national growth is that, except for short periods, the flow of concessional development assistance has generally been small compared to the sum of national and

commercial resource flows available to sustain development. Aid flows have contributed importantly to initiating or sustaining the momentum of growth at critical periods. India between 1956 and 1967 and Korea in the first decade after World War II are examples. But there are also failure cases such as in Ghana in the 1960s and in Tanzania in the 1970s.

Lessons from Assistance for Sector Development

There is, however, evidence from specific country cases and from sector studies that development assistance has been most effective in generating growth when it has been focused on those investments that enhance productivity growth. Investment in education has been one such investment. Investment in agricultural research has been another.

In this section I attempt to draw some lessons for sectoral development assistance--particularly those areas of sectoral assistance that are relevant for agricultural and rural development.

Assistance for Physical Infrastructure Development

During the 1950s and 1960s, large-scale investment in transport facilities (roads, railroads, ports, and airports) and multipurpose (power, flood control, irrigation) resource development projects occupied a very prominent place in both bilateral and multilateral development assistance portfolios. Many of these activities made substantive contributions to the development of the recipient countries. Others became a burden on the development process. A number of factors contributed to the low returns realized from such projects. Project cost overruns were often substantial. The time required to complete the projects was often much longer than projected in the planning studies. The technology and scale of such

projects were often incompatible with the level of technological development in the rest of the economy. Failure to consider the implications of exchange rate distortions led to investments that were excessively capital-intensive or entirely inappropriate. Returns to infrastructure investment were delayed and reduced by policy regimes that were not able to take full advantage of growth opportunities.

Disappointment with the flow of benefits led to severe criticism of large infrastructure projects. In the Seyhan project in Turkey, for example, the production impact of the land and water development programs of the 1950s and 1960s did not exert a major impact on production until the 1970s. In Korea, the payoff to transportation investments made during the 1950s was relatively low until the period of rapid growth in the late 1960s and 1970s.

In India, returns on large infrastructure and industrial projects were dampened by failure to invest in appropriate technical education and research. The impact of irrigation investment has often been delayed because of failure to develop on-farm water delivery systems and institutions to manage them (Traxler and Ruttan, 1986).

Over the last several decades, both technical and economic aspects of project planning and evaluation have become more sophisticated. Much has been learned and the methodology and practice of cost-benefit estimation have been developed and applied more widely. Planning and implementation capacity in the aid-recipient countries has improved. The worst errors of the 1950s and 1960s are no longer being made. And a broader and more balanced portfolio of projects embracing technical and professional training, research and development, and others is, in many countries,

54

overcoming the lack of the complementary inputs that have in the past dampened the returns to infrastructure project investment.

It now appears possible again to take a more positive view of lending for infrastructure investment, especially in connection with agricultural development. Furthermore, it appears that in a number of countries the enhanced capacity for infrastructure planning and development means that the assistance agencies will be able to reduce the level of attention and resources devoted to the detail of project planning and implementation. This should free their staffs to give greater attention to the considerations of macro and sector policy that will influence the economic viability of infrastructure project investment.

Investment in Human Resource Development

Both the development theorists and the development assistance agencies were slow to recognize the importance of investment in education and in other forms of human capital for economic growth. In the early literature the dominant view was that education and health programs should be considered primarily as enhancing consumption rather than as productive investments. It was generally held that such programs should be subordinated to the goal of expanding production until the country had achieved a substantial increase in the level of per capita income.

As evidence indicating high rates of return to education began to accumulate, perspectives began to change. The U.S. development assistance agency made major investments in university development in India in the 1960s. The World Bank made its first educational loan in 1963. By 1980 it had financed over 200 educational development projects. Initial emphasis was placed primarily on scientific and technical education because of its

11

obvious complementarity with infrastructure, industrial, and agricultural development projects. Continuing research has indicated, however, that the highest rates of return are often at the primary level and decline as the level of educational attainment increases. Evidence from a large number of studies suggests that returns at all levels of education are substantially higher than the rate of return levels used to justify investment in many other project areas by development assistance agencies (Psacharopoulos, 1985).

There remain a number of unanswered questions. Some relate to the relative importance and efficiency of formal primary and secondary education in developing countries. There is as yet little evidence that the development assistance agencies have been especially effective in attempts to improve the efficiency of primary and secondary education programs. This stands in sharp contrast to the contributions that both private and official assistance has made to the modernization and reform of higher education in a number of countries.

Returns to Agricultural Research

Agricultural research has consistently achieved rates of return that are among the highest available to either national governments or development assistance agencies. These high social rates of return reflect substantial underinvestment in agricultural research. Underinvestment by both the private and the public sectors reflects the large spillover effects that transfer the gains from the public and private suppliers of technology to producers, and from producers to consumers.

Sustained growth in agricultural production capacity requires a careful articulation of public and private sector support for technology

research and development. The development of public sector institutions capable of training agricultural scientists and technicians is essential. Countries that have been successful in sustaining rapid technical change in agriculture have found it necessary to develop sufficient public sector capacity in agricultural research to enable them to develop and adapt agricultural technology suited to their own resource and institutional environments. India's relatively sophisticated agricultural research system has been an important factor enabling India to confound much of expert opinion and achieve close to self-sufficiency in food grain production in the late 1970s and early 1980s. Assistance by the U.S. aid agencies and by private foundations played an important role in strengthening India's capacity in agricultural education and research.

Those countries that have attempted to rely primarily on borrowed technology have rarely developed the capacity to adapt and manage the borrowed technology in a manner capable of sustaining agricultural development. The private sector has generally been more effective in the development and adoption of mechanical and chemical technology than of biological technology for crop and animal production. In contrast, the private sector has in most countries been relatively efficient in embodying new knowledge in technical inputs (machines, fertilizer, pesticide, seeds) and in marketing agricultural supplies compared to the public sector or parastatal organizations.

Rural Development Programs

The implementation of community and integrated rural development programs has been a continuing challenge and a source of frustration to development assistance agencies.⁴ The development of rural communities

represented an important program thrust of both private and official development assistance in the 1950s. The integrated rural development thrust of the 1970s represented a renewed commitment to these same objectives. Yet the gap between the hopes for such programs and program accomplishments has remained large.

A review of the literature suggests that one of the major sources of disillusionment on the part of donors with the results of assistance to community development is a lack of consistency between the dynamics of community development processes and the imperatives of donor assistance. Successful rural development programs tend to be (a) small in geographic scope and slow to implement; (b) intensive in demands on professional and administrative capacity; (c) difficult to assess within the framework of conventional cost-benefit analysis; and (d) difficult to monitor and inspect. Donors on the other hand are under pressure to undertake large projects with measurable short-run accomplishments. They are more comfortable in dealing with projects that are (a) capital- and import-intensive, (b) amenable to cost-benefit or cost-effective project analysis, and (c) easy to monitor and evaluate.

A second source of disillusionment has been the difficulty of achieving consistency between the local self-help and resource mobilization philosophy of rural development programs and the objectives of donors to achieve measurable improvements in basic human needs indicators. This has led to a program drift toward delivery of services to local communities and a neglect of the economic and political reforms necessary to achieve effective mobilization of community resources. This in turn tends to lead to a decline in program performance when donor resources are phased out.

0.150

improvements in the level of services were often not complemented by growth in the community resources necessary to sustain the services. There is now relatively good documentation, much of it from USAID program evaluation studies, that success in local resource mobilization is an exceedingly important factor in accounting for continued program viability following the phasing-out of donor support.

Although development assistance agencies have found it difficult to achieve success in programs designed to enhance the quality of life in rural areas, one cannot conclude that there is an inherent conflict between growth and equity objectives in rural development. Indeed, the literature suggests that these objectives are potentially highly complementary. The constraint on the effectiveness of development programs has been due to the complex interaction between political and economic development at the local level that is required to generate effective demand and to sustain that demand.

Some Development Assistance Policy Issues and Questions

In the previous sections of this paper a number of rather clear-cut "lessons" from development assistance were identified. In this section I raise an issue that has received little attention in the literature: What development assistance activities are feasible in an unstable economic and political environment? I also return to the question of the role of various forms of assistance. Finally, I indicate some concerns about major limitations in the literature on development assistance impact.

5/1

Assistance in an Unstable Environment

One of the most difficult problems of development assistance policy is how to provide effective assistance in an unfavorable economic and political environment. Should the development assistance community simply conclude that, where the environment for development assistance is so adverse, assistance should be discontinued until a political and administrative environment emerges that is more conducive for efficient use of development assistance?

There are at least some tentative indications from the experience of the countries studied in this review and in other literature that there are a number of areas where it is possible for development assistance to be at least moderately "policy proof"--where assistance can be designed to make an effective contribution in spite of (a) the limited effectiveness or even perversity of the policies pursued by national governments and (b) the absence of a realistic chance that government will improve the policy setting in the foreseeable future. These activities fall under the broad headings of investment in human capital and community infrastructure.

Programs to achieve the minimum levels of investment in human capital and in community infrastructure do not need to draw heavily on external resources. Institutional innovations that provide incentives for local units of government to mobilize indigenous labor and material resources should be encouraged. With support for institutional development or reform most of the resources needed to support such activities can be mobilized at the local or regional level. Such programs are usually regarded as desirable even by national governments that do not have the bureaucratic capacity, or that are too corrupt, to effectively implement larger-scale

agricultural or industrial development projects. In many cases such programs may be more effectively carried out through either expatriate or indigenous private voluntary organizations rather than being directly administered by bilateral or multilateral assistance agencies.

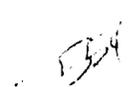
In addition to the immediate benefits there are also substantial longer-term benefits from strengthening the capacity of provincial and local institutions to manage and sustain investments in human capital and community infrastructures. Development of local institutional capacity can also contribute to the development of political, bureaucratic, and technical skills that are necessary for more efficient and responsive national political regimes. When a more effective national regime does emerge, the local institutional infrastructure needed to sustain rapid development is in place--as in Korea after the fall of the Rhee government. Finally, considerable experimentation is often necessary to create viable institutions capable of sustaining the necessary investment in human capital and community infrastructure. A period of trial and error is often necessary to develop systems that are sustainable in terms of community economic resources and that are compatible with local cultural endowments.

Aid Instruments

Most governments are open to a policy dialogue that can take place at different levels and through the use of various aid instruments. The literature is properly inconclusive on whether program aid or project aid is the superior development policy instrument. A careful reading of the literature leads to the conclusion that an effective assistance program will include in its portfolio both program and project assistance and a variety of sectoral aid. At one extreme, nonproject aid can play a

strategic role in providing foreign exchange and budgetary support for a government that is attempting a major structural readjustment as part of a program of policy reform. Such assistance can also play an important role in legitimizing a donor-recipient dialogue concerning the elements of the macroeconomic reform package. A level of professional capacity on the part of both the donor agency and the recipient government that commands the respect of both sets of participants in the policy dialogue is an essential element. We are sensitive to situations in which donors have forced inappropriate or inadequate policy reforms on reluctant recipients, not because of the weight of the donor policy analysis, but because of the need for assistance on the part of the recipient. And, we are also aware of situations in which the recipient countries have accepted, in principle, highly appropriate donor policy recommendations but have failed to articulate the rationale for the policies within their own political and bureaucratic environment.

At the other extreme, project assistance is more appropriate when directed toward fairly specific physical and infrastructure development projects. Transportation, communication, and sanitary and irrigation facilities are prerequisites for both rural and urban development. Primary education and health facilities and agricultural research and technology transfer capacity are essential. The capacity to construct and maintain the physical infrastructure and to staff and manage the institutional infrastructure is basic to the development process. These capacities are acquired slowly, over a generation or more, rather than during a single plan period. Project assistance can contribute to the development of the basic physical and institutional infrastructure even in environments in



which governments have limited political or economic capacity to implement appropriate macroeconomics in sector policies. But donor assistance can also be overdone. There are situations in which donor project assistance has exceeded recipient capacity for project management. In a number of countries it appears that project assistance has contributed to the fragmentation and even the disintegration of the capacity for governance.

The difficulty of providing effective sustained support for institutional development within the traditional development assistance project mechanism can be illustrated in the case of agricultural research. In a number of countries assistance for the development of national agricultural research systems has contributed to the rapid development of professional capacity and facilities. But the period of rapid development has too often been followed by the erosion or collapse of the research system's capacity when external project support has declined.

There is now a substantial body of literature that suggests that the project approach has, under a variety of circumstances, contributed to a cycle characterized by the initial development and subsequent erosion of institutional capacity. The reason is that external project assistance often provides an alternative to the development of internal political support. National program directors have frequently found that the generation of external support requires less intensive entrepreneurial effort than the cultivation of domestic political support. Development assistance agencies have given too little attention to the issues of how to provide development assistance in a manner that will strengthen rather than weaken the domestic political support for the program in which donors place high priority in their assistance efforts.

Many assistance activities incorporate features of both program and project assistance. The key issue is not which type of assistance is in principle superior but rather which combinations of assistance forms can best promote development objectives in specific country settings. As a result, specific rules limiting or setting target allocations of different types of assistance in bilateral or multilateral institutions are distinctly inappropriate. The same is true for overall targets on local cost financing or general rules on financing solely foreign exchange components of projects.

Gaps in Development Assistance Impact Analysis

Wide gaps exist in our ability to evaluate the impact of development assistance. The evidence is most clear in those areas where both development theory and experience would lead us to expect the lowest rates of return--in the areas of physical resource transfers and capital investment. The evidence is weakest in those areas where development theory and personal experience lead us to expect the highest rates of return. These are areas such as technical assistance, human resource investment, and institutional infrastructure development.

We are not able, for example, to document the impact on the development of individual developing countries of the very large numbers of professionals and scientists who have trained with aid support in the developing countries. Yet we are aware, when we visit the countries that have made substantial progress, that many leaders in the private sector, in higher education, and in government service have received support for their training through development assistance.

Are the Lessons Useful?

How useful are the lessons from the past likely to be in the formulation of development assistance policy in the future? It is with considerable reluctance that I have forced myself to conclude that the lessons of the past are likely to have but limited relevance for the future.

One reason is the shift in the focus of bilateral development assistance. There is now a substantial body of evidence to the effect that donor self-interest considerations play a significantly larger role in aid allocation by bilateral donors than in the past.

In the case of the United States, strategic and foreign policy objectives account for a larger share of assistance flows than a decade or a decade-and-a-half ago. Among the other OECD countries the use of assistance resources to support donor trade and commercial policy objectives is now more important in explaining the allocation of assistance resources. This trend in bilateral assistance was partially offset by a shift toward a higher share of assistance being channeled through multilateral agencies in the 1970s. But this trend has been reversed in the 1980s.

A second reason is the decline in the share of assistance in the form of project assistance and the rise in the role of policy based assistance in the form of sector and structural adjustment lending. These loans are designed to induce and support reforms in sector policy--agricultural price policy for example--and in macroeconomic policy. Support for macroeconomic policy is not new. During the 1960s the US/AID participated in dialogue with recipient governments such as Brazil, India and Turkey about

macroeconomic policy and experimented with allocating performance conditions to assistance agreements. During the 1970s, however, AID narrowed its focus and concentrated more of its resources on sector development in areas such as agriculture, health, and education. The World Bank, however, from the outset, almost exclusively funded projects. Until the late 1970s the International Monetary Fund was the sole major institution engaged in extensive policy based lending. The effect of the global depression and the financial crisis that has faced large numbers of developing countries has been to propel the Bank into a rapid growth in the share of its lending in the form of sector and structural adjustment loans. The US/AID has also expanded its sector and structural adjustment lending.

This change interjects an entirely new set of criteria into the evaluation of assistance programs. Joan Nelson (1986) has emphasized that the core task of policy-based lending in support of adjustment is to create and sustain commitment (to reform) rather than to press for specific measures at a particular moment. This involves effort to bring about sustained institutional change in recipient countries rather than change physical facilities, technology, or even human capital. But neither the recipient countries or the donors are able to draw on an extensive body of experience, or theory, on how to move from the existing policy distortions to a sound macroeconomic regime characterized by an appropriate real exchange rate, appropriate incentive structures, adequate rates of domestic saving and investment, and responsible fiscal and monetary policies. The political and economic costs associated with such a transition are often very high and bear unequally on different segments of society. It is doubtful that the bilateral and multilateral donors will be able to

generate the resources to facilitate such reforms--either in recipient countries or at home.

The third reason that I am skeptical about the value of the lessons of the past is "aid weariness" on the part of development assistance agency personnel and donor country development assistance constituencies. Assistance agency personnel are as committed, or more committed, to their work, as in the past. But in personal contact with both bilateral and multilateral assistance agency personnel, I sense that they are no longer as convinced as in the past that what they are doing will make a difference. This may reflect the more constipated economic environment of the 1980s than the buoyant atmosphere of the 1960s and 1970s. But it also reflects the lack of a new synthesis of theory and practice to provide a rationale for development assistance efforts.

I also sense a rise in skepticism among development assistance constituencies. In the United States, for example, the enthusiasm of the constituency that galvanized Congressional action and the new focus on rural development and basic needs in the 1970s has dissipated. New populist constituencies have emerged to challenge the assistance agencies on their neglect of the environmental effects of project lending. And concern with "competitiveness" have caused some former constituencies to challenge assistance for national resource, agricultural and industrial and even infrastructure development in poor countries.

What are the implications of the redirection of aid resources and aid weariness for the future of development assistance policy? I do not see the future clearly. But I do anticipate that development assistance flows and programs will differ greatly in the 1990's from the program with which

we are familiar. One possibility is that we will see a shift from the economic assistance mode in the way developed countries relate to developing countries to an economic cooperation mode that will involve much more complex flows of resources and information.

ENDNOTES

¹This paper draws on research reported more fully in Krueger, Michalopoulos and Ruttan (1989). See particularly the chapter by Sukhatme (1989).

²In the case of India, foreign aid was relatively small in the 1950s. By the mid-1960s, it had risen to over 4 percent of India's net national product and over one-third of central government capital expenditures. By the 1980's, aid had fallen to about 1.5 percent of net national product and to approximately 15 percent of central government capital expenditures (Sukhatme, 1989).

³In retrospect this appears to be a case where the government was successful in blaming the donors for action that it regarded as necessary. The Indian government had thoroughly considered the devaluation of the rupee and the related changes in trade and exchange rate policies before the Bell mission report and the timing of the devaluation came as a surprise to the World Bank (Cong. 11, 1973, p. 92; Sukhatme, 1989).

⁴For a history of rural development programs in India, see Sussman (1982).

REFERENCES

- A. Krueger, C. Michalopoulos and Vernon W. Ruttan (with others), Aid and Development (Baltimore: The Johns Hopkins University Press, 1989).
- V. Sukhatme, "Assistance to India" in A. O. Krueger, C. Michalopoulos and Vernon W. Ruttan (eds.), Aid and Development (Baltimore: The Johns Hopkins University Press, 1989).
- I. P. M. Cargill, "Efforts to Influence Recipient Performance: Case Study of India" in J. P. Lewis and I. Kupor (eds), The World Bank Group, Multilateral Aid, and the 1970s (Lexington, Mass.: Lexington Books, 1973).
- G. Traxler and V. W. Ruttan "Assistance for Water Resource Development in Pakistan, Pakistan Journal of Agricultural Social Sciences 1 (July-December 1986), pp. 72-91.
- G. Psacharopoulos, "Reforms to Education: A Further International Update and Implications," Journal of Human Resources 20 (1985), pp. 583-604.
- G. Sussman, The Challenge of Integrated Rural Development in India (Boulder, Colo.: Westview Press, 1982).
- J. M. Nelson, "The Diplomacy of Policy Based Lending" in Richard E. Feinberg (ed.) Between Two Worlds: The World Bank's Next Decade (New Brunswick: Transaction Books for Overseas Development Council), pp. 67-86.

COMMENTARY

Sustainability is not enough

Vernon W. Ruttan

Abstract. *Traditional agricultural systems that have met the test of sustainability have not been able to respond adequately to modern rates of growth in demand for agricultural commodities. A meaningful definition of sustainability must include the enhancement of agricultural productivity. At present, the concept of sustainability is more adequate as a guide to research than to farming practice.*

Key words: sustainability definition, productivity increase, population growth, income increase, research implications

Any definition of sustainability suitable as a guide to agricultural practice must recognize the need for enhancement of productivity to meet the increased demands created by growing populations and rising incomes. The sustainable agricultural movement must define its goals sufficiently broadly to meet the challenge of enhancing both productivity and sustainability in both the developed and developing world. I will illustrate the problems of achieving these goals with some historical examples.

Ambiguity about technology

The productivity of modern agriculture is the result of a remarkable fusion of science, technology and practice. This fusion did not come easily. The advances in tillage equipment and crop and animal husbandry which occurred during the Middle Ages and until well into the 19th century evolved almost entirely from husbandry practice and mechanical insight. The power that the fusion of the-

oretical and empirical inquiry has given to the advancement of knowledge and technology since the middle of the 19th century has made possible advances in material well-being that could not have been imagined in an earlier age.

These advances have also been interpreted as contributing to the subversion of traditional rural values and institutions and to the degradation of natural environments. They led, in the 1960s and 1970s, to the emergence of a new skepticism about the benefits of advances in science and technology. A view emerged that the potential power created by the fusion of science and technology is dangerous to the modern world and the failure of the human race.

This ambiguity about the impact of science and technology on institutions and environments has led to a series of efforts to increase the sensitivity of scientists and science administrators and to reform the decision processes for the allocation of research resources. These efforts have typically attempted to find rhetorical capsules which would serve as a banner under which efforts to achieve reforms might march. Among the more prominent have been "appropriate technology," "integrated pest management," "low-input technology" and, more recently, "sustainability."

Reforming agricultural research

It is not untypical for such rhetorical capsules to achieve the status of an ideology or a social movement while still in search of a methodology, a technology, or even a definition. If the reform movement is successful in directing scientific and technical effort in a productive direction, it becomes incorporated into normal scientific or technological practice. If it leads to a dead-end, it slips into the underworld of science often to be resurrected when the conditions which generated the concern again emerge toward the top of the social agenda.

Research on new uses for agricultural products is an example. It was promoted in the 1930s under the rubric of chemurgy and in the 1950s under the rubric of utilization research as a solution to the problem of agricultural surpluses. It lost both scientific and political credibility because it promised more than it could deliver. It has emerged again, in the late 1970s and early 1980s, in the guise of enhancing value added.

The "sustainability" movement, like other efforts to reform agricultural research, has experienced some difficulty in arriving at a definition that can command consistency among the diverse and sometimes incompatible reform movements that are marching under its banner. Those of you who may recall the more populist conservation literature of the 1950s, such as *Exploit and Civilization* (1955) by Tom Dale and Vernon Carter, or *Malabar Farm* (1947) by Louis Bromfield, will recognize the poetry that has emerged in some of the

Vernon W. Ruttan is Regents Professor, Department of Agricultural and Applied Economics and Department of Economics, and Adjunct Professor, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, St. Paul, MN 55018.

new sustainability literature. Fortunately we can draw on several historical examples of sustainable agricultural systems.

Sustainable agricultural systems

One example of sustainable agriculture was the system of integrated crop-animal husbandry that emerged in Western Europe in the late middle ages to replace the medieval two- and three-field systems (Boserup, 1965). The "new husbandry" system emerged with the introduction and intensive use of new forage and green manure crops. These in turn permitted an increase in the availability and use of animal manures. This permitted the emergence of intensive crop-livestock systems of production through the recycling of plant nutrients in the form of animal manures to maintain and improve soil fertility.

A second example can be drawn from the agricultural history of East Asian wet rice cultivation (Hayami and Rutan, 1985). Traditional wet rice cultivation resembled farming in an aquarium. The rice grew tall and rank; it had a low grain-to-straw ratio. Most of what was produced, straw and grain, was recycled into the flooded fields in the form of human and animal manures. Mineral nutrients and organic matter were carried into and deposited in the fields with the irrigation water. Rice yields rose continuously, though slowly, even under a monoculture system.

A third example is the forest and bush fallow (or shifting cultivation) systems practiced in most areas of the world in pre-modern times and today in many areas of tropical Africa (Pingali, Bigot and Binswanger, 1987). At low levels of population density, these systems were sustainable over long periods of time. As population density increased, short fallow systems emerged. Where the shift to short fallow systems occurred slowly, as in Western Europe and East Asia, systems of farming that permitted sustained growth in agricultural production emerged. Where the transition to short fallow has been forced by rapid population growth, the consequence has often

been soil degradation and declining productivity.

Sustaining and enhancing productivity

This brings me to the title of this paper. The three systems that I have described, along with other similar systems based on indigenous technology, have provided an inspiration for the emerging field of agroecology. But none of the traditional systems, while sustainable under conditions of slow growth in demand, has the capacity to respond to modern rates of growth in demand generated by some combination of rapid increase in population and in growth of income. Some traditional systems were able to sustain rates of growth in the 0.5-1.0 percent per year range. But modern rates of growth in demand are in the range of 1.0-2.0 percent per year in the developed countries. They often are in the range of 3.0-5.0 percent per year in the less developed and newly industrializing countries; rates of growth in demand in this range lie outside of the historical experience of the presently developed countries.

In searching the literature on sustainability, I do not find sufficient recognition of the challenge that modern rates of growth in demand imposes on agriculture. If the concept of sustainability is to serve as a guide to practice, it must include the use of technology and practices that both sustain and enhance productivity.

In the United States, the capacity to sustain the necessary increases in agricultural production will depend largely on our capacity for institutional innovation. If we lose our capacity to sustain growth in agricultural production, it will be a result of political and economic failure. Failure to reform agricultural commodity programs in a manner that will contribute to both sustaining and enhancing productivity will mean the loss of one of the few industries in the United States that has managed to retain world-class status--that is capable of competing in world markets (Ruttan and von Witzke, 1988).

It is quite clear, however, that the sci-

entific and technical knowledge not yet available that will enable farmers in most tropical countries to meet the current demand their societies are placing upon them nor to sustain the increases that are currently being achieved. Further, the research capacity has not yet been established that will be necessary to provide the knowledge and the technology. In these countries, achievement of sustainable agricultural surpluses is dependent on advances in scientific knowledge and on technical and institutional innovation.

Implications for research

I am deeply concerned that the commitment to support the development of the research capacity in both developed and developing countries that will be necessary to achieve productive and sustainable agricultural systems has been weakening. And I am also concerned that the sustainability movement is pressing for adoption of agricultural practices under the banner of sustainability before either the science has been done or the technology is available.

It has been surprisingly difficult to find careful definitions of the term sustainability. This is at least in part because "sustainability," if it is to provide a useful rhetoric for reform, must be able to accommodate the several traditions that must march under its banner. These include the organic agriculture tradition, the land stewardship movement, the agroecology perspective, and others. In my judgment, any attempt to specify the technology and practices that meet the criteria of sustaining and enhancing productivity would be premature. *At present it is useful to define sustainability in a manner that will be useful as a guide to research rather than as an immediate guide to practice.* As a guide to research, it seems useful to adhere to a definition that would include (a) the development of technology and practices that maintain and/or enhance the quality and and water resources, and (b) improvement in plants and animals and the advances in production practices that will facilitate the substitution of biological technology for chemical technology.

Furthermore, it is desirable to generate the knowledge that will enable us to determine what it is possible to achieve in the direction of the above objectives primarily from a biological perspective. Maximum yield experiments represent a useful analogy. The objective of a maximum yield experiment or trial is not to provide a guide to farm practice. Rather it is to find out how a plant population performs under high level input stress. *The research agenda on sustainable agriculture needs to define what is biologically feasible without being excessively limited by present economic constraints.*

References

1. Boserup, E. 1965. Conditions of Agricultural Growth. Aldine Publishing Company, Chicago, Illinois.
2. Bromfield, L. 1947. Malabar Farm. Harper, New York, New York.
3. Dale, T., and V. G. Carter. 1955. Topsoil and Civilization. Oklahoma University Press, Norman, Oklahoma.
4. Hayami, Y., and V. W. Ruttan. 1985. Agricultural Development: An International Perspective. The Johns Hopkins University Press, Baltimore, Maryland. pp. 280-298.
5. Pingali, P., Y. Bigot, and H. P. Binswanger. 1987. Agricultural Mechanization and the Evolution of Farming Systems in Sub-Saharan Africa. The Johns Hopkins University Press, Baltimore, Maryland.
6. Ruttan, V. W., and H. von Witzke. 1988. Toward a Global Agricultural System. Interdisciplinary Science Reviews (in press).

26

Macroeconomic Statistics for ANE's Rural Economic Growth Strategy

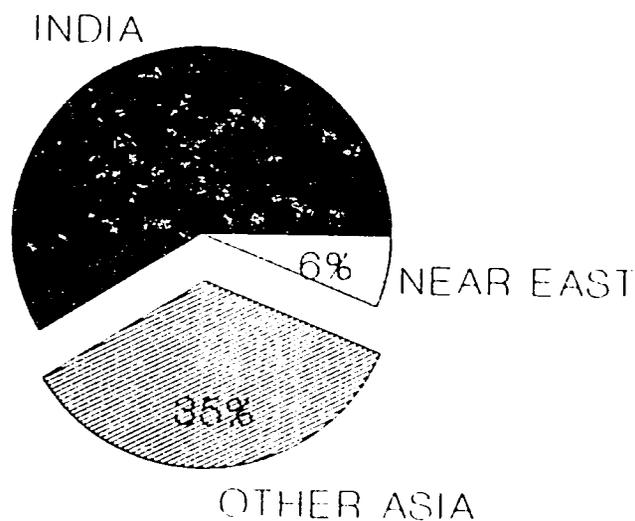
Prepared by

ANE/TR/ARD and
The Harvard Institute for International Development
February 1989

POPULATION

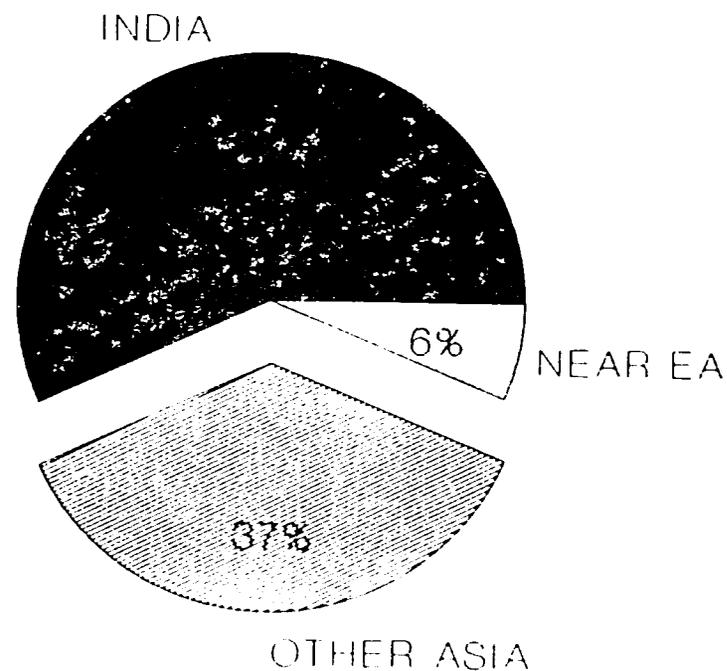
India, Other Selected Asia and Near East

1961



Total=0.768 billion

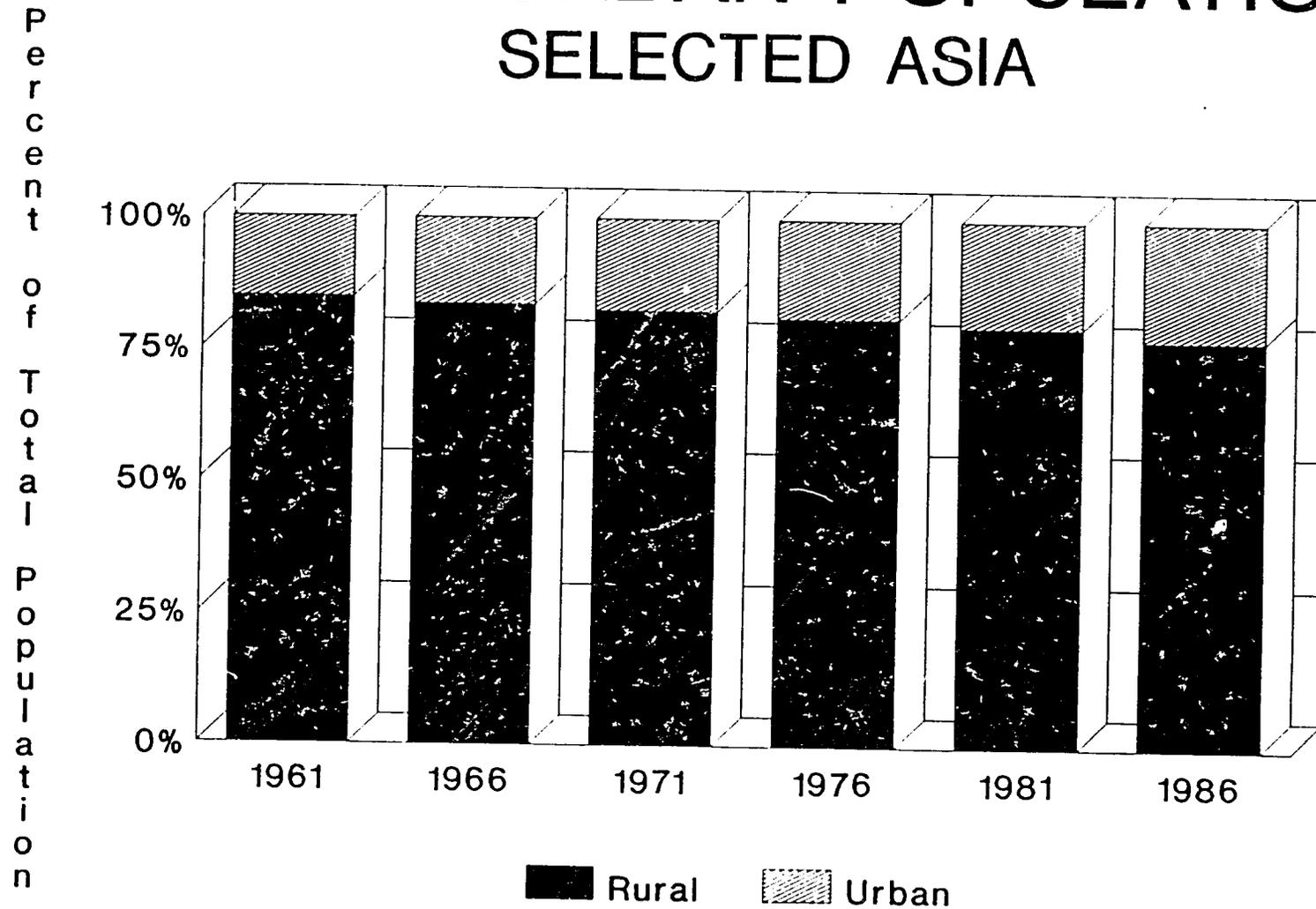
1986



Total=1.357 billion

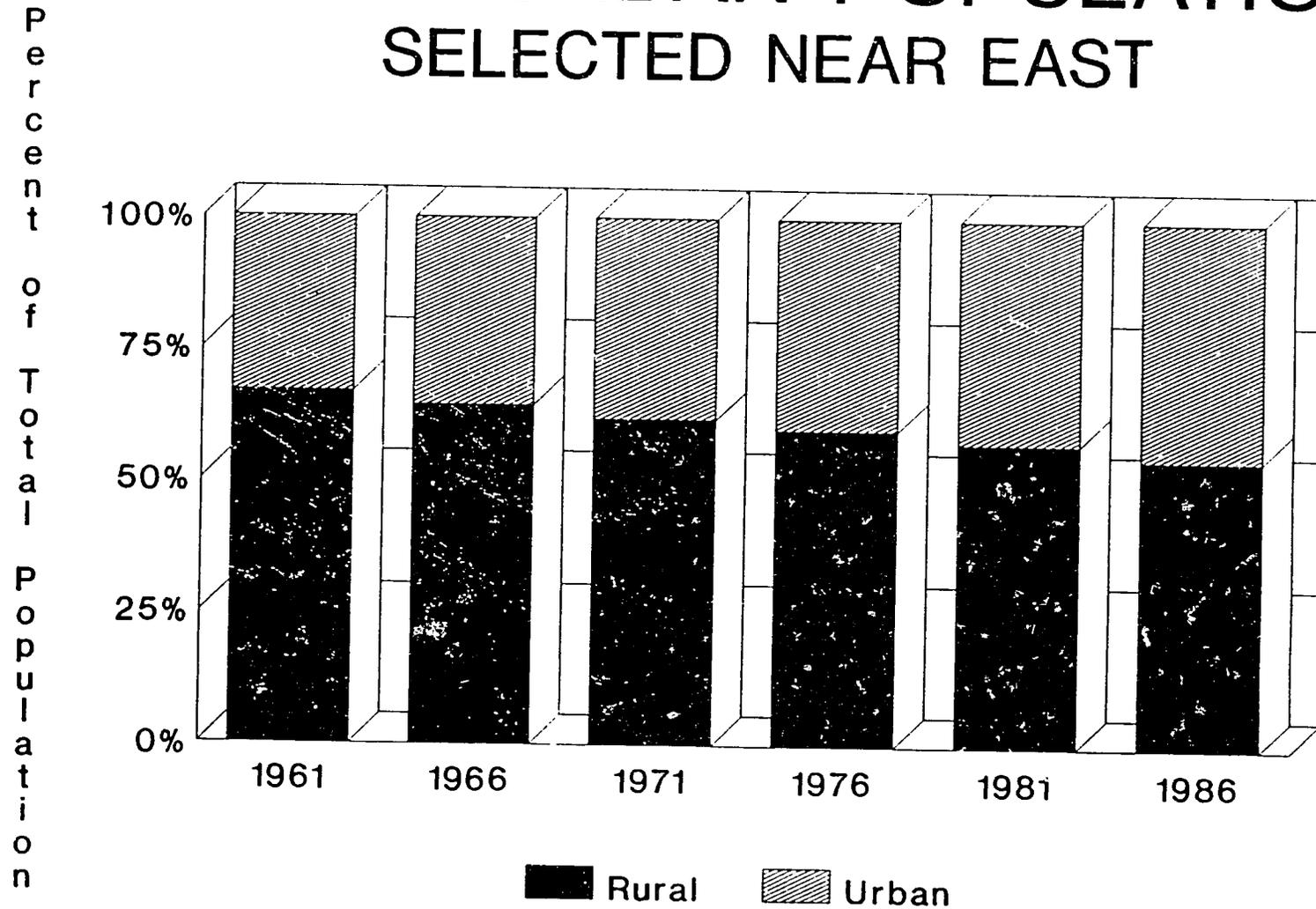
Source: FAO

RURAL/URBAN POPULATION SELECTED ASIA



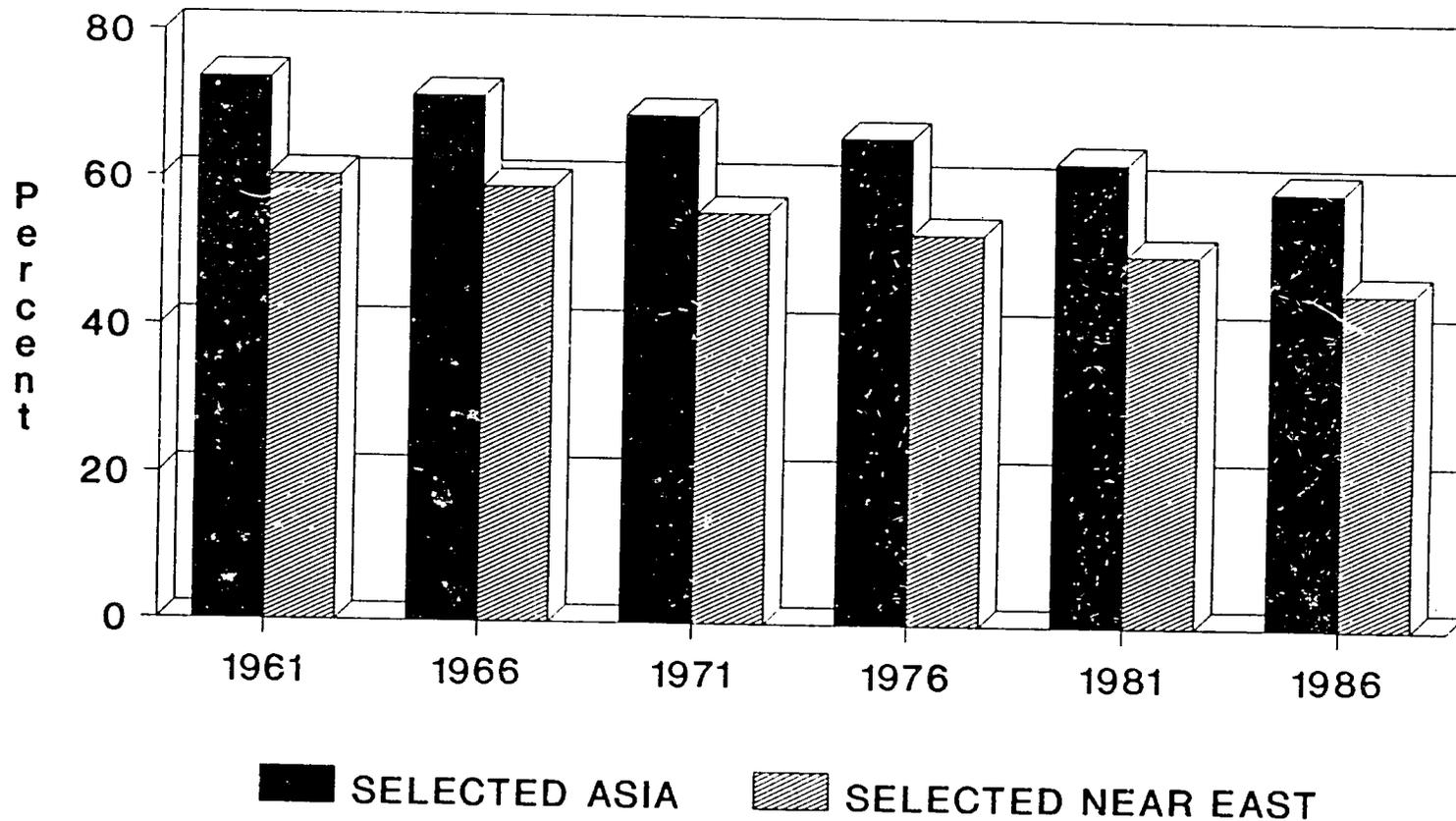
Source: World Bank, FAO

RURAL/URBAN POPULATION SELECTED NEAR EAST



Source: World Bank, FAO

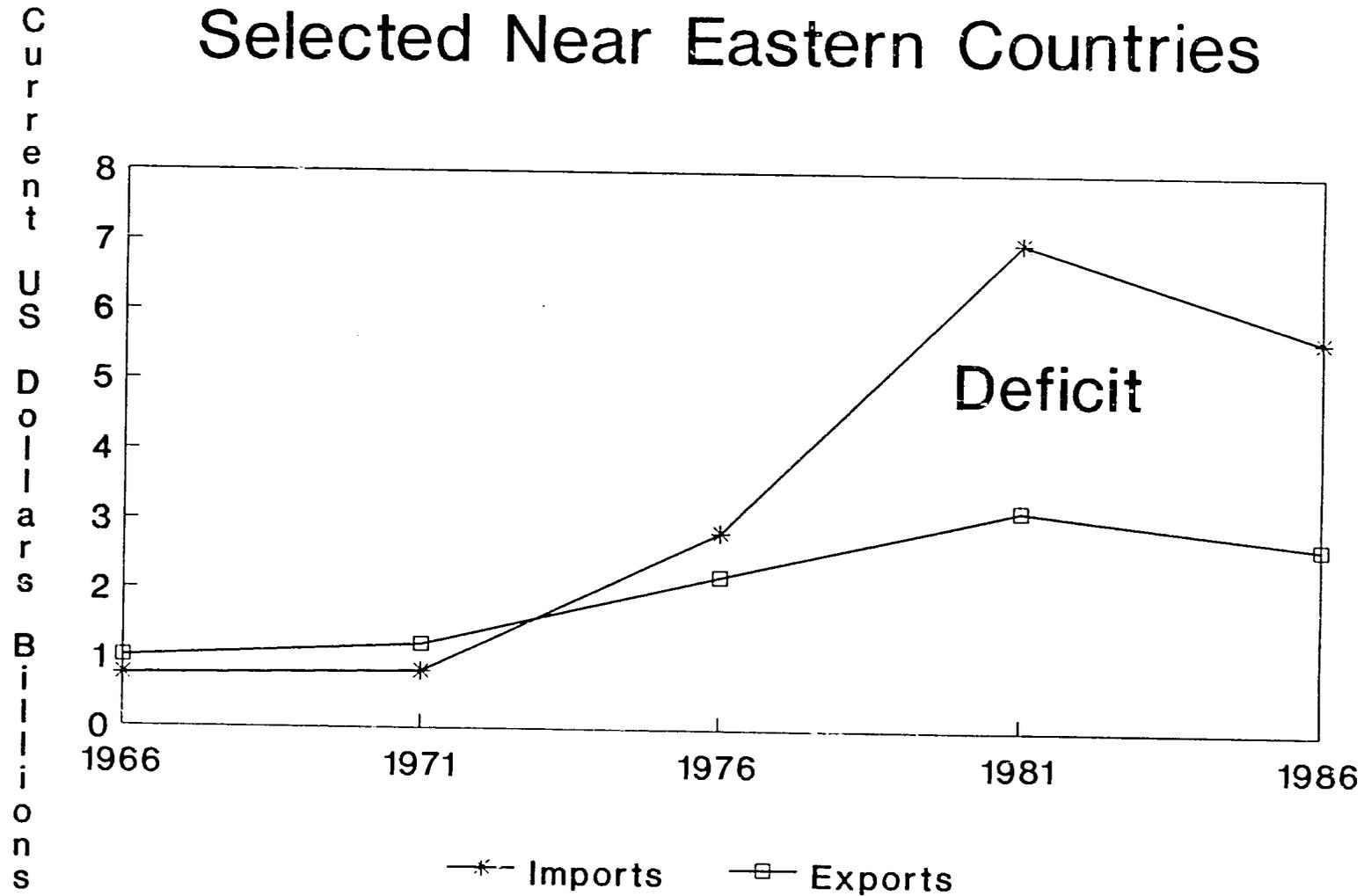
Agricultural Labor Force As Percentage of Total Labor Force



Source: World Bank, FAO

AGRICULTURAL TRADE

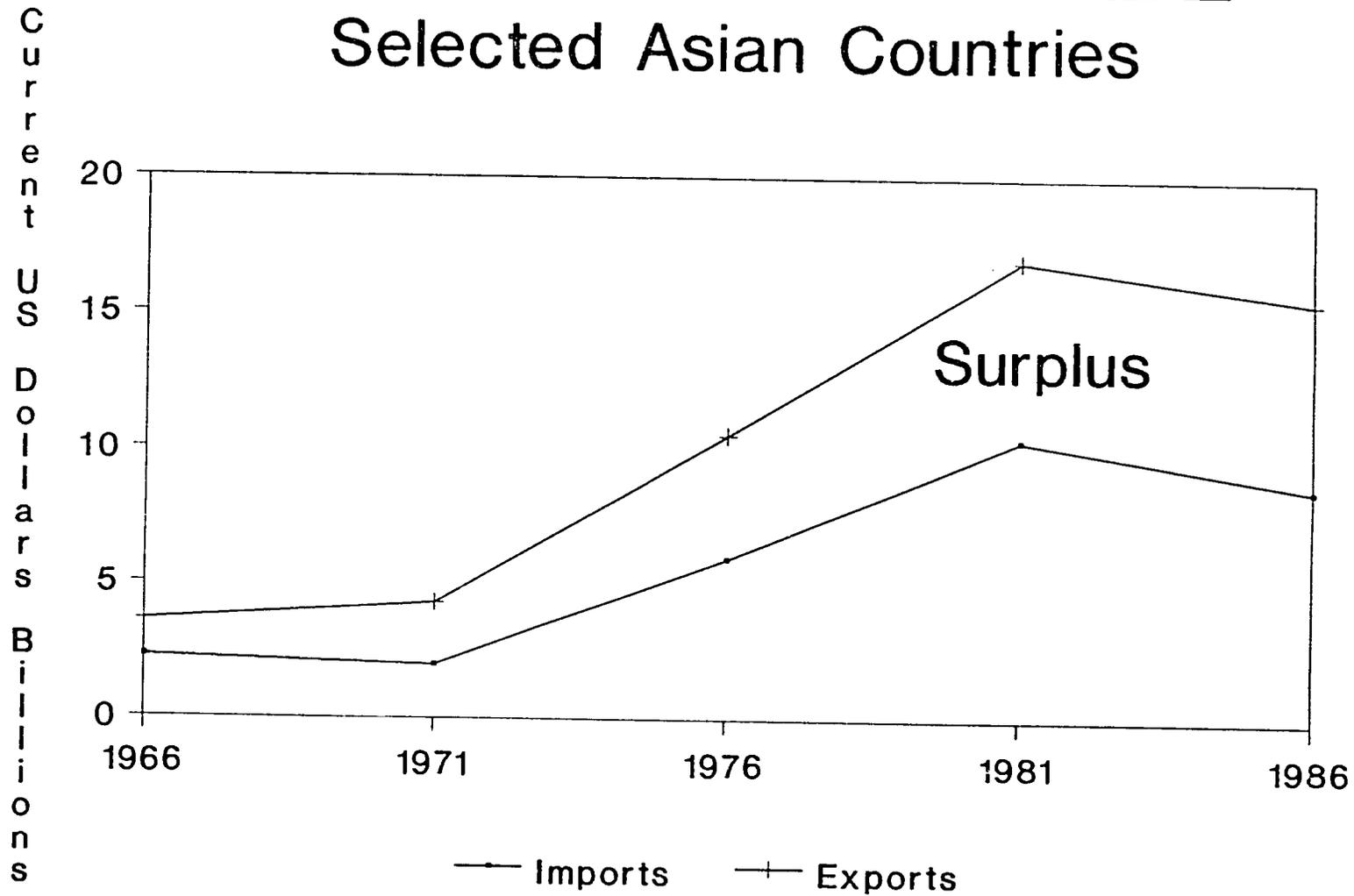
Selected Near Eastern Countries



Source: World Bank

AGRICULTURAL TRADE

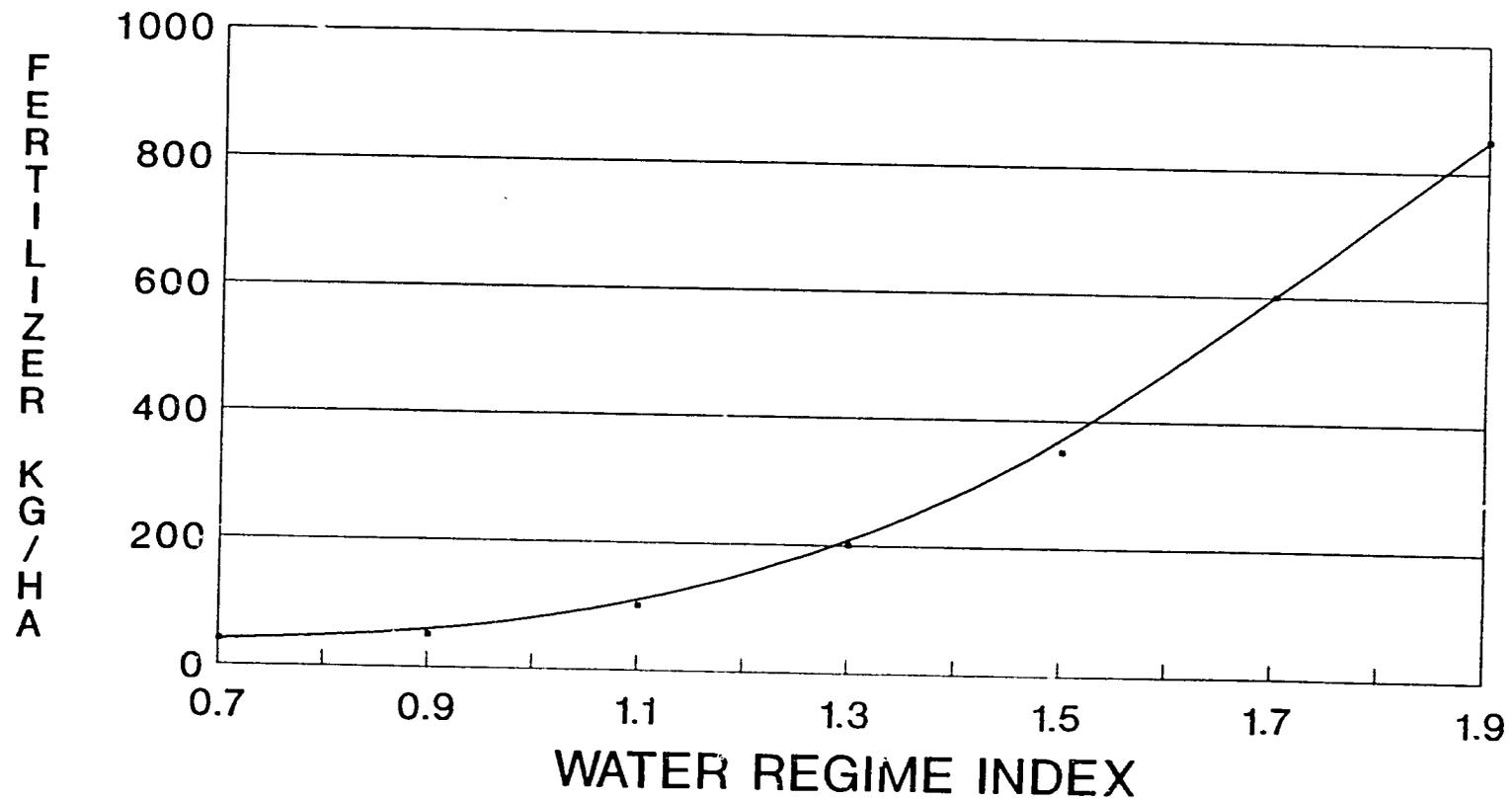
Selected Asian Countries



Source: World Bank

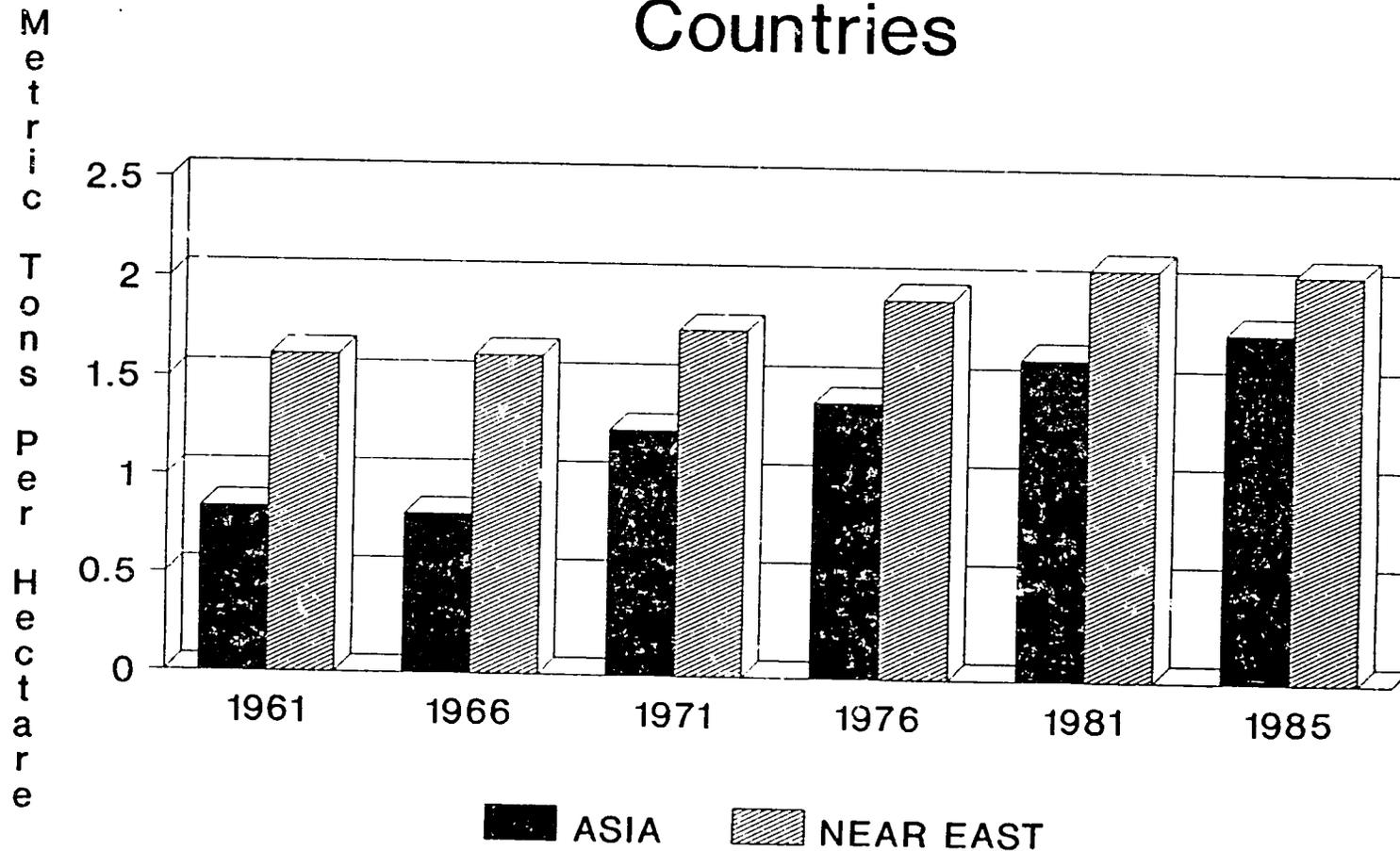
52

Water Regime and Fertilizer/H for Cereals SELECTED ASIAN COUNTRIES



WHEAT YIELDS

Selected Asian and Near Eastern Countries

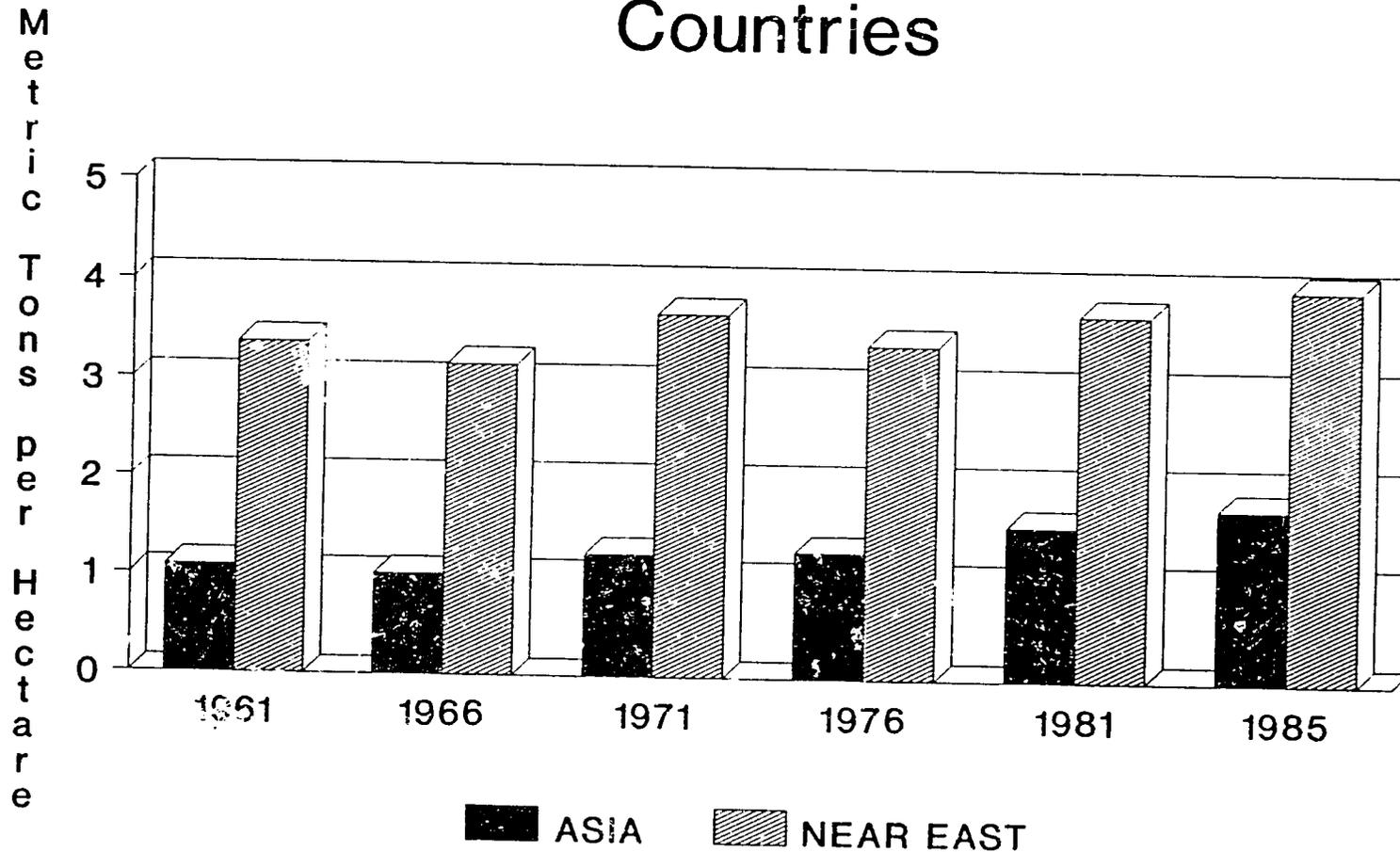


Source: USDA (FAS)

5/14

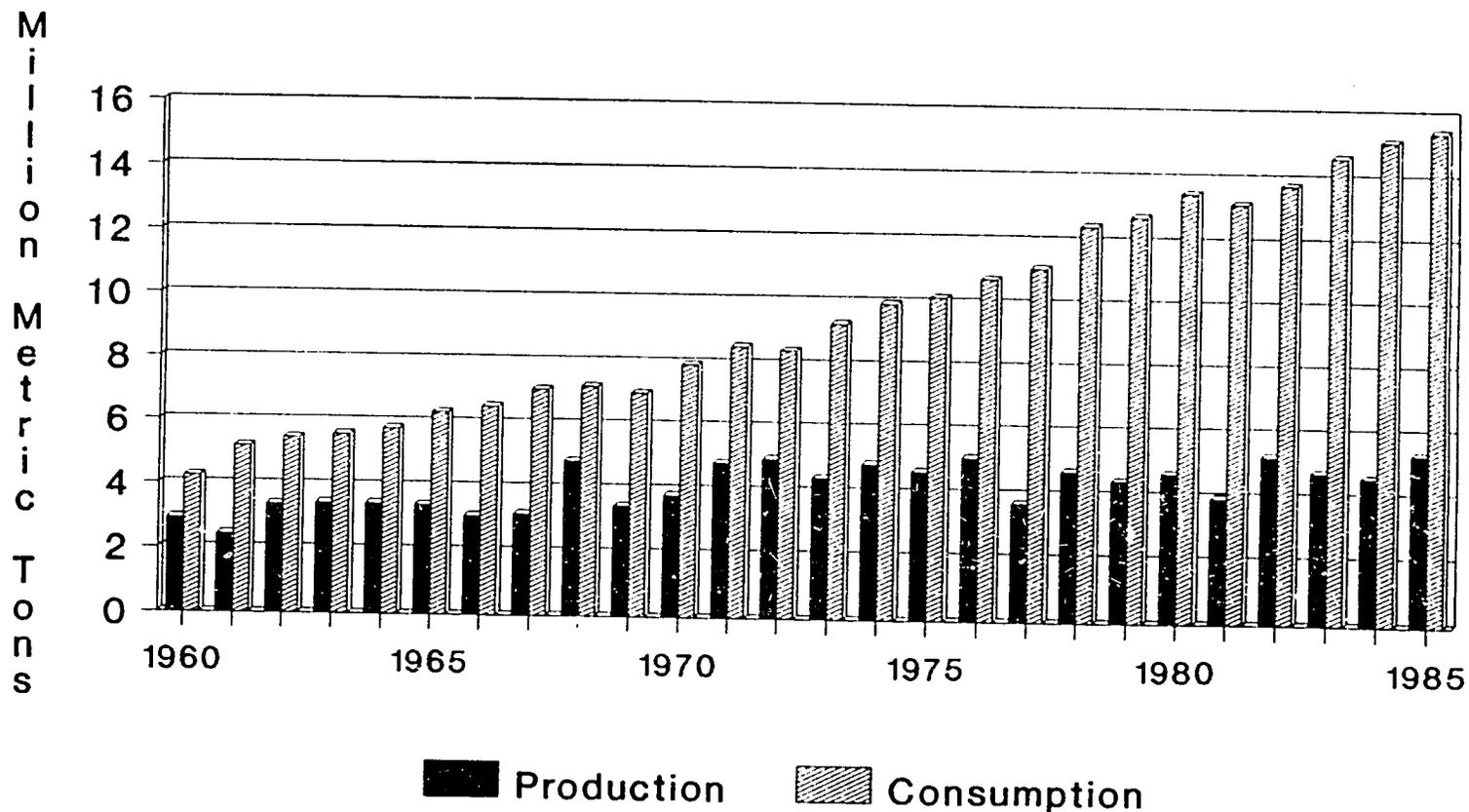
RICE YIELDS

Selected Asian and Near Eastern Countries



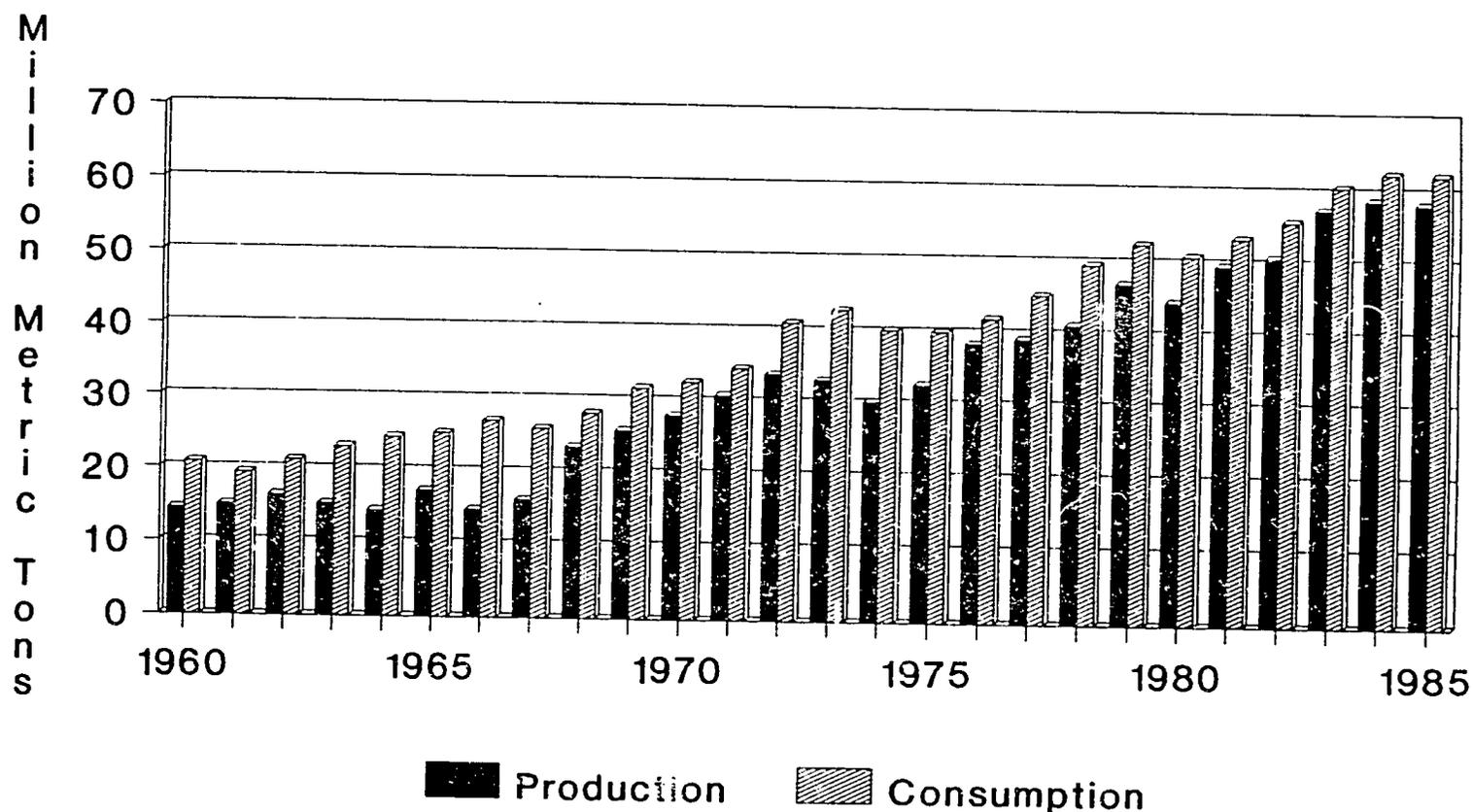
Source: USDA (FAS)

WHEAT PRODUCTION AND CONSUMPTION IN SELECTED NEAR EAST



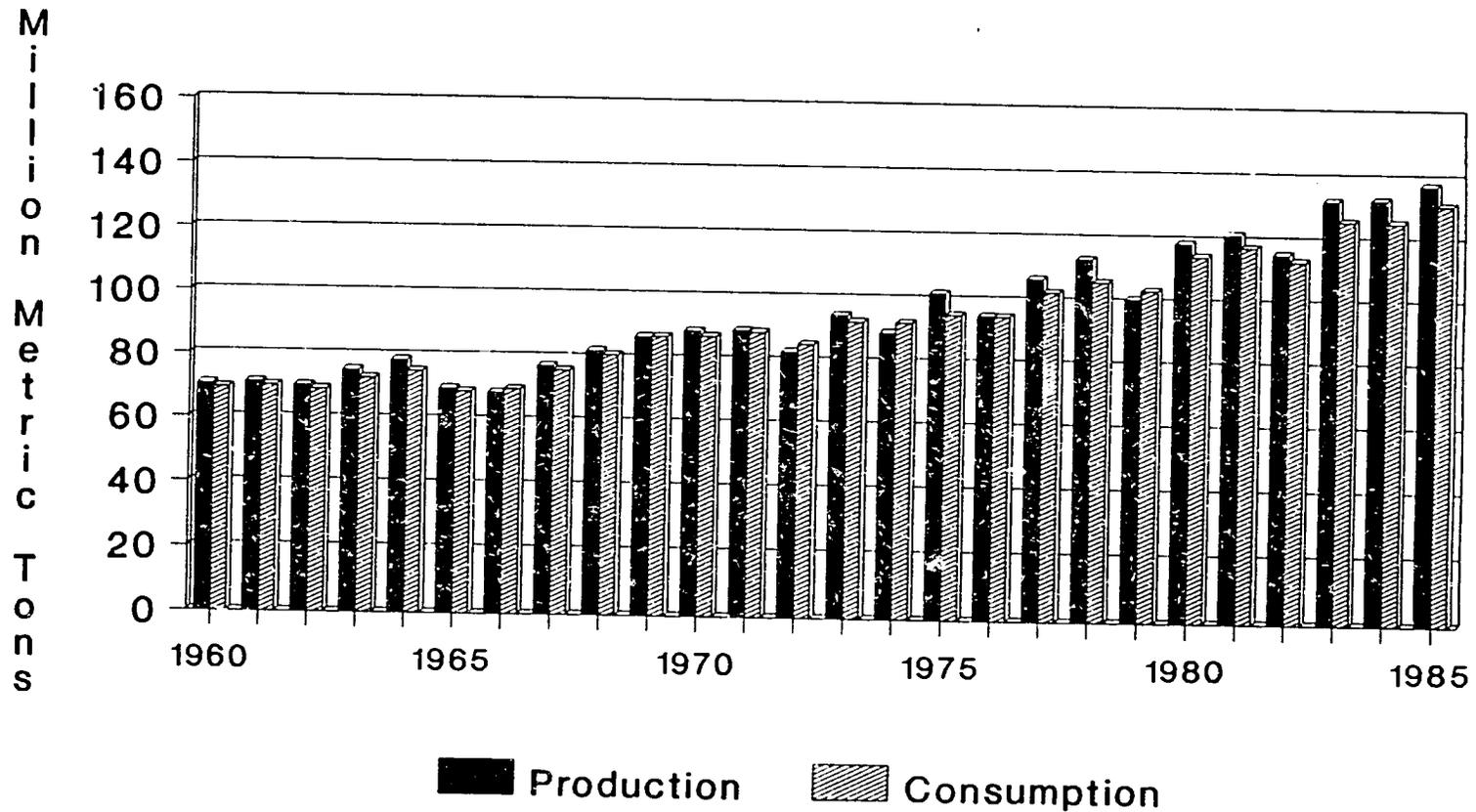
Source: USDA (FAS)

WHEAT PRODUCTION AND CONSUMPTION IN SELECTED ASIA



SOURCE: USDA (FAS)

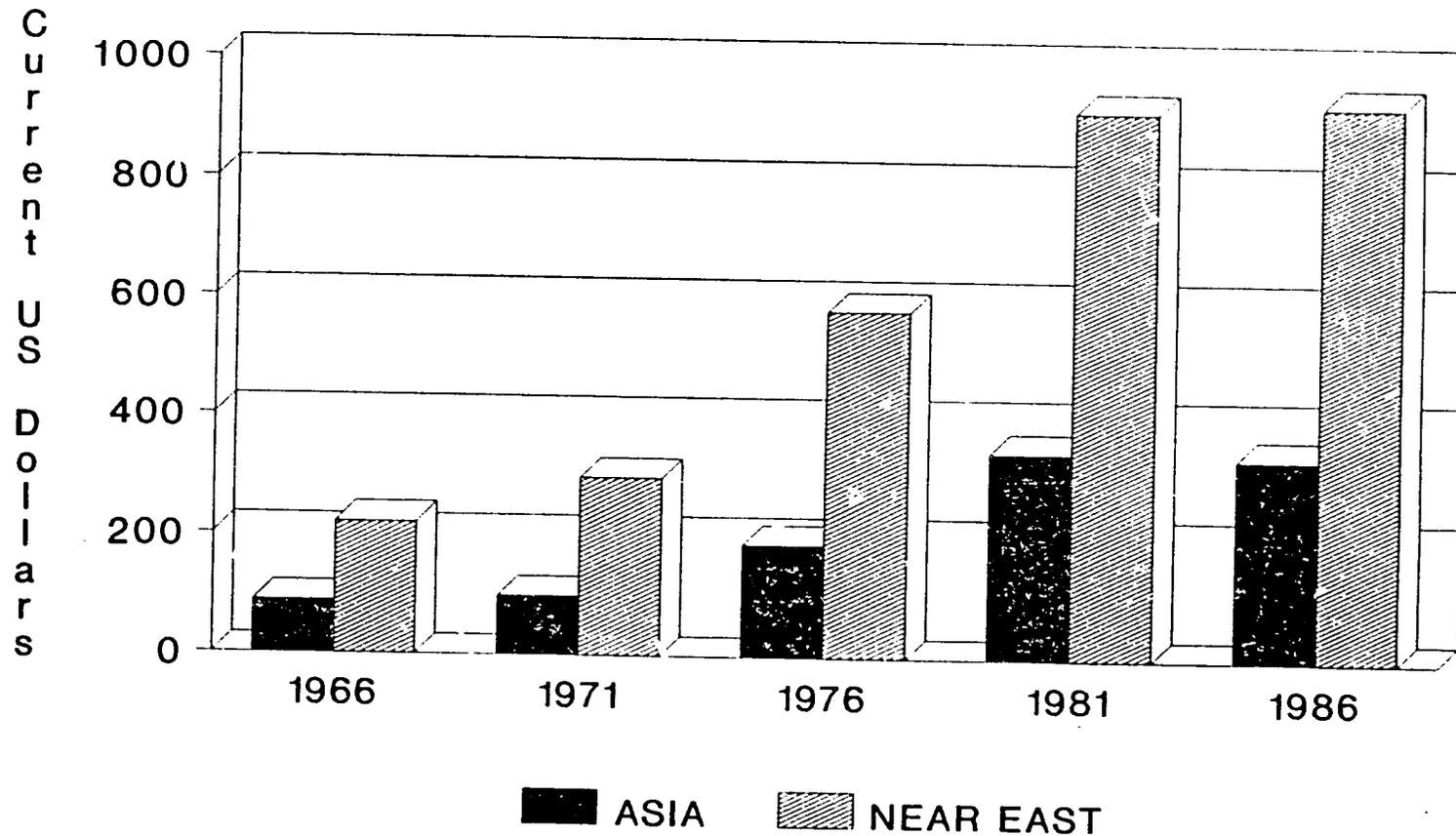
RICE PRODUCTION AND CONSUMPTION IN SELECTED ASIA



SOURCE: USDA (FAS)

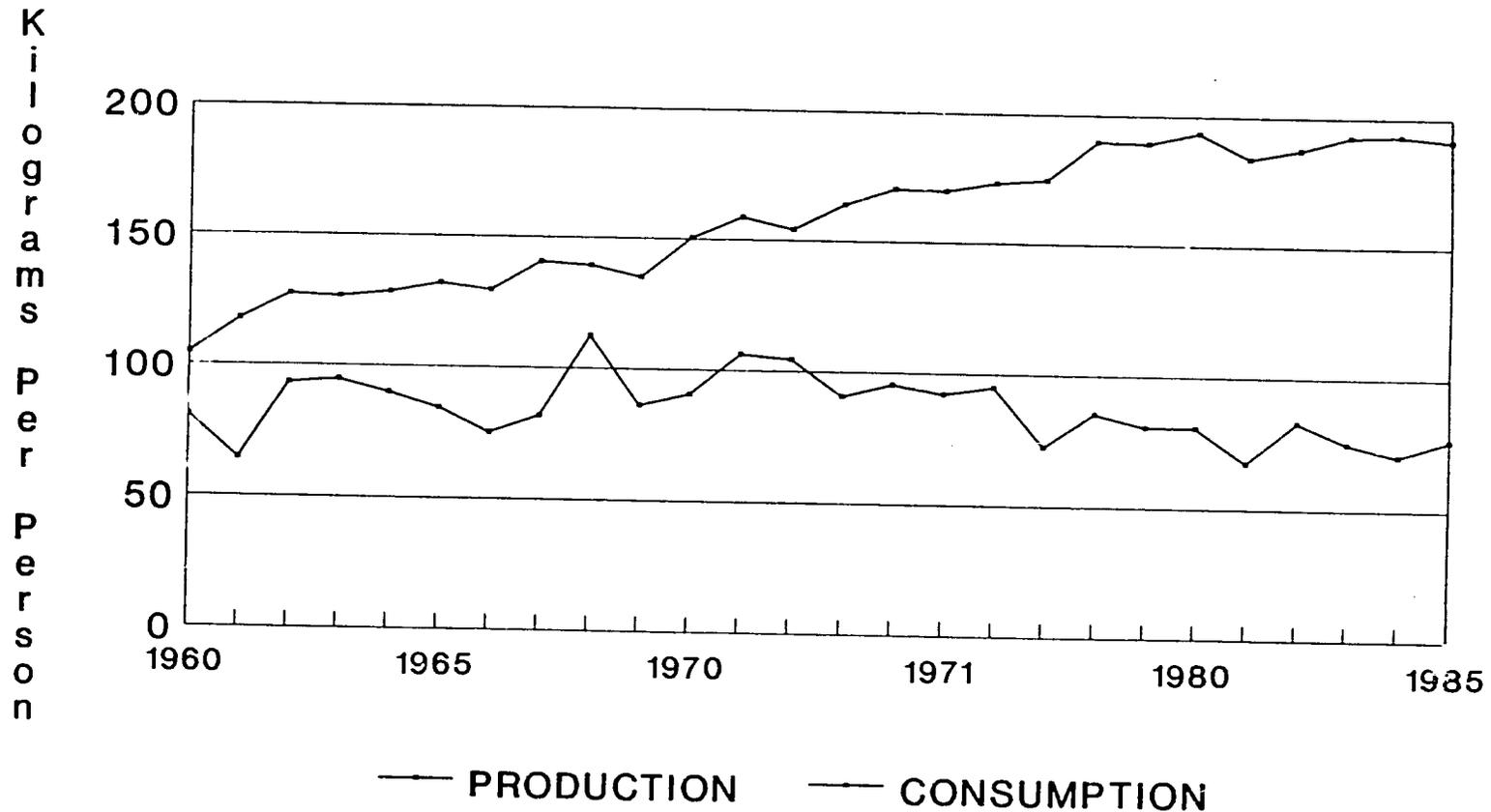
REAL GNP PER CAPITA

Selected Asia and Near East Countries



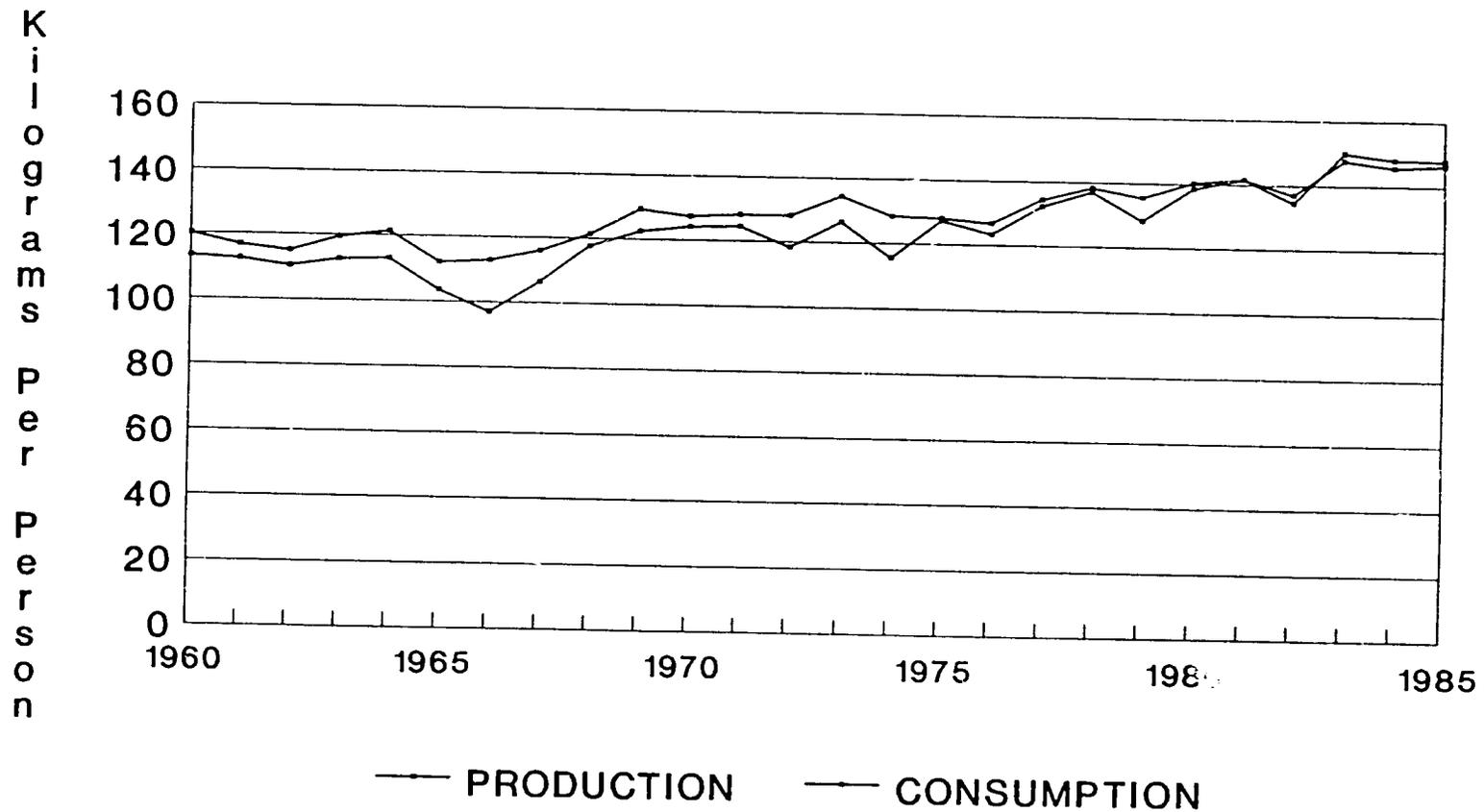
SOURCE: WORLD BANK

Foodgrain Production and Consumption Per Capita NEAR EAST



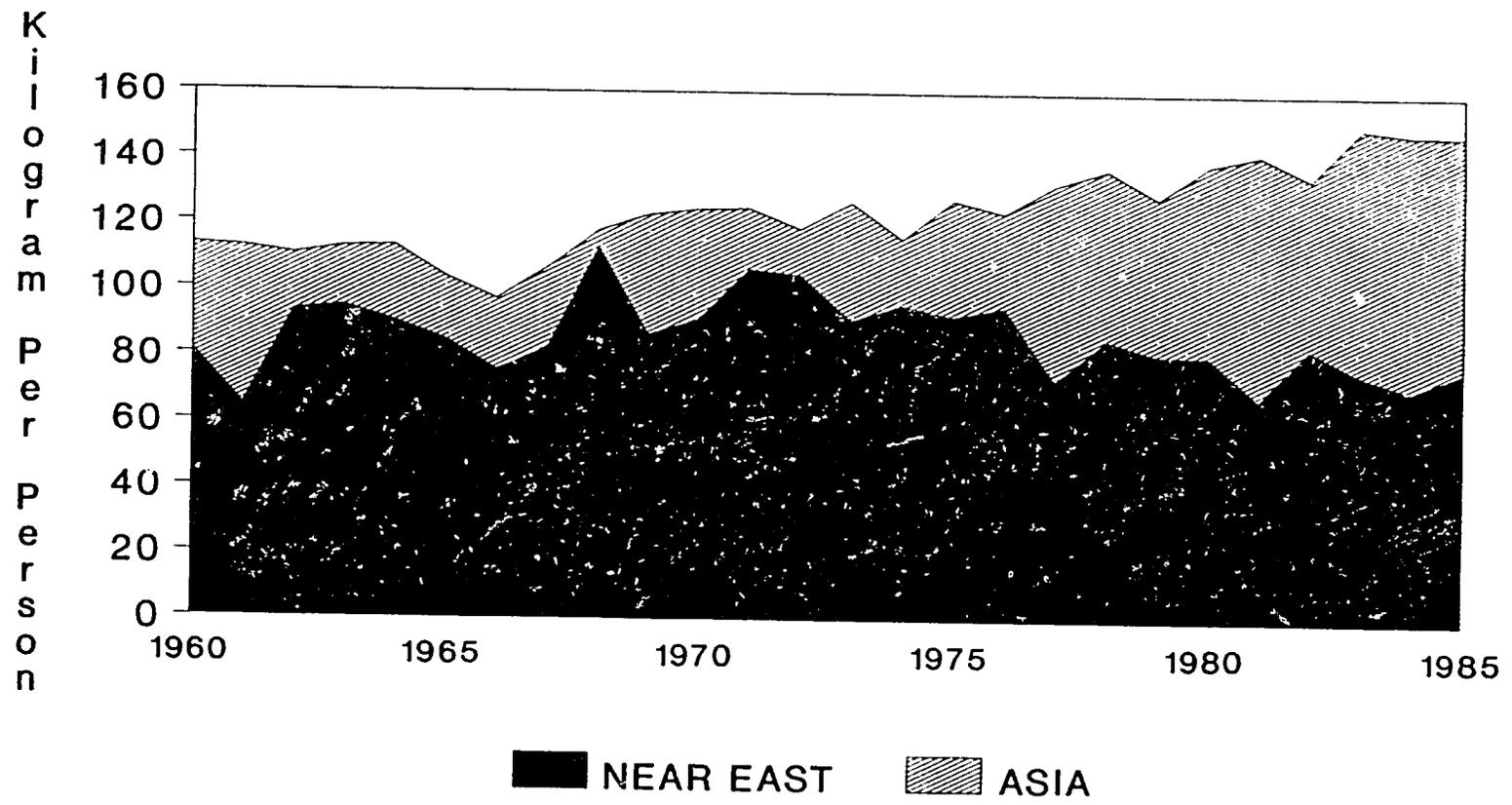
Source: USDA (FAS)

Foodgrain Production and Consumption Per Capita SELECTED ASIA



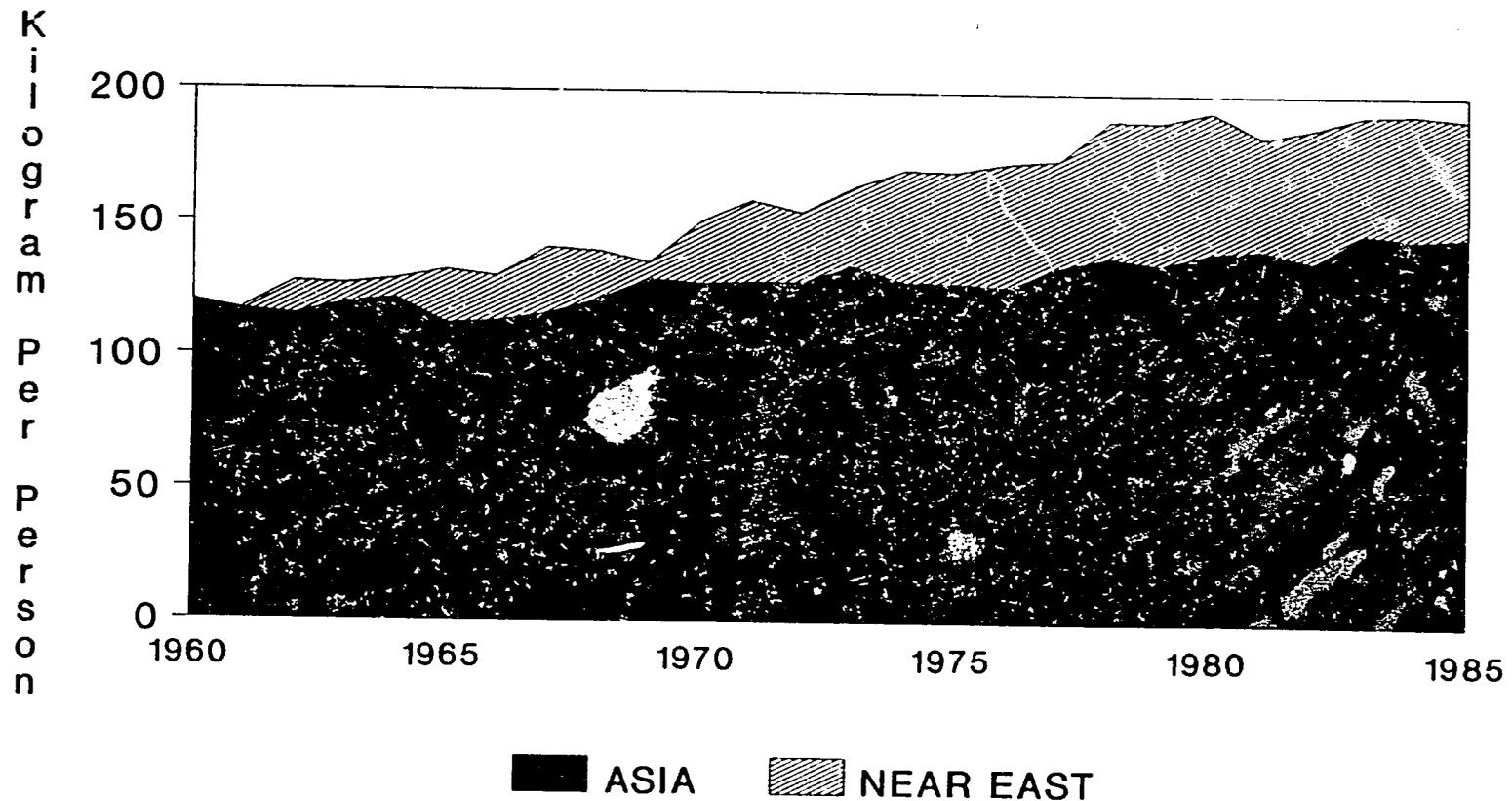
SOURCE: USDA (FAS)

FOODGRAIN PRODUCTION PER CAPITA NEAR EAST AND ASIA



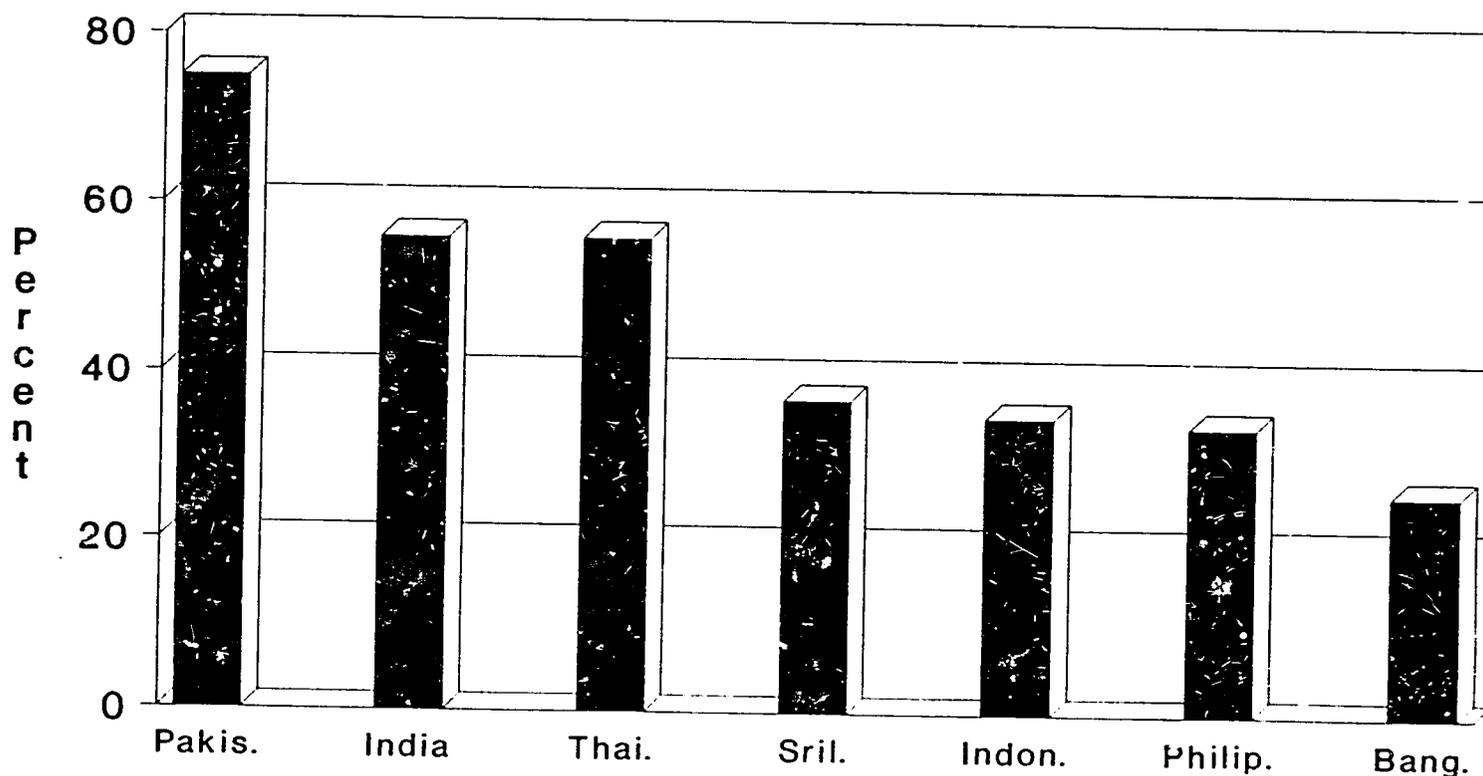
Source: USDA (FAS)

FOODGRAIN CONSUMPTION PER CAPITA NEAR EAST AND ASIA



SOURCE: USDA (FAS)

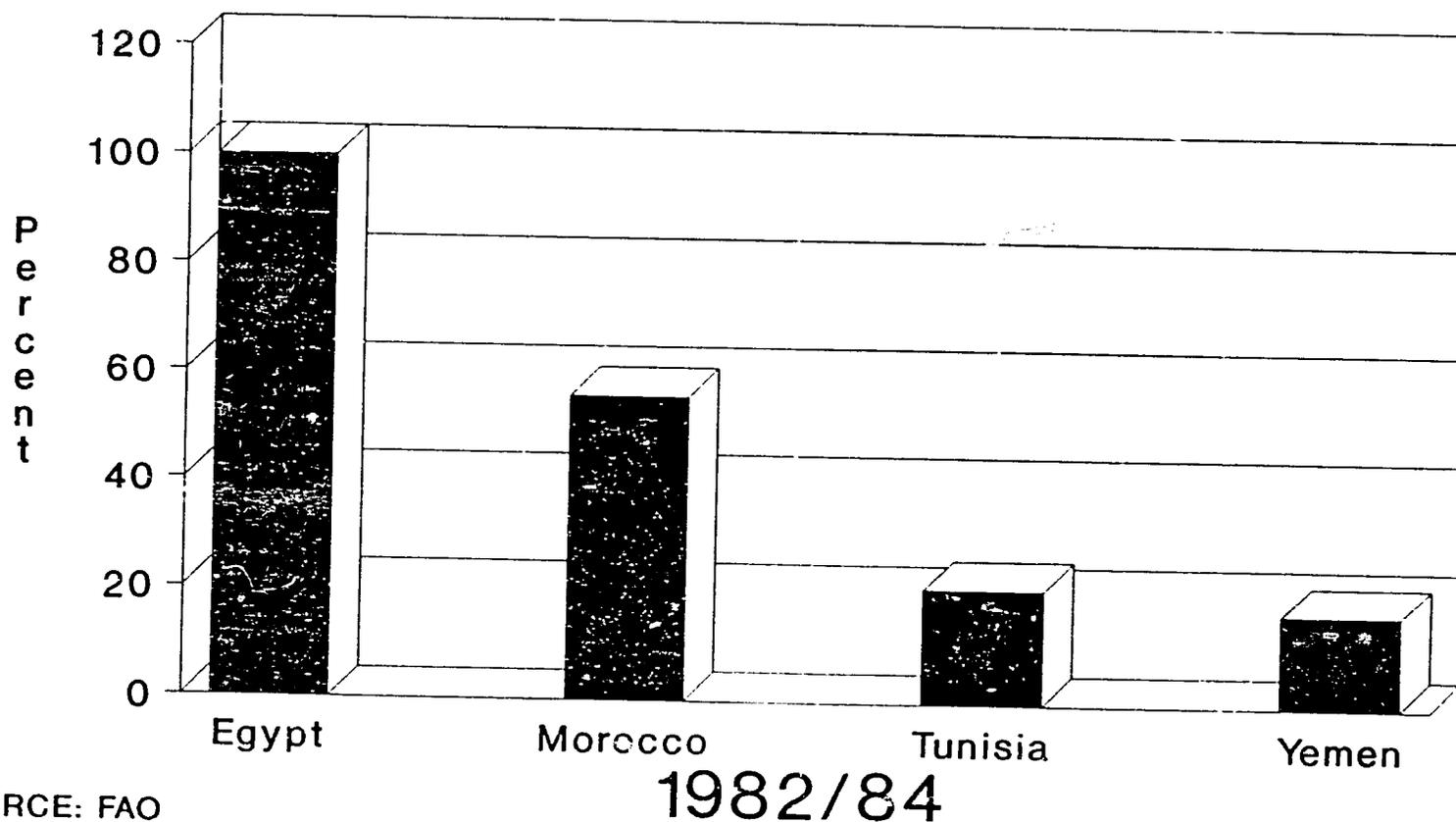
SHARE OF HIGHER QUALITY LAND IN TOTAL LAND USE SELECTED ASIA (Good Quality=Irrigated+Rainfed)



SOURCE: FAO

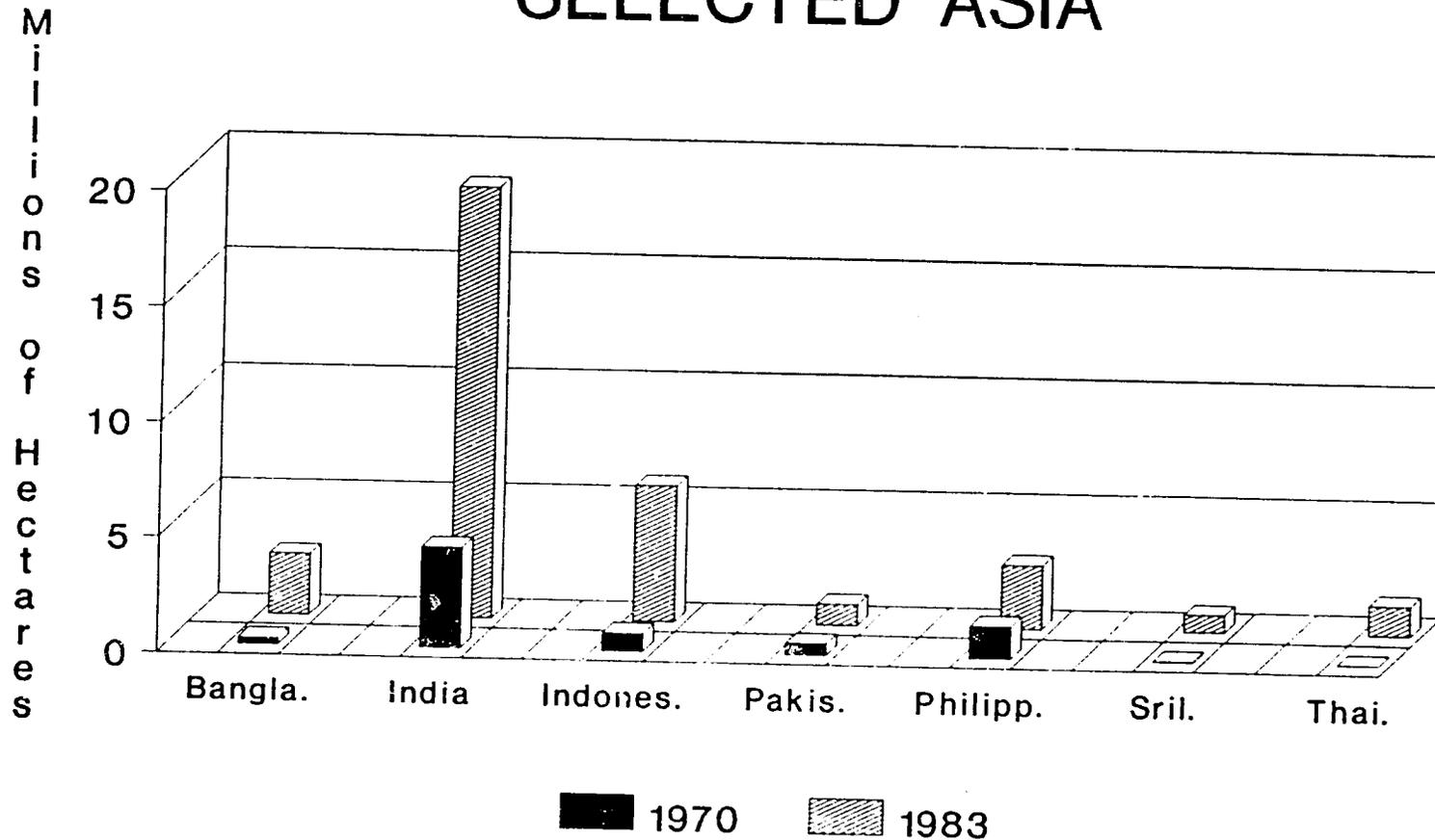
1982/84

SHARE OF HIGHER QUALITY LAND IN TOTAL LAND USE SELECTED NEAR EAST (Good Quality=Irrigated+Better Rainfed)



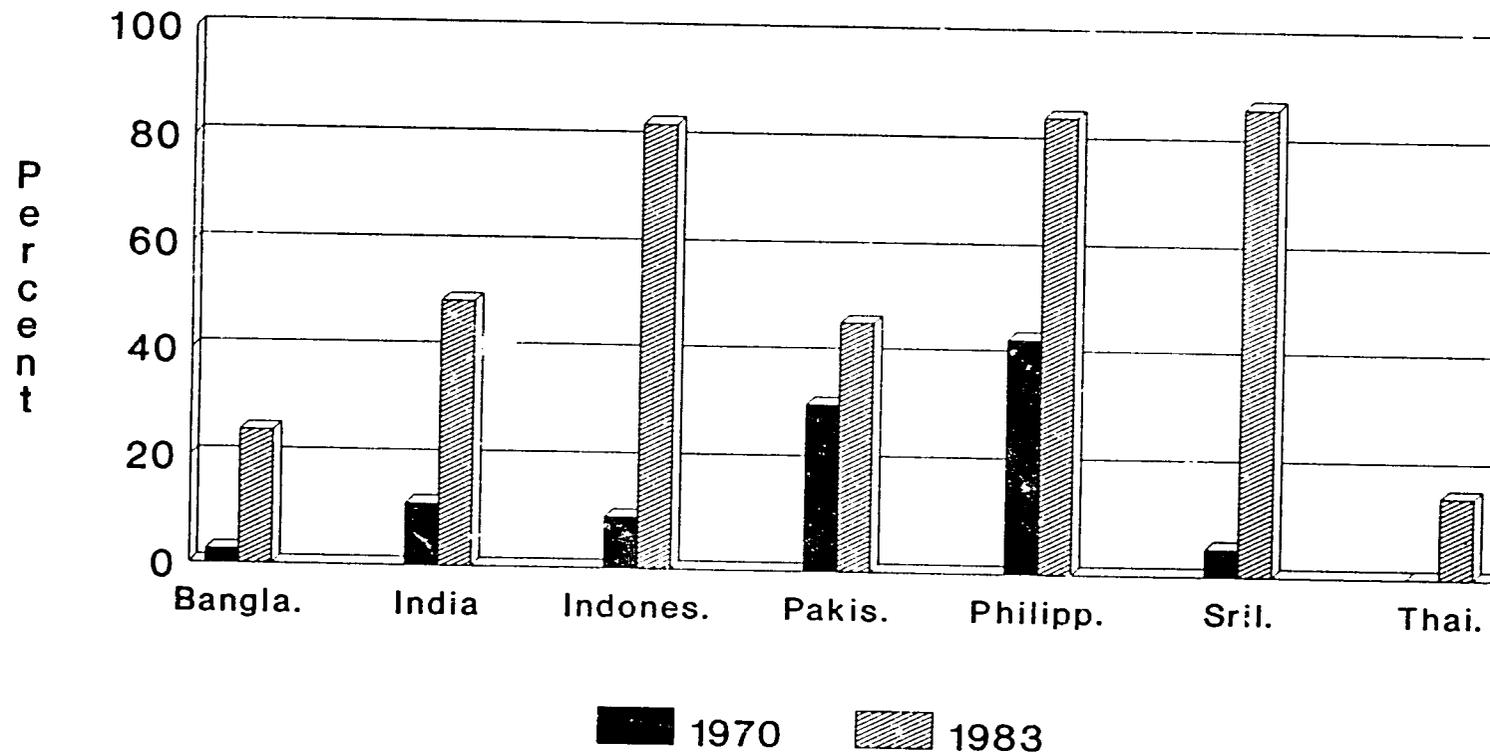
SOURCE: FAO

AREA IN HIGH YIELDING VARIETIES OF RICE SELECTED ASIA



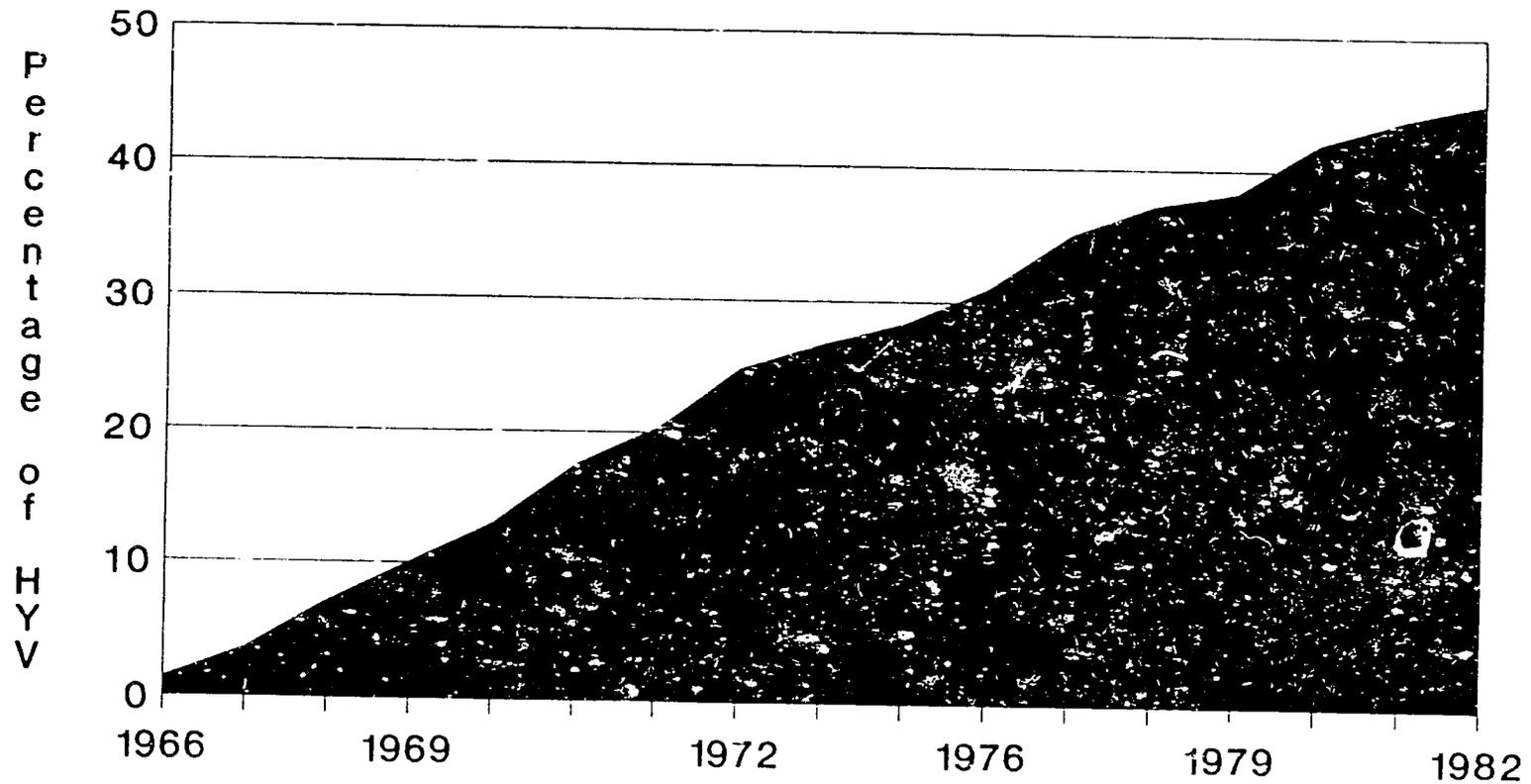
SOURCE: D. Dalrymple

Share of High Yielding Varieties of Rice in Total Area SELECTED ASIA



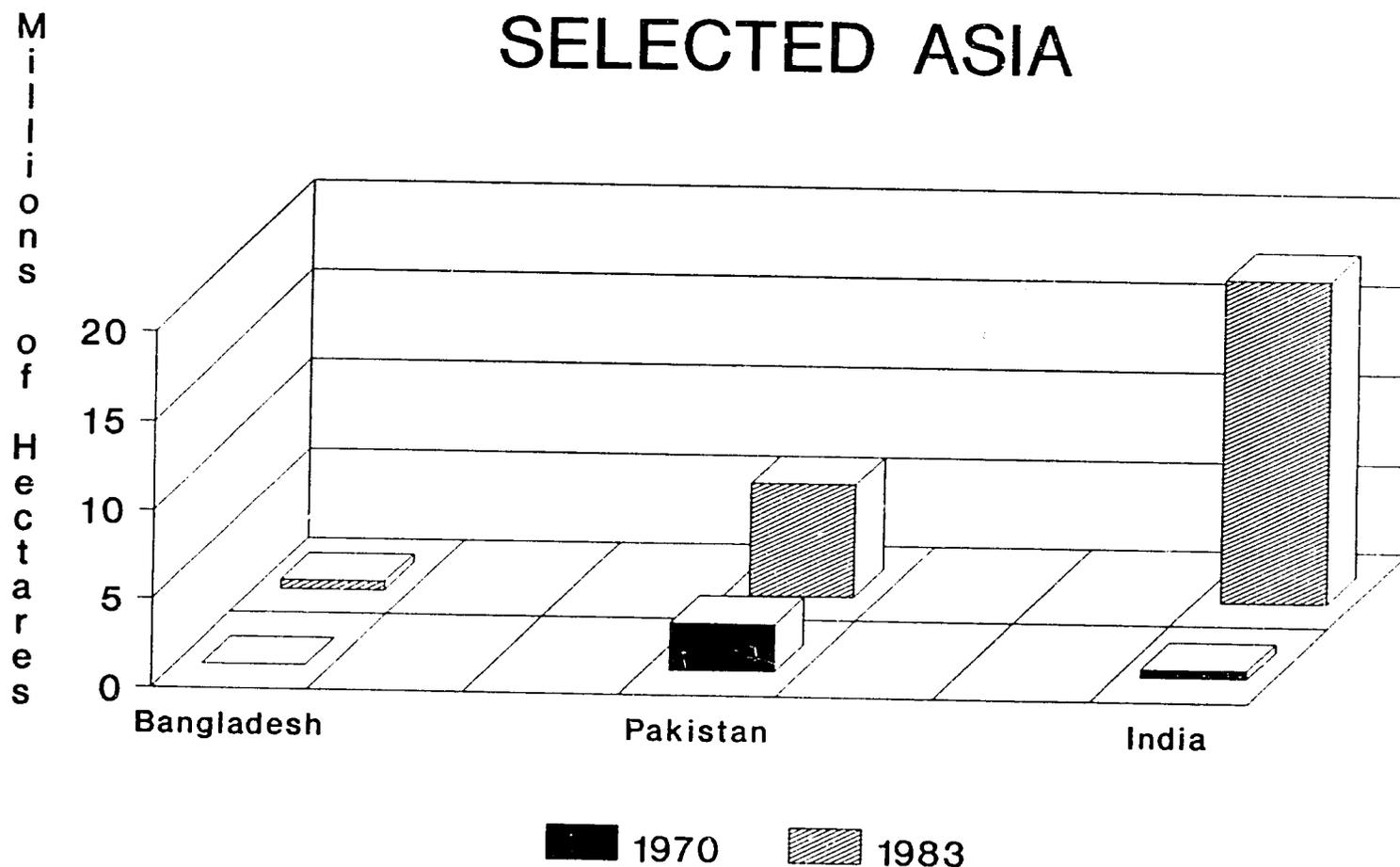
SOURCE: D. Dalrymple

Growth of Area in High Yielding Varieties of Rice SELECTED ASIA



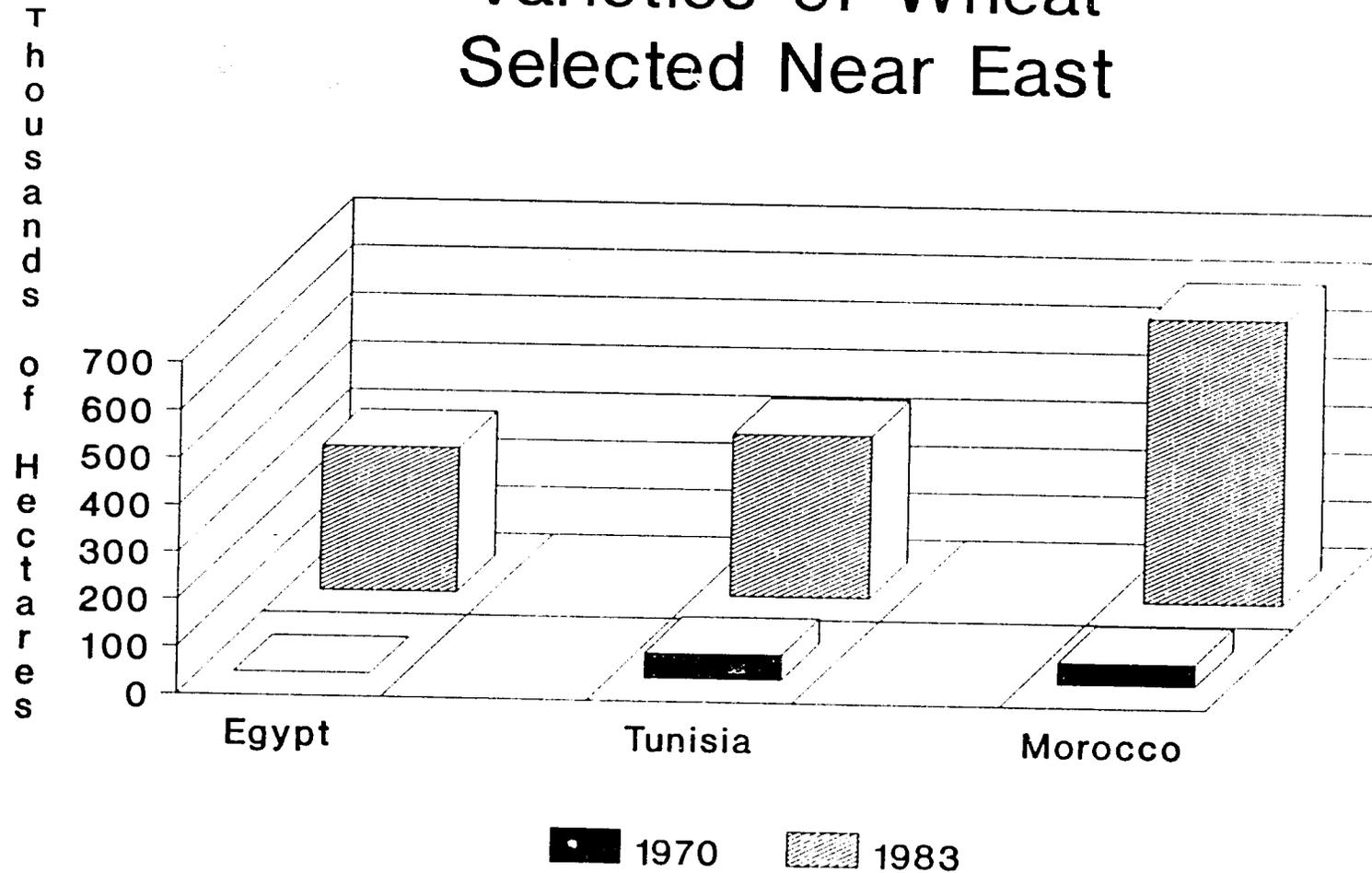
SOURCE: D. Dalrymple

AREA OF HIGH YIELDING VARIETIES OF WHEAT SELECTED ASIA



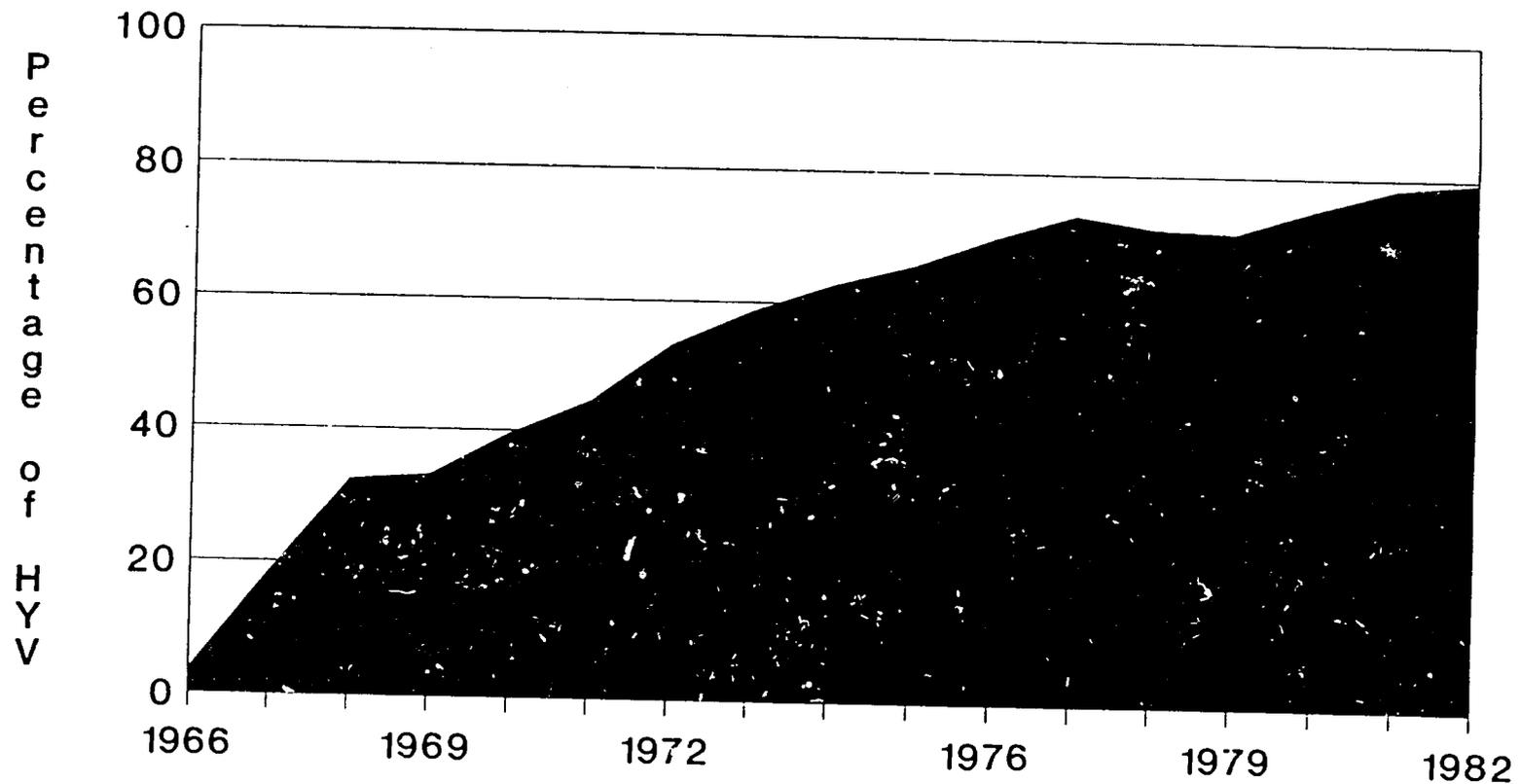
SOURCE: D. Darlymple

Area of High Yielding Varieties of Wheat Selected Near East



SOURCE: D. Darlymple

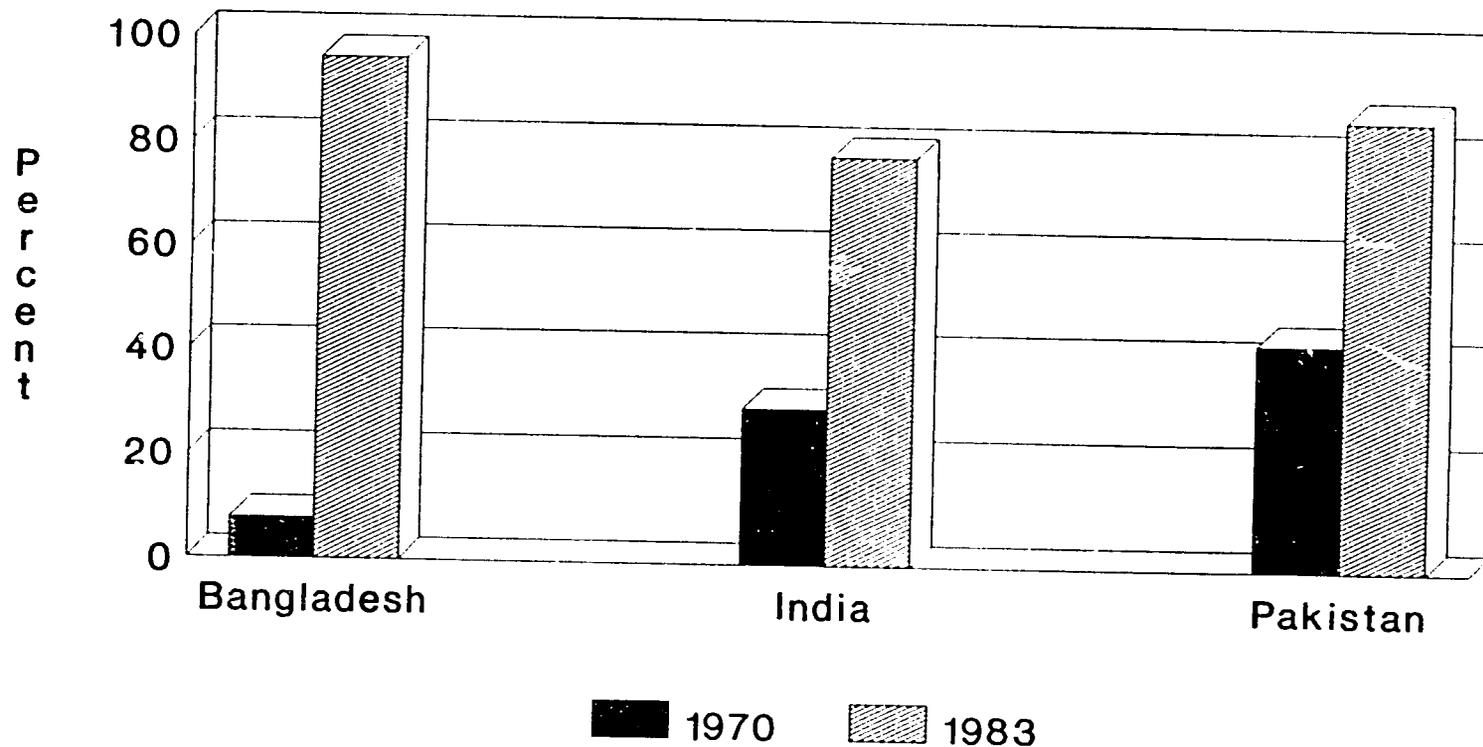
Growth of Area in High Yielding Varieties of Wheat Selected Asia



Source: D. Darlymple

23

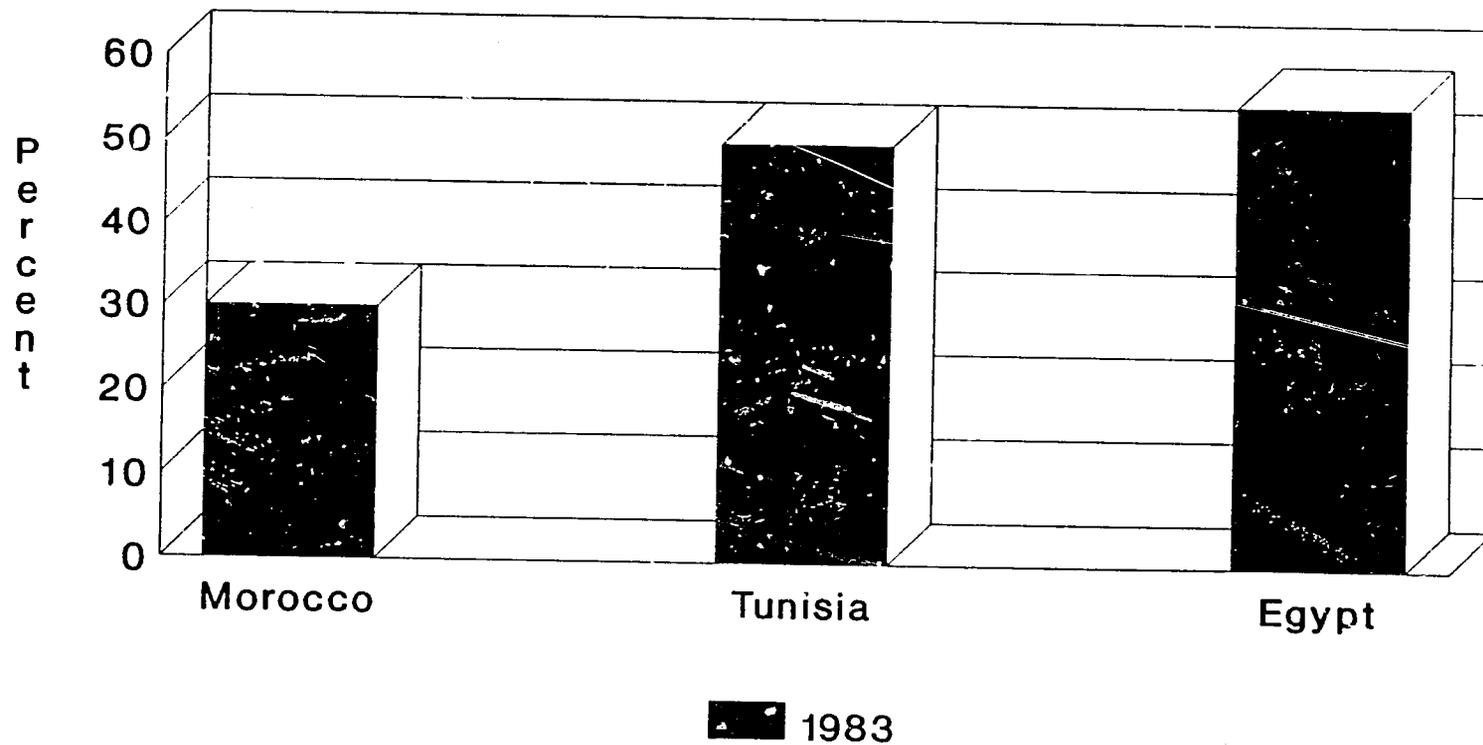
Share of High Yielding Varieties of Wheat in Total Area Selected Asia



SOURCE: D. Darlymple

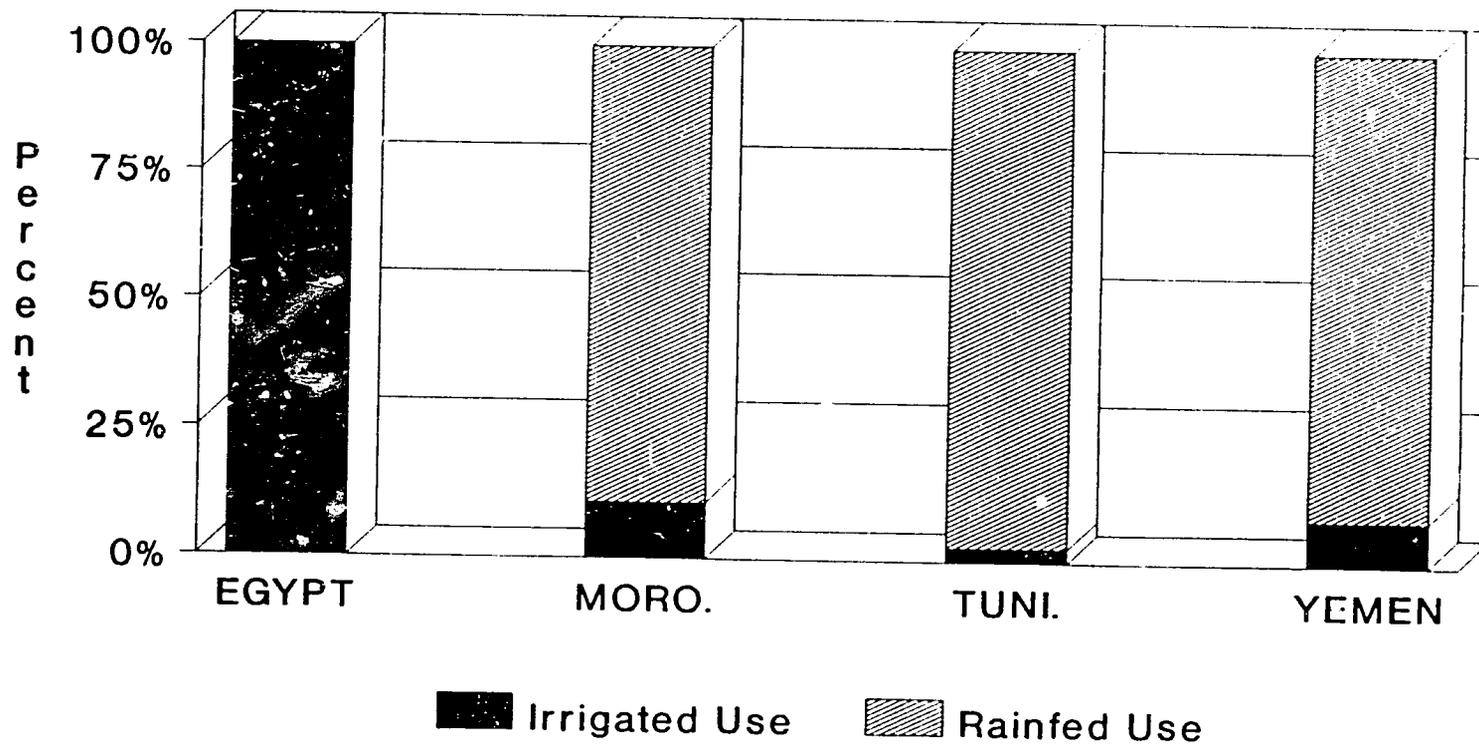
592

Share of High Yielding Varieties of Wheat in Total Area Selected Near East



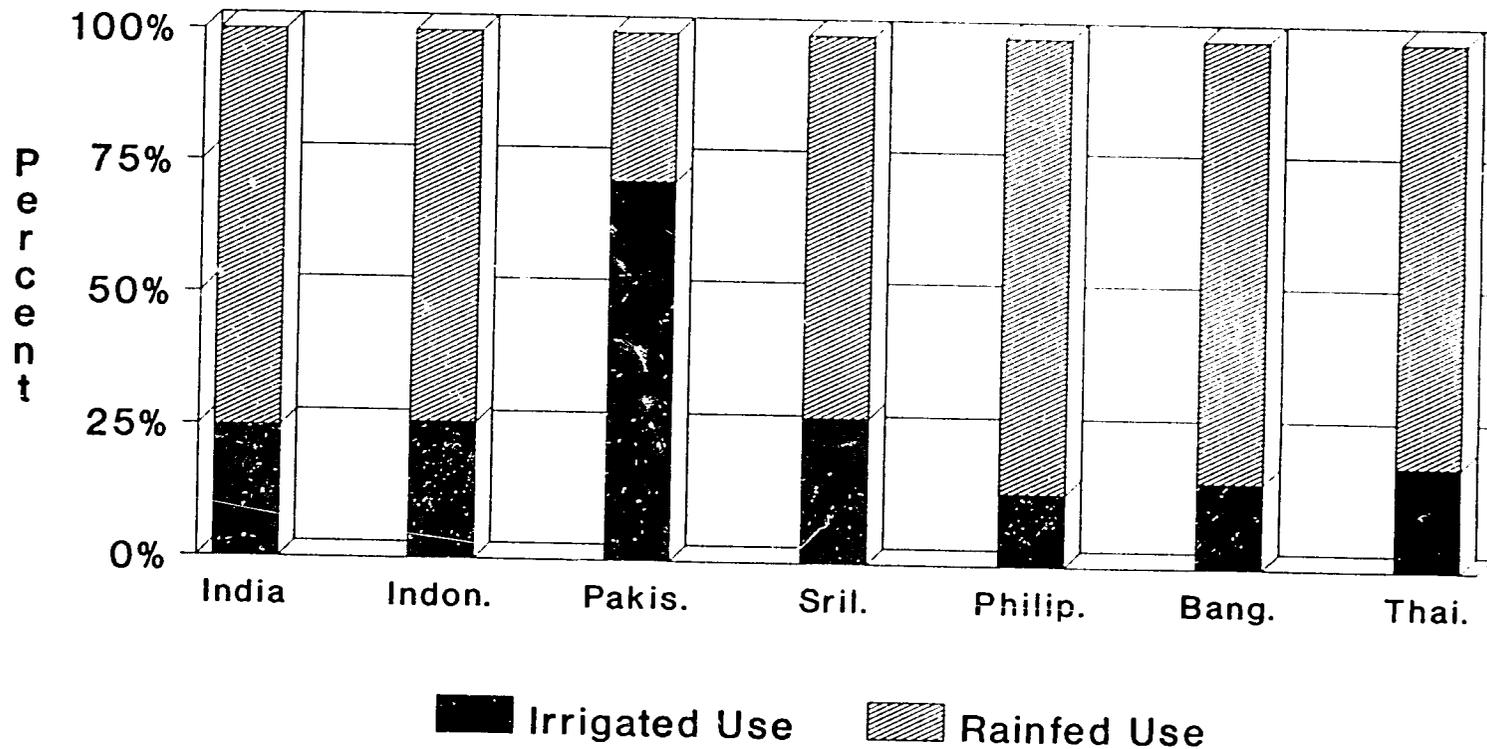
SOURCE: D. Darlymple

PERCENTAGE OF AGRICULTURAL LAND IRRIGATED SELECTED NEAR EAST 1982/1984



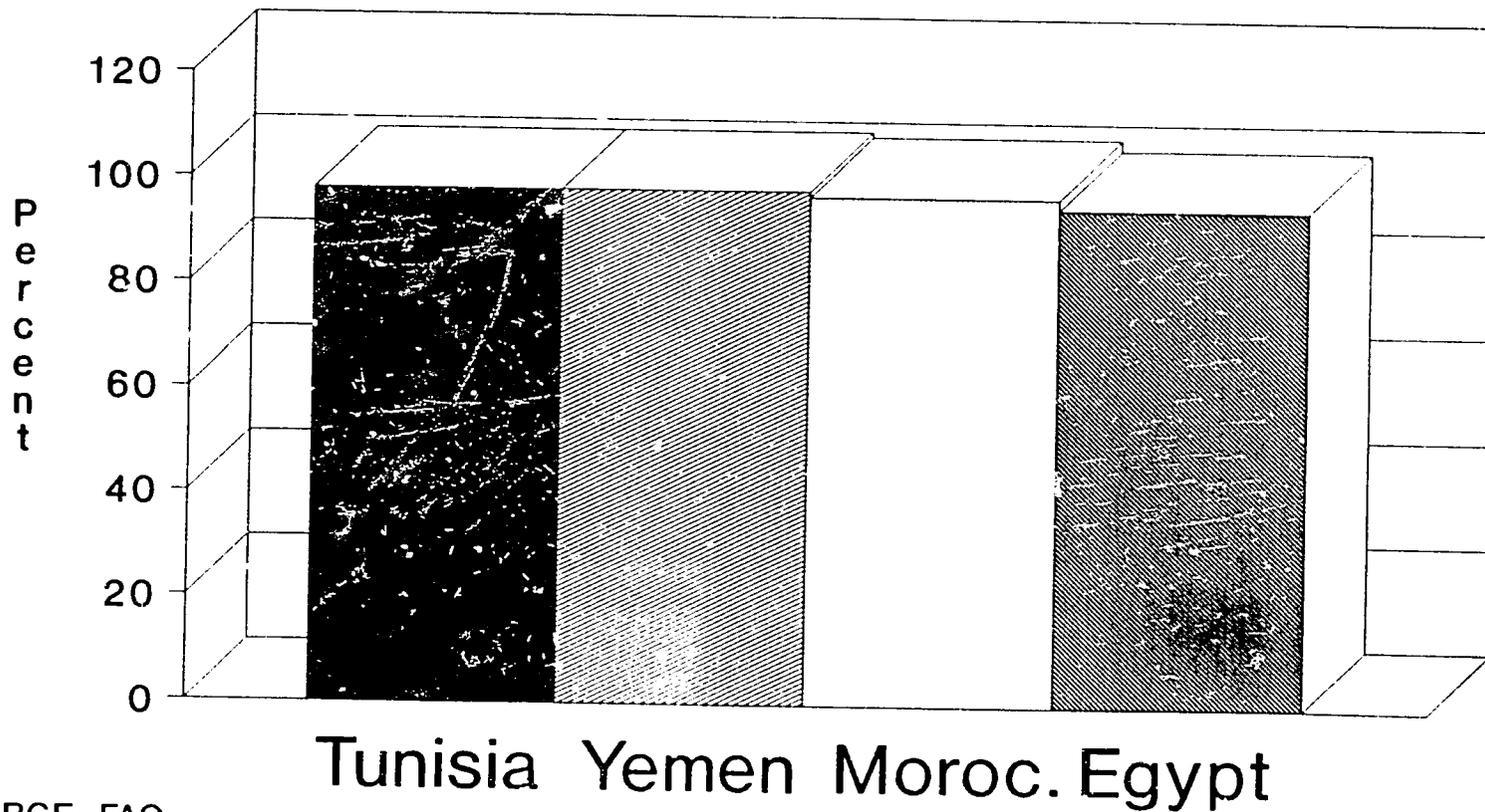
SOURCE: FAO

PERCENTAGE OF AGRICULTURAL LAND IRRIGATED SELECTED ASIA 1982/84



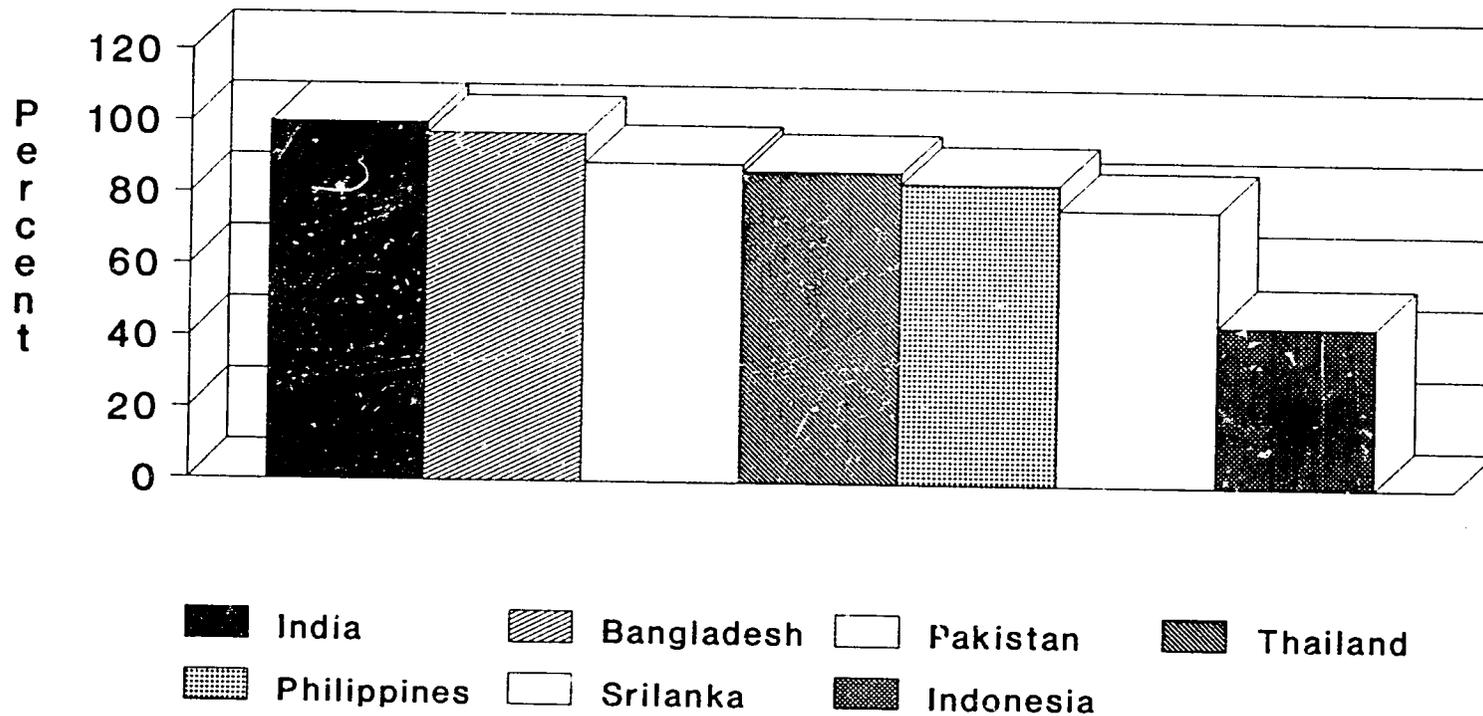
SOURCE: FAO

PERCENT OF LAND IN USE TO POTENTIAL SELECTED NEAR EAST 1982/1984



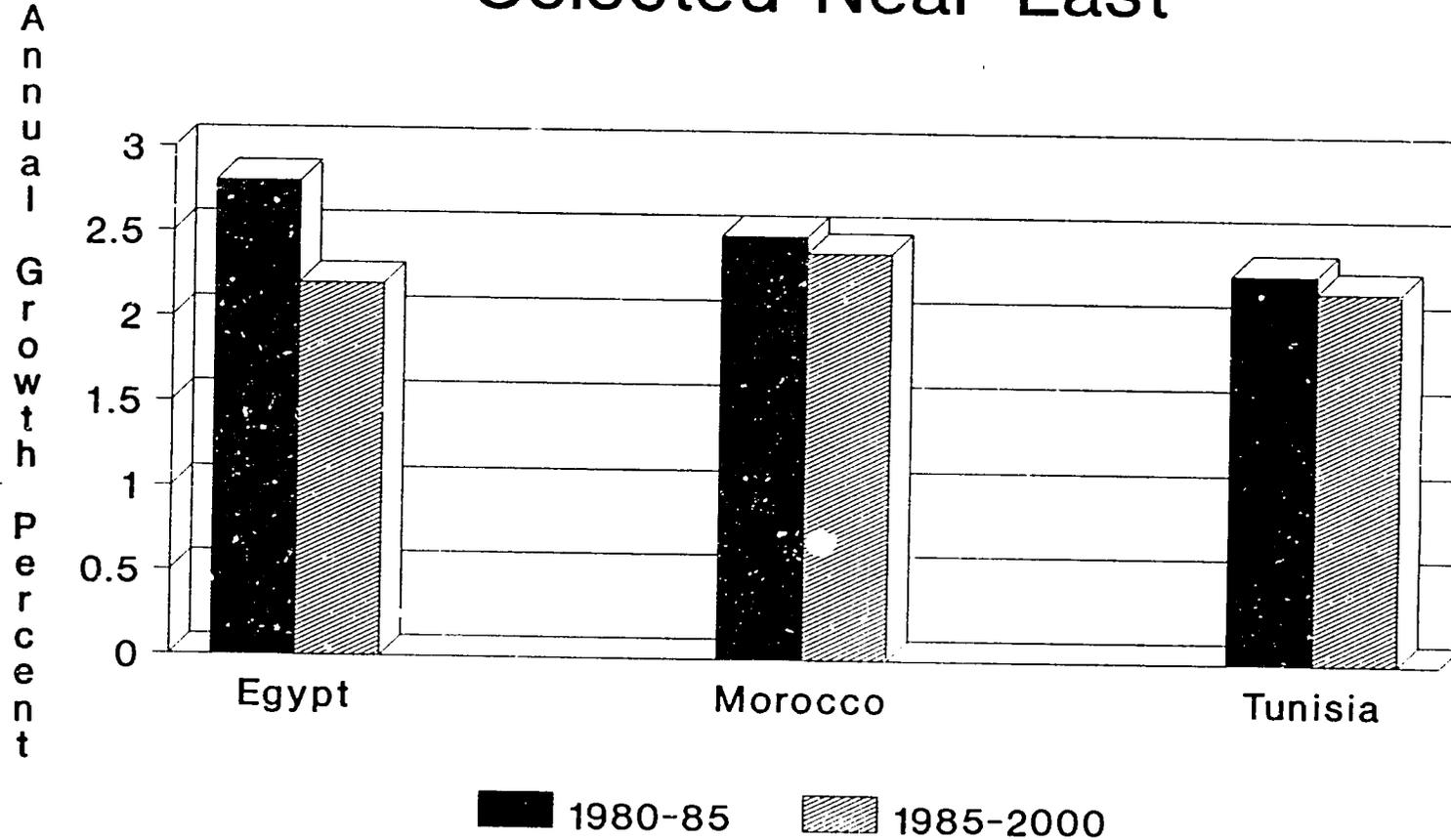
SOURCE: FAO

PERCENT OF LAND IN USE TO POTENTIAL SELECTED ASIA 1982/84



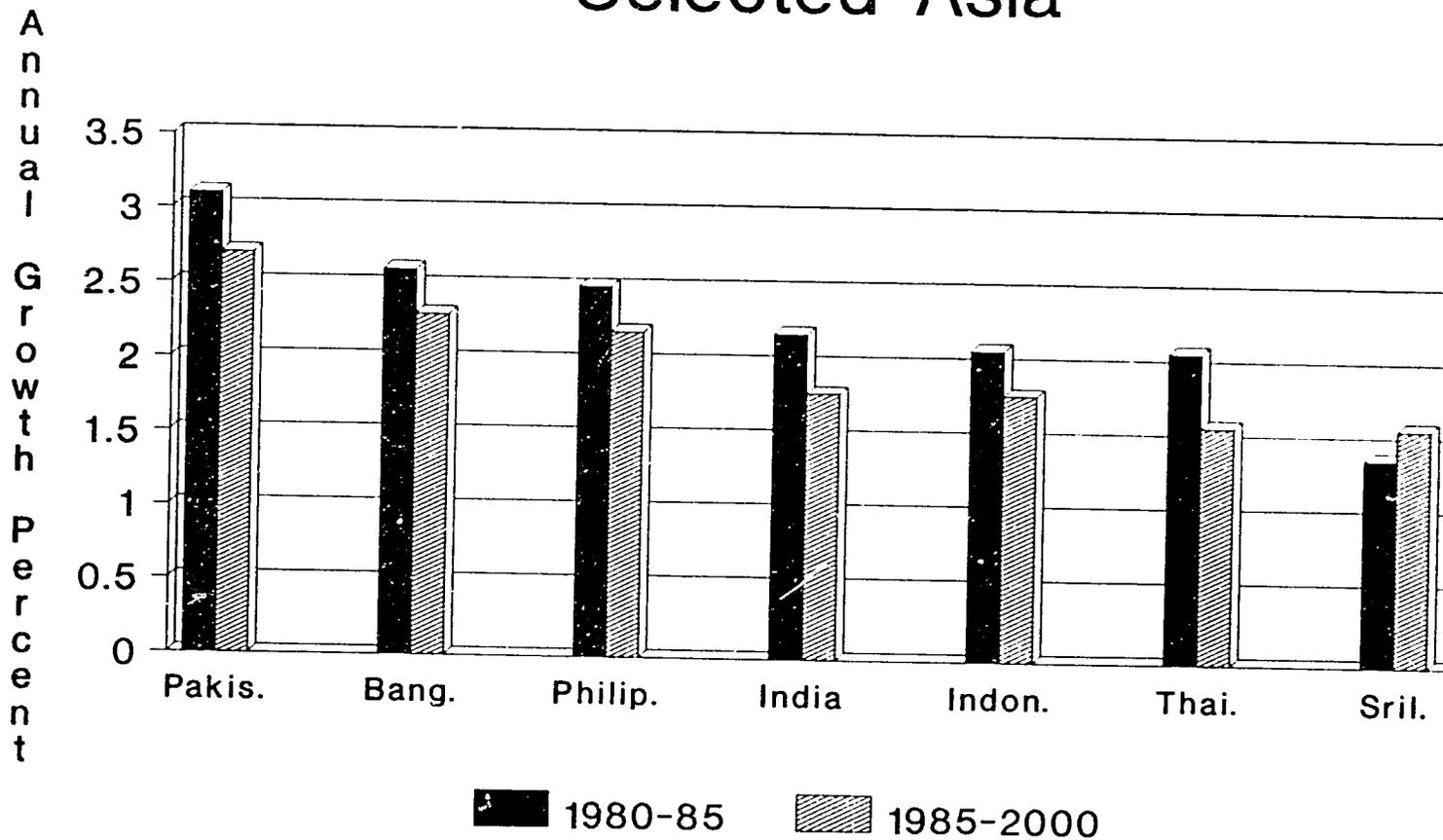
SOURCE: FAO

Population Growth and Projections Selected Near East



SOURCE: WORLD BANK

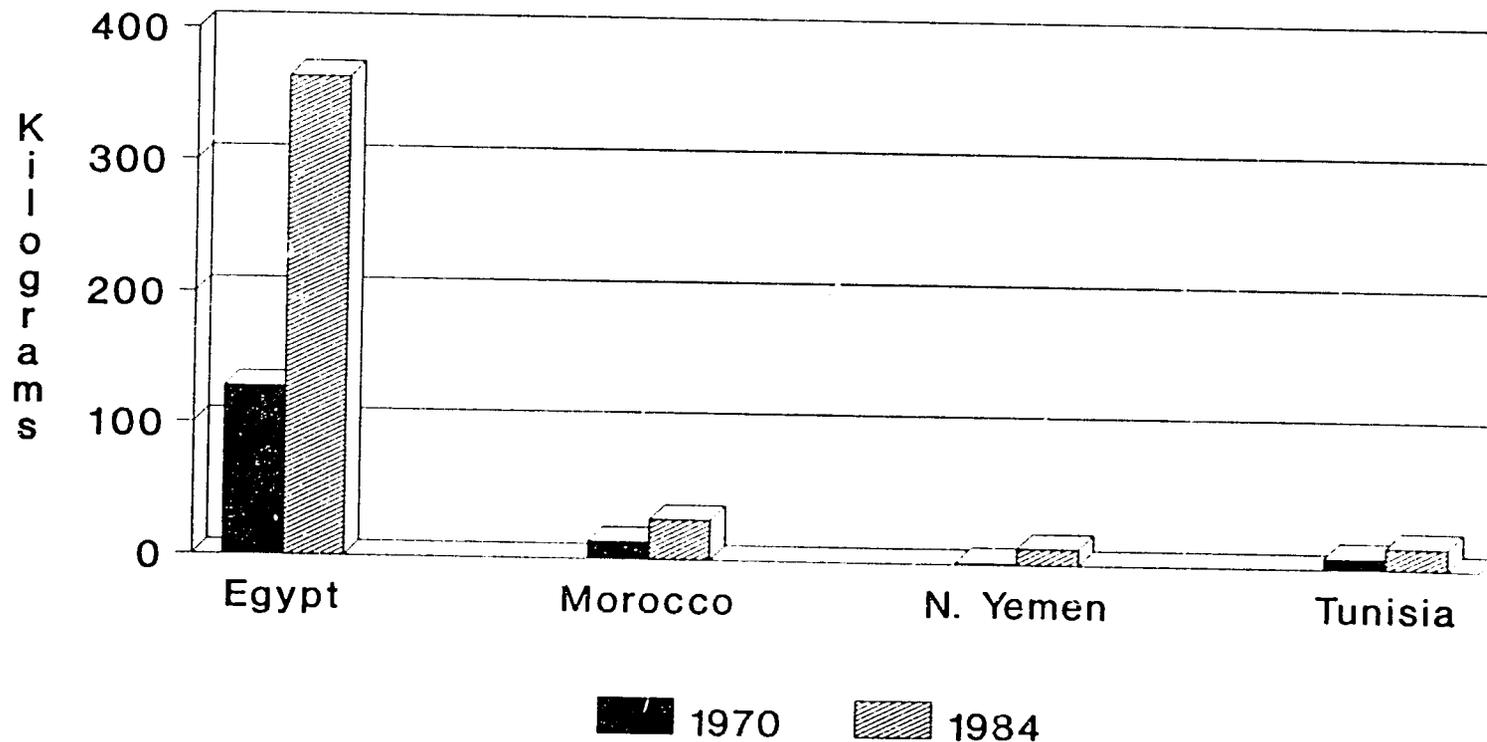
Population Growth and Projections Selected Asia



SOURCE: WORLD BANK

FERTILIZER CONSUMPTION

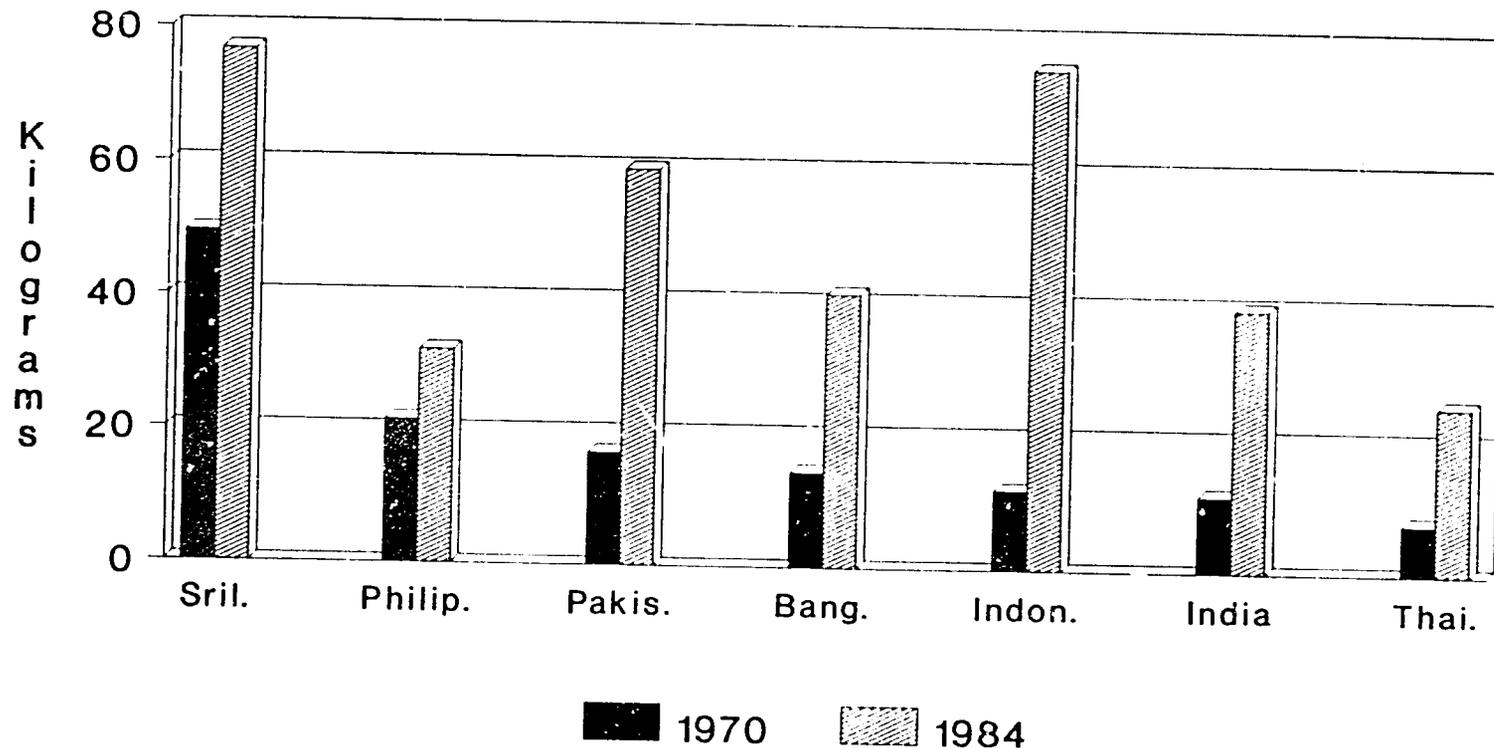
(Kilograms of Plant Nutrient Per Hectare of Arable Land)
Selected Near East



SOURCE: WORLD BANK and FAO

FERTILIZER CONSUMPTION

(Kilograms of Plant Nutrient
Per Hectare of Arable Land)
Selected Asia

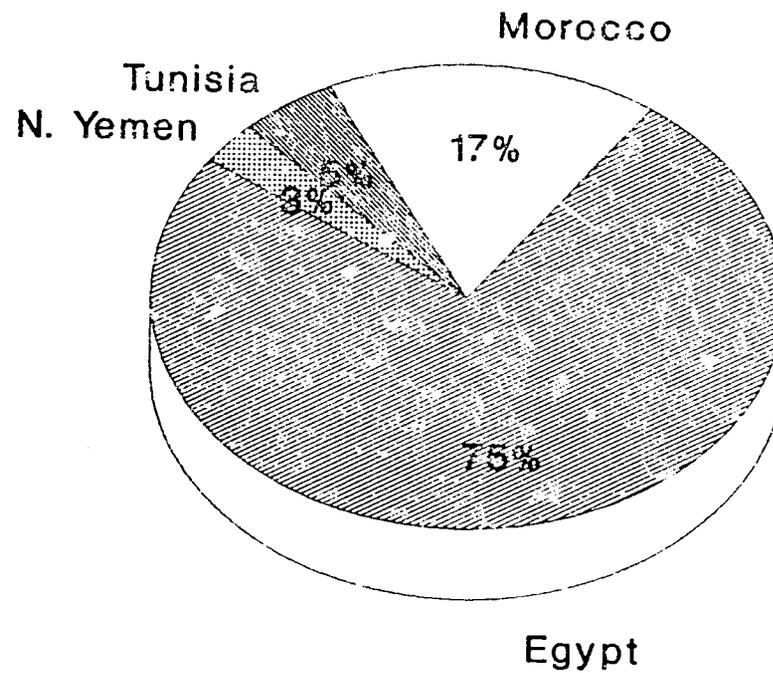


SOURCE: WORLD BANK and FAO

FERTILIZER CONSUMPTION

(Millions of Metric Tons in 1984)

Selected Near East



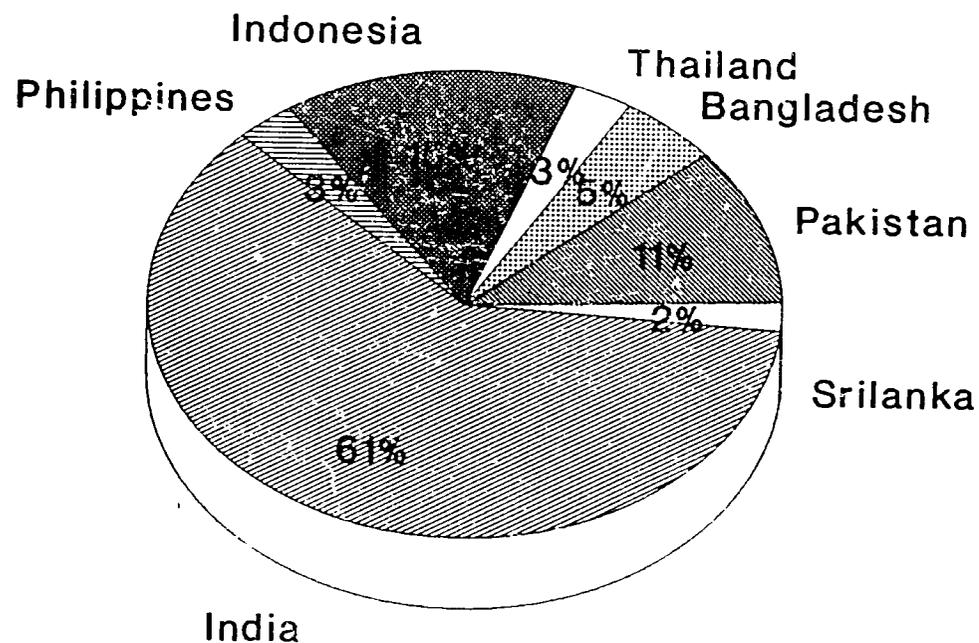
TOTAL=1.33 million

SOURCE: WORLD BANK and FAO

FERTILIZER CONSUMPTION

(Millions of Metric Tons in 1984)

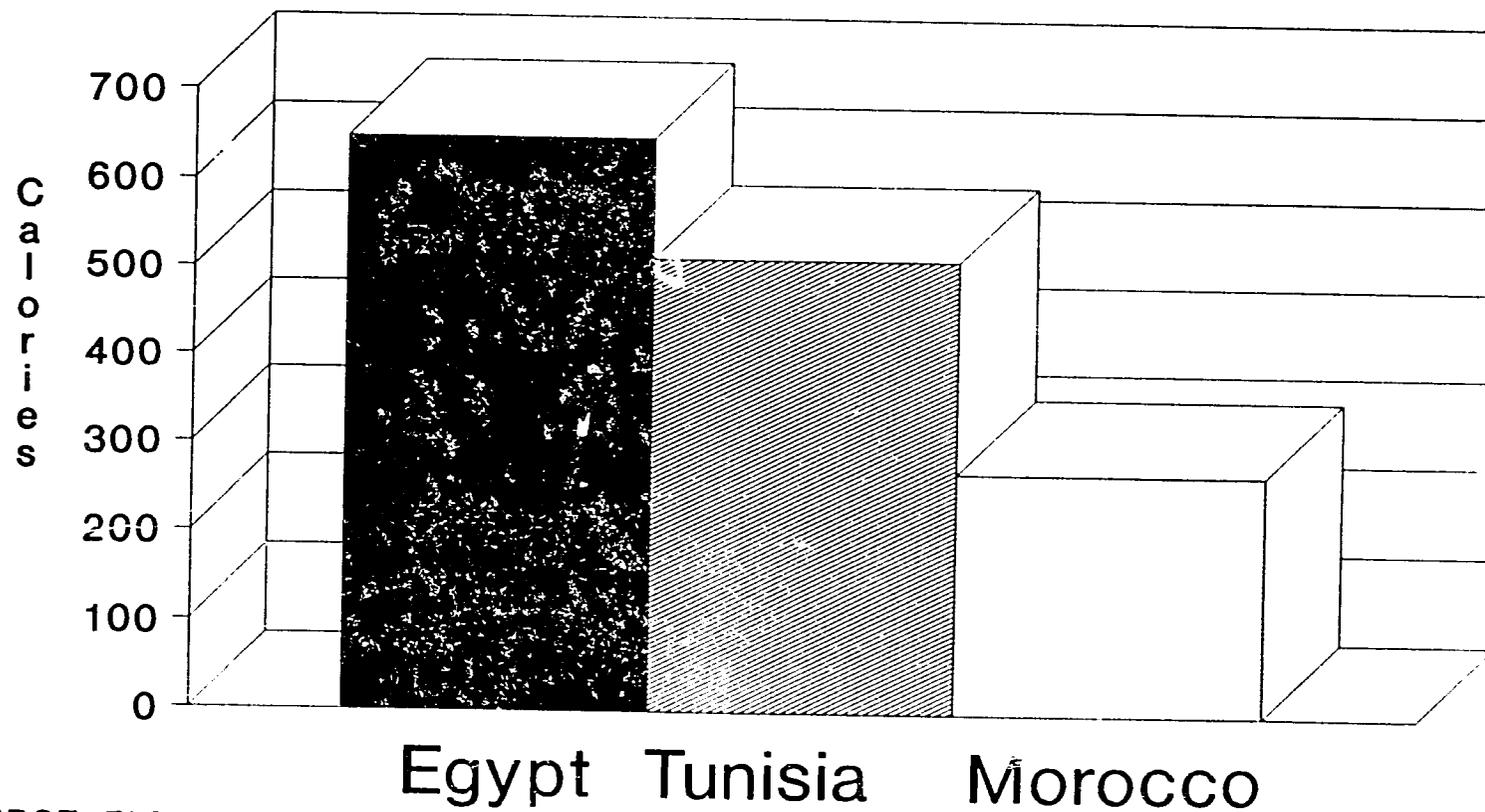
Selected Asia



TOTAL=10.7 million

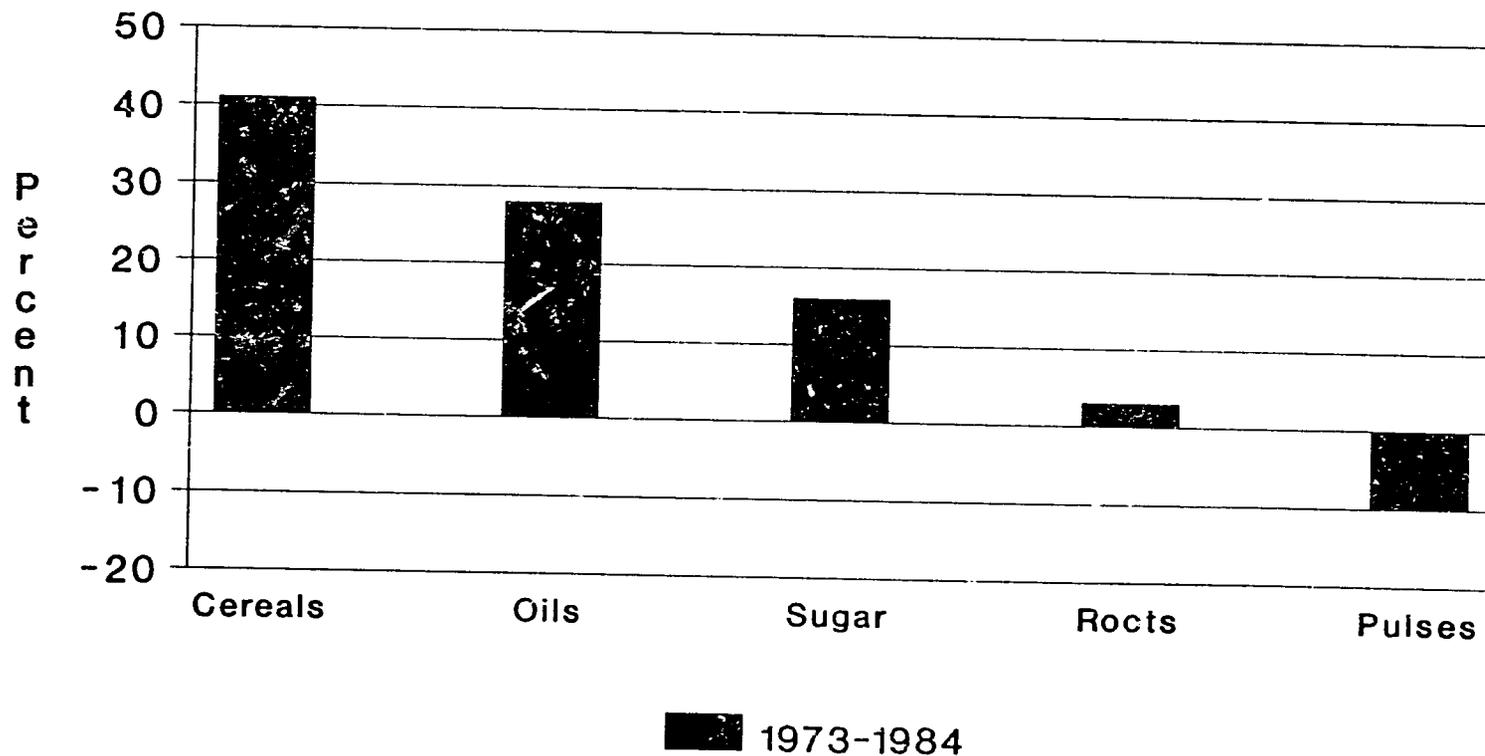
SOURCE: WORLD BANK and FAO

CHANGE IN PER CAPITA CALORIE CONSUMPTION SELECTED NEAR EAST 1973-1984



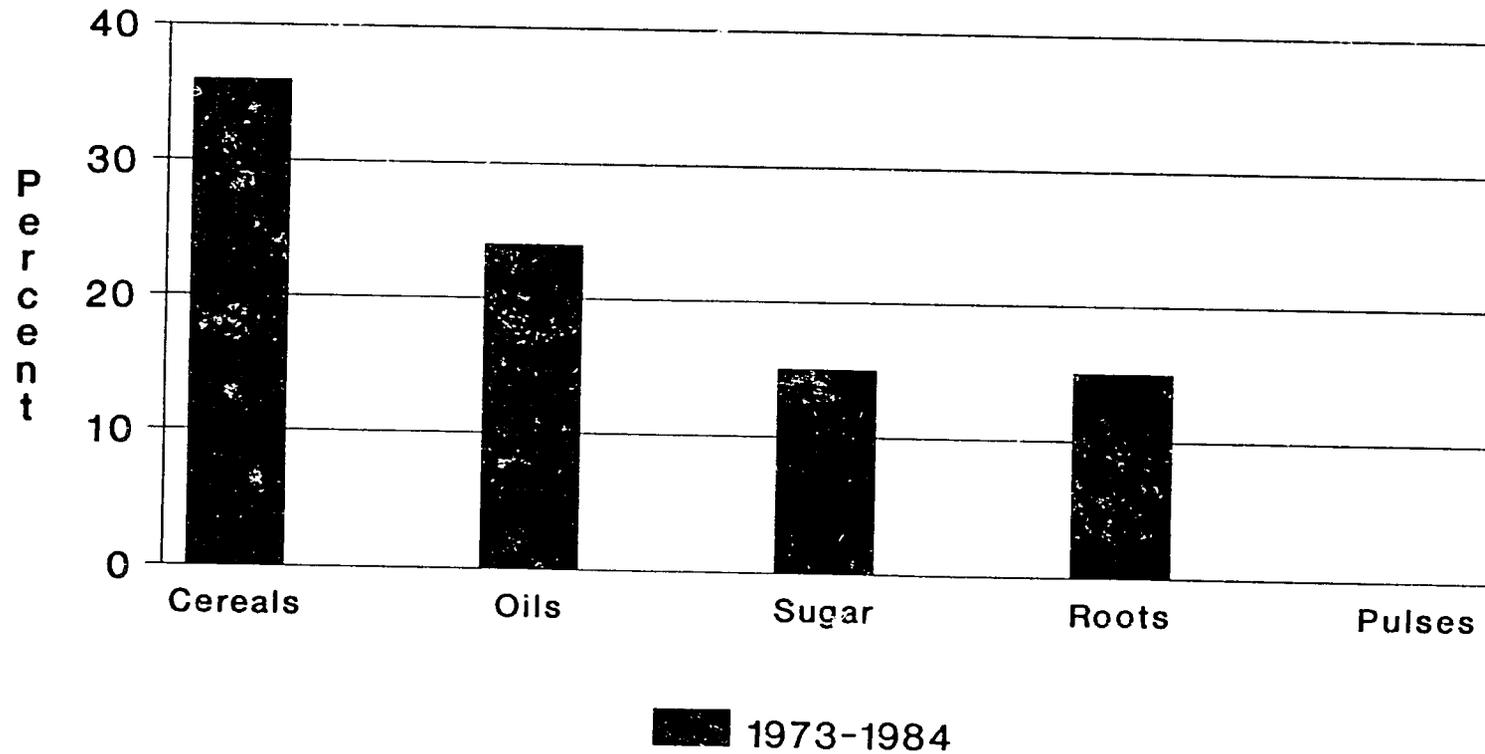
SOURCE: FAO

Sources of Change in Calorie Consumption EGYPT



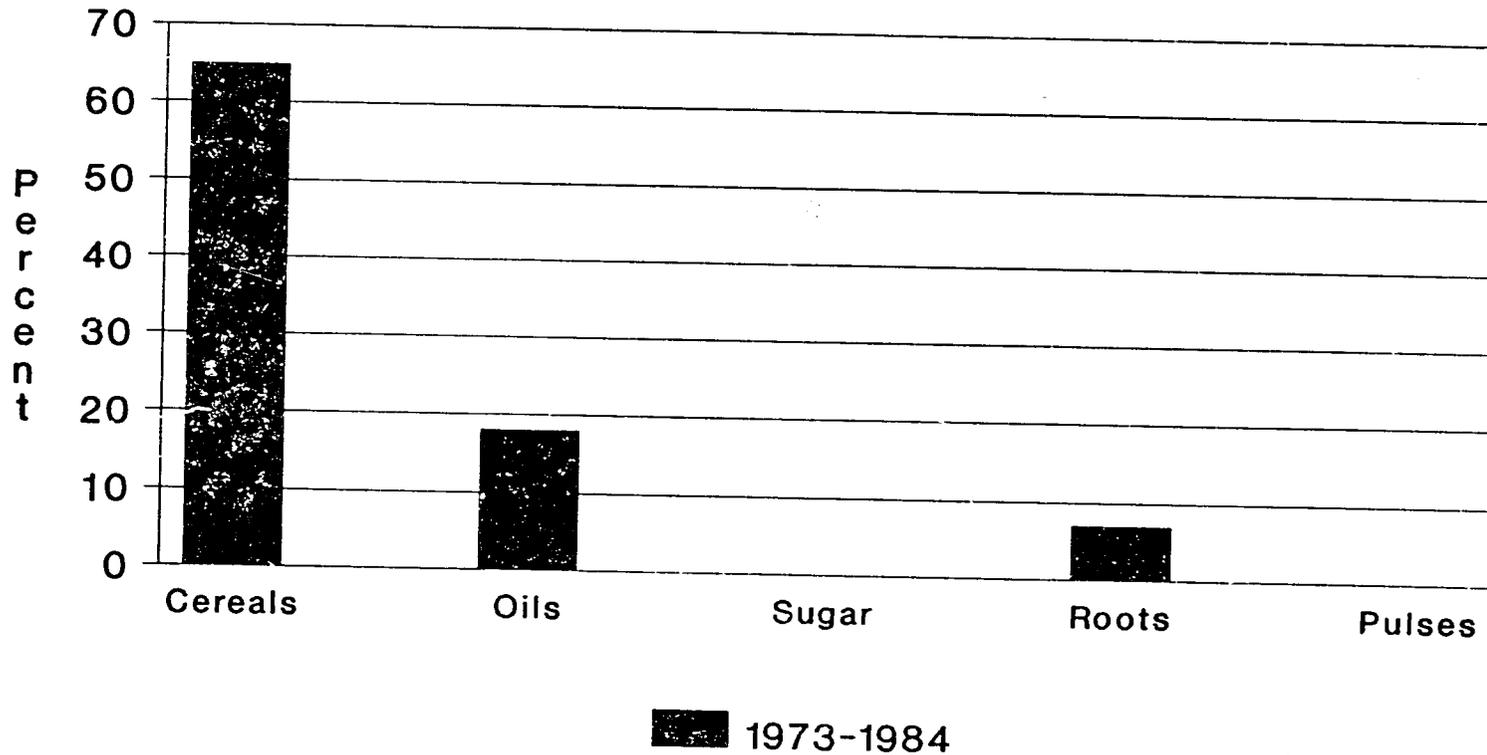
SOURCE: FAO

Sources of Change in Calorie Consumption INDIA



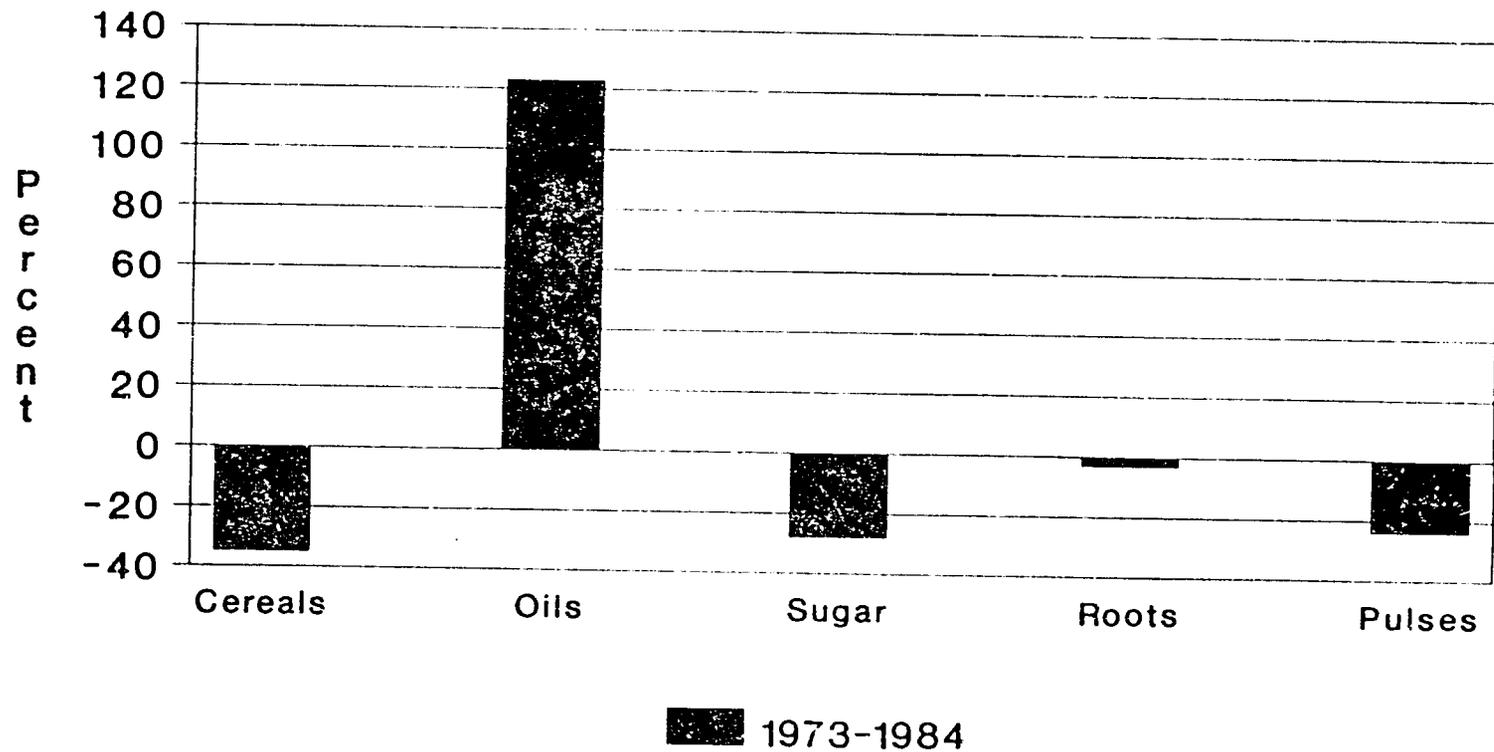
SOURCE: FAO

Sources of Change in Calorie Consumption INDONESIA



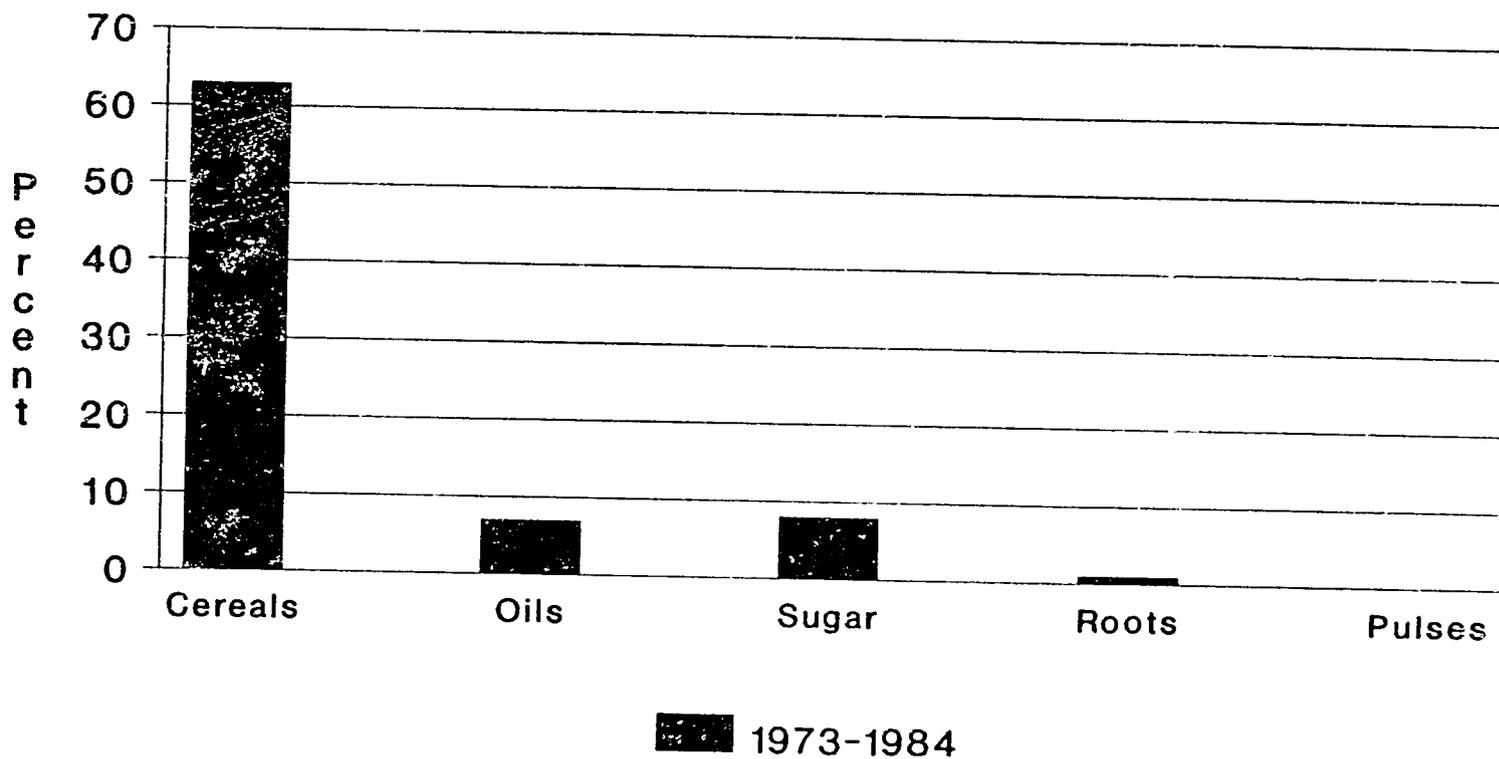
SOURCE: FAO

Sources of Change in Calorie Consumption PAKISTAN



SOURCE: FAO

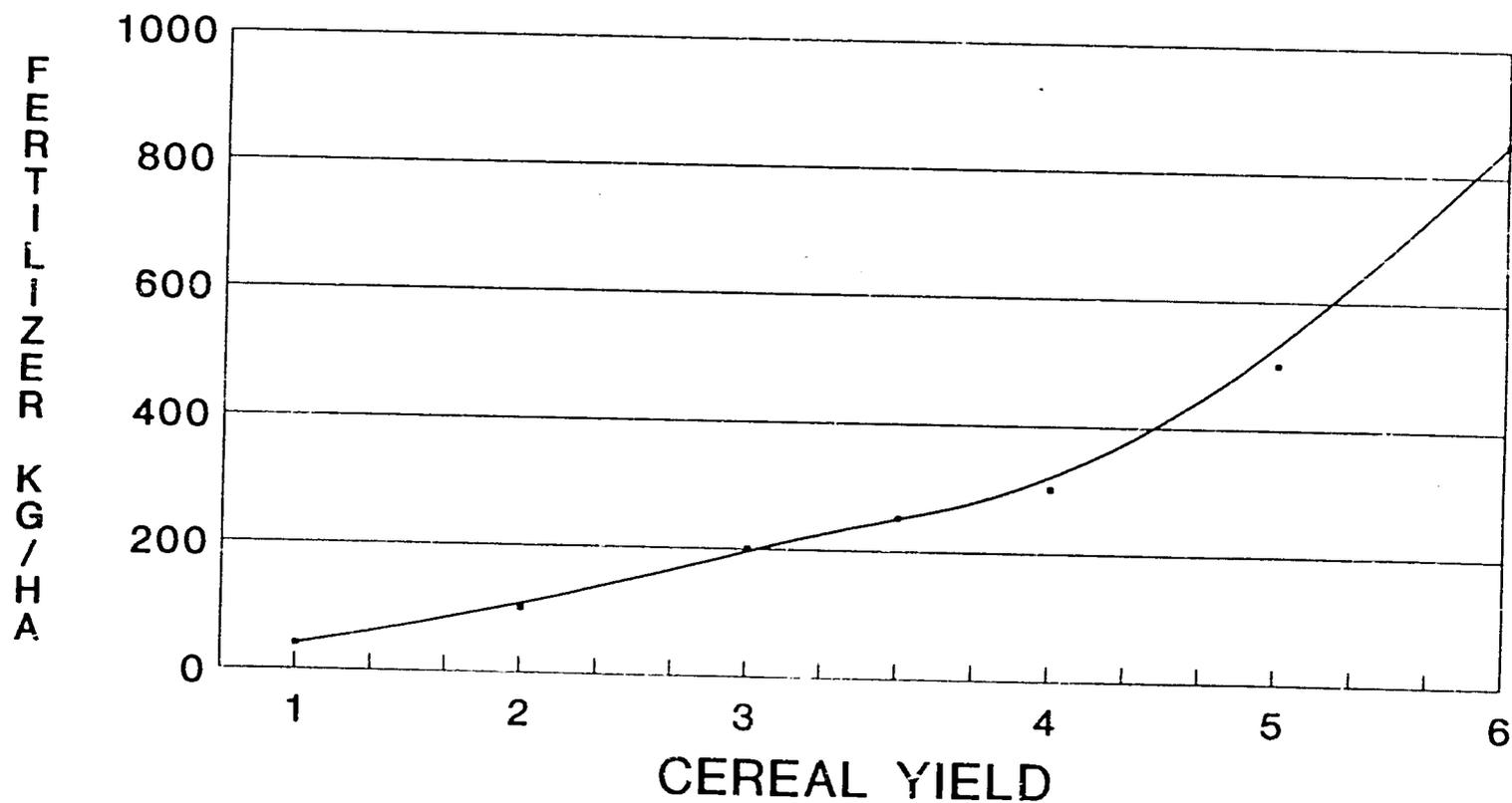
Sources of Change in Calorie Consumption TUNISIA



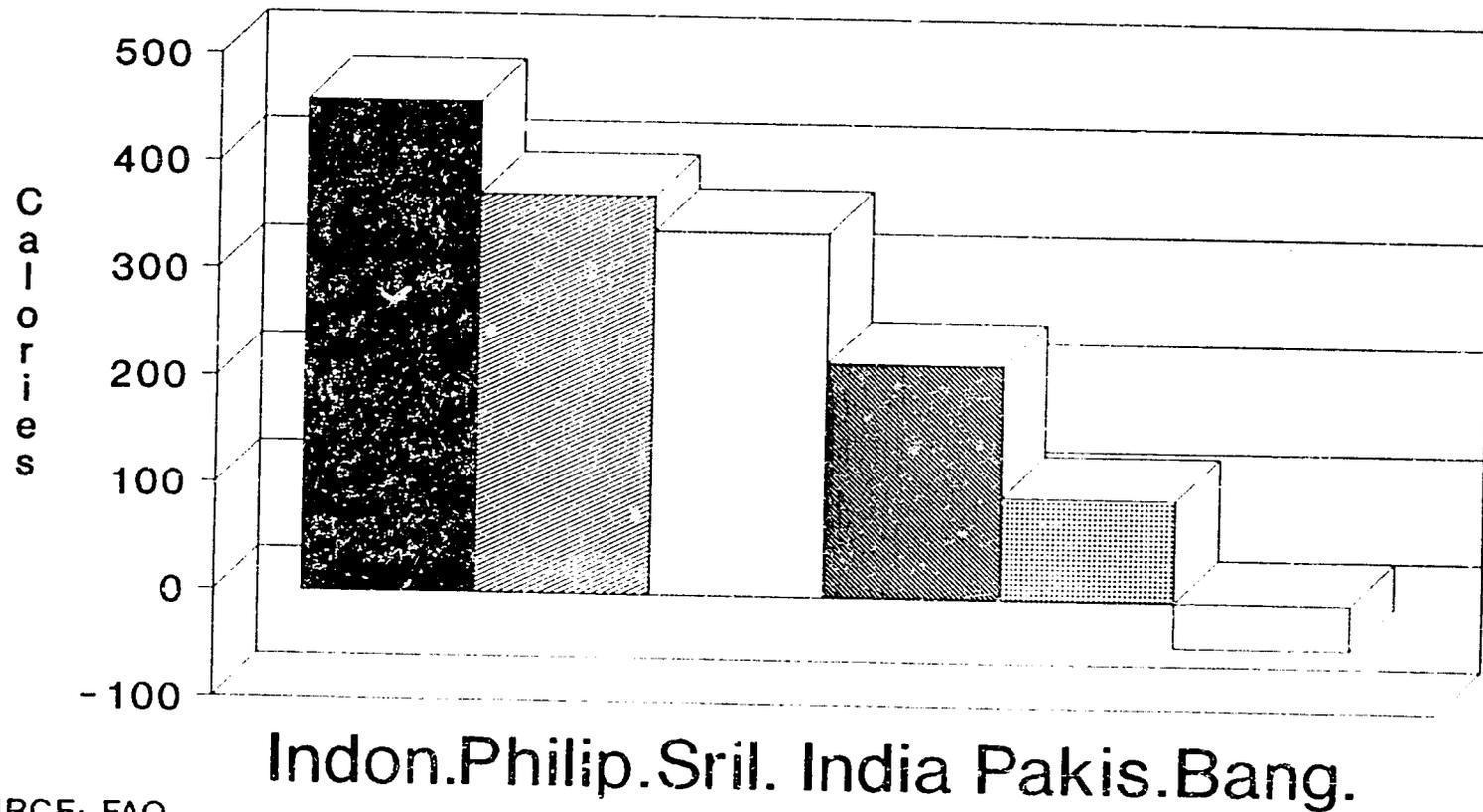
SOURCE: FAO

379

Fertilizer/HA and Cereal Yield (1980-85 Cereal Yield) SELECTED ASIAN COUNTRIES

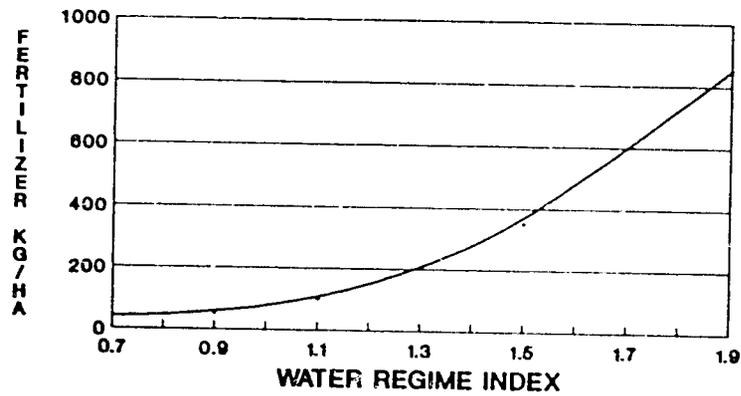


CHANGE IN PER CAPITA CALORIE CONSUMPTION SELECTED ASIA 1973-84

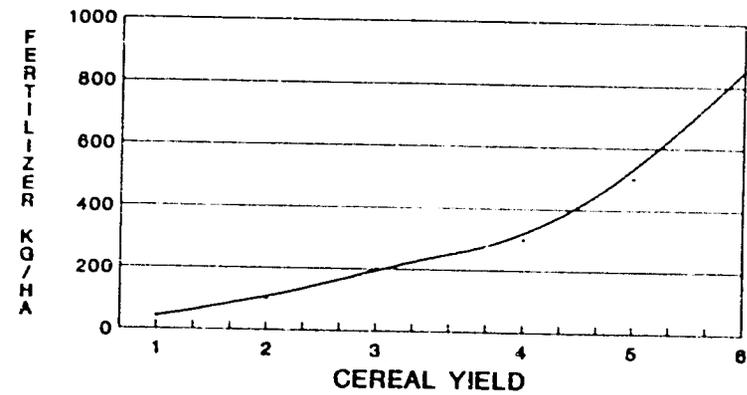


SOURCE: FAO

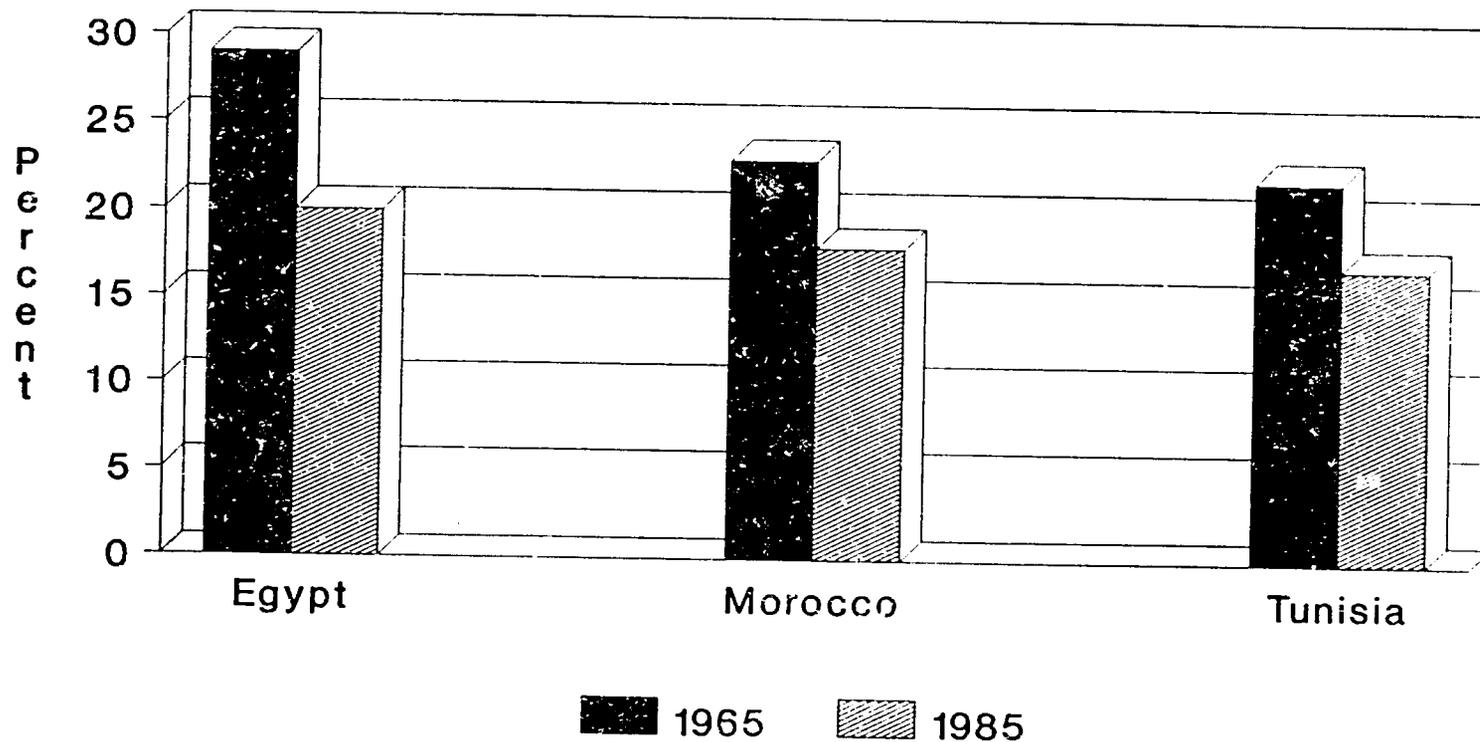
Water Regime and Fertilizer/H
for Cereals
SELECTED ASIAN COUNTRIES



Fertilizer/HA and Cereal Yield
(1980-85 Cereal Yield)
SELECTED ASIAN COUNTRIES

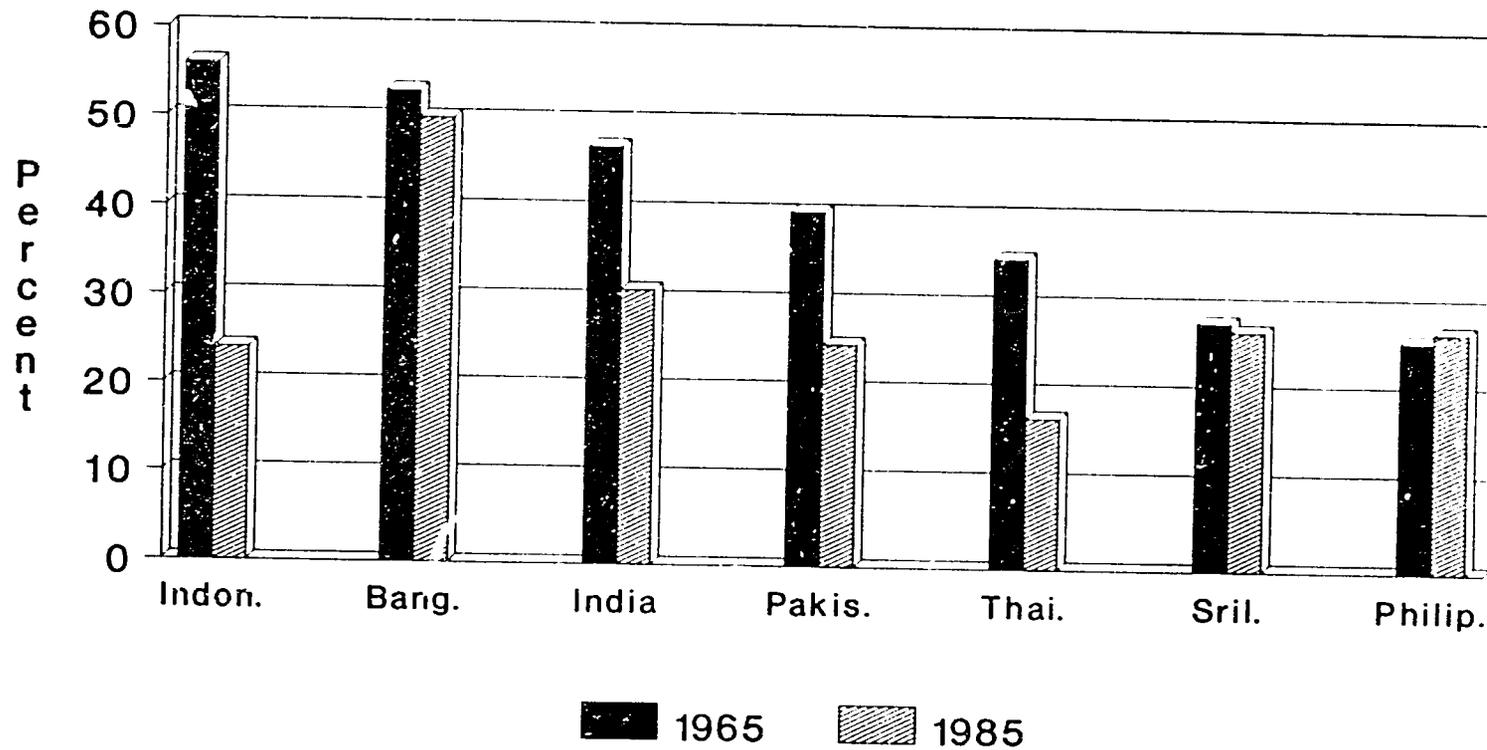


Share of Agriculture in GDP Selected Near East



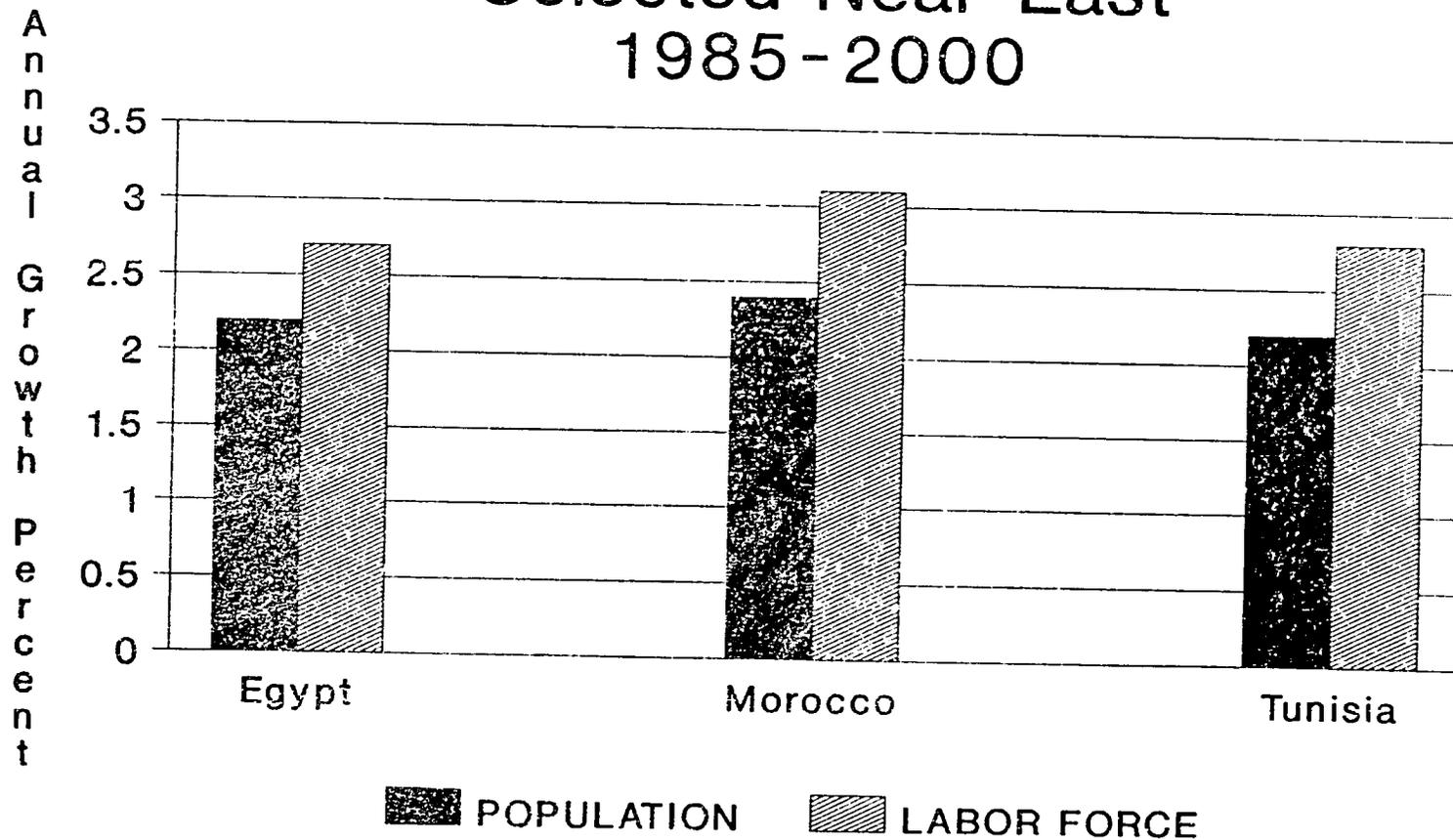
SOURCE: WORLD BANK

Share of Agriculture in GDP Selected Asia



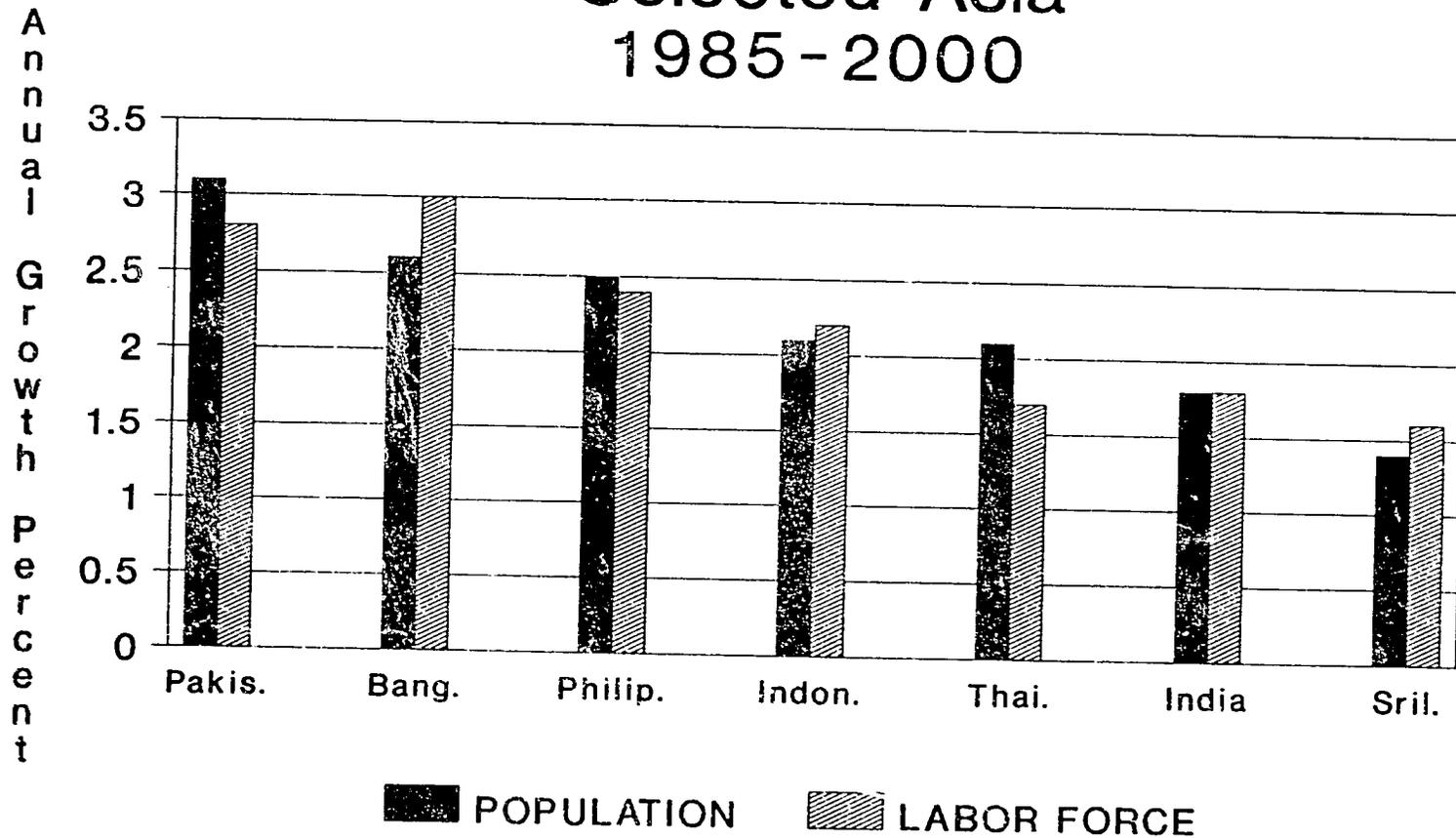
SOURCE: WORLD BANK

Population Growth and Labor Force Growth Selected Near East 1985 - 2000



SOURCE: WORLD BANK

Population Growth and Labor Force Growth Selected Asia 1985 - 2000



SOURCE: WORLD BANK

ENVIRONMENT AND NATURAL RESOURCES STRATEGY PROJECT
of the Asia and Near East Bureau
U.S. Agency for International Development

Purpose: The Asia and Near East (ANE) Bureau of the U.S. Agency for International Development (AID) is formulating a regional strategy to underline the significance of natural resources and environmental conditions for sustainable development in the region and to identify programming priorities for AID through the 1990s. The specific goal of this project is to prepare a comprehensive report that will analyze the major natural resource and environmental problems in the ANE region, assess how ANE governments have responded to these problems, review AID and other donor strategies and programs to assist ANE countries; and recommend to AID appropriate priorities for ANE environment and natural resource programming.

The audience for the strategy will be the ANE Bureau, USAID country missions, AID-supported countries, U.S. Congress, bilateral and multilateral donors, non-governmental organizations (NGOs), and U.S.-based firms working in the region. A significant effort will be made during the strategy formulation process to include these groups in the identification of issues, review of findings and assumptions, and discussion of priorities.

The Strategy Process: The process of developing a strategy involves preparing a variety of analyses and working papers undertaken during the period January - July 1989. These are being coordinated by the Center for International Development and Environment of the World Resources Institute (WRI):

- 1) A background paper that sets out a framework for analyzing the causal links between natural resources and economic growth in the region. This analysis will develop a typology of ANE countries according to economic, ecological, and other groupings and examine the political economy of resource management, particularly linkages to the private sector, women, and the landless.
- 2) A computerized data base for the ANE Bureau that uses available statistics, as well as a brief paper reviewing the choice of natural resource and environmental indicators, the limitations of existing data, and recommendations for improving the data.
- 3) Sixteen background papers that focus on a variety of natural resource degradation issues in the region. Some papers will address the trends and development priorities related to particular natural resources, while others examine environmental aspects of particular trends, and others address critical cross-cutting issues such as institutional constraints to natural resource management [see Appendix].

4) An analysis of economic aspects of sustainable agriculture in the ANE region, that has a particular focus on marginal lands and rainfed agriculture. A draft of this paper will be circulated for discussion at the AID/ANE Agriculture Development Officers (ADO) meeting in Morocco in February, 1989.

5) Short, four-page reports that summarize the natural resource situation in each of the 15 ANE countries and the South Pacific. A sample will be shown at the ADO meeting in Morocco.

6) An inventory of AID and other donor programs and projects in the ANE region that assesses, in general terms, the process of donor cooperation in natural resources and the environment as it relates to specific ANE countries.

7) A working list of broad programming guidelines for the region that covers information, education and training, policy dialogue, institution building, and others. Criteria for weighing the options will be developed, based on the priorities that government leaders in the region assign to resource problems; approaches that ANE governments are now taking; degree of difficulty in removing key constraints; and the comparative advantage of AID and other U.S. organizations.

The Final Strategy: The working papers and data base resulting from the above tasks will be the basis of a synthesis paper and a draft strategy prepared by WRI for AID in early June. This synthesis report will propose programmatic priorities for the 1990s with clear and cogent rationale presented for each priority. The draft strategy will be reviewed in a workshop sometime in mid-June, involving participation from USAID Missions, the ANE Bureau and other AID offices. Based on the discussion during this workshop, the strategy document will be finalized and circulated widely in July.

Contacts:

Robert Ichord, Chief, Energy and Natural Resources, ANE/TR
[Telephone: 202-647-8274 FAX: 202-647-6962 Telex: 892703]
Molly Kux, Environment Officer for ANE, ANE/PD
[Telephone: 202-647-9933]
U.S. AID, Washington, D.C. 20523

Dan Tunstall, Project Manager, [Telephone 202-662-2583]
Cynthia Mackie, Senior Researcher, [Telephone 202-662-2514]
World Resources Institute
1709 New York Avenue, NW, Washington, D.C. 20006
[Switchboard: 202-638-6300 FAX: 202-638-0036 Telex 64414
WRIWASH]

Appendix: Background Issue Papers

The authors of the issue papers and the reviewers from AID and WRI are listed below. (Support for these papers comes from a variety of AID/ANE and S&T offices and programs.) Each of the authors will: 1) relate their topic to economic growth in the ANE region; 2) recommend indicators for measuring the problem; 3) categorize the type of policies and approaches that governments and other institutions are taking to deal with the problem; 4) describe major donor and private sector efforts to assist countries; 5) develop a comparative set of hypotheses on the different options for dealing with the problems; and 6) recommend priorities for AID programming in the 1990s. Each paper will be about 25 pages long and the drafts will be reviewed in a two-day meeting in mid-April before the papers are finalized in May.

Deforestation and Its Implications for the Asia/Near East Region

Authors: Pat Durst (AID Forestry Support Program), George Armstrong (AID/ANE/TR), Carl Gallegos (AID/S&T/FENR)
Reviewers: Bob Winterbottom (WRI/Center), Peter Hazelwood (WRI)

Biological Resource Conservation

Authors: Nels Johnson (WRI/Center) and Janice Alcorn (ANE/TR/ENR)
Reviewers: Kathryn Saterson and Molly Kux (ANE/TR/ENV), Kenton Miller (WRI)

Global Warming

Author: Bob Ichord (AID/ANE/TR/ENR)
Reviewer: Bill Moomaw (WRI)

Soil Loss and Land Degradation

Author: Bill Bentley (Winrock International)
Reviewer: Mohamed El-Ashry (WRI)

Watershed Management: Issues and Opportunities

Author: Cynthia Mackie (WRI/Center)
Reviewer: Bob Winterbottom (WRI/Center)

Coastal Resource Degradation

Authors: Random Dubois (Consultant), Steve Olsen and Lynne Hale (U. of Rhode Island)
Reviewers: Nora Berwick (AID/S&T/FENR), Molly Kux (ANE/PD/ENV)

Rural Water Supply and Environmental Issues

Authors: Rick Mattson (WASH) and Jahan Tavangar (consultant)
Reviewers: Stan Peabody (AID/ANE/TR/ARD), Tony Garvey (ISPAN), Mohamed El-Ashry (WRI)

Environmental Aspects of Rapid Urbanization and Industrial Growth

Authors: Rick Mattson (WASH), David Laredo and Carol Lurie (WASH)
Reviewers: Bruce Odell (AID/ANE/PD), Molly Kux (ANE/PD/ENV), Sue Gibson (AID/ANE/TR/HN), Walter Arensberg (WRI/Center)

Inefficient Irrigation Systems

Author: To be determined
Reviewer: Tony Garvey (AID/ANE/TR)

Energy Inefficiency and Its Environmental Implications

Author: Suzanne Leonard and Chris Hurst (Hagler-Bailly)
Reviewers: Jessica Mathews, Jim MacKenzie (WRI)

Institutional Strategies for Sustainable Development

Author: Charles Barber (Consultant)
Reviewers: Kirk Talbott (WRI/Center), Lee Kimball (Council on Ocean Law)

Strengthening NGOs for Natural Resource Management in Asia

Author: David Richards (WRI/Center)
Reviewers: Tom Fox (WRI/Center), Janet Brown (WRI)

Hazardous Wastes/Toxics

Author: To be determined
Reviewer: Molly Kux (AID/ANE/PD/ENV), Lou Higgins (AID/S&T/FENR)

Environmental Implications of Agricultural Chemical Use

Authors: Lou Higgins (AID/S&T/FENR), Jules Pretty (IIED London), Bill Barclay (WRI/Center)
Reviewers: Consortium for International Crop Protection and Rodale Research Center

Gender Issues and Natural Resource Management

Author: Kathy Parker (consultant)
Reviewers: Bruce Horwith (AID/PPC/WID), Anamaria Long (ANE/TR/HR), Cheryl Cort (WRI/Center)

Non-project Assistance to the Natural Resources Sector

Author: Tim Resch (AID Forestry Support Program)
Reviewers: Dan Deely (AID/S&T/FENR), Molly Kux, (ANE/PD)

AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON, D.C. 20523

9.

MEMORANDUM

TO: ANE ARD Officers

FROM: S&T/RD, Eric Chetwynd, Jr. (Acting) 

SUBJECT: Settlement and Natural Resource Systems Analysis (SARSA) research on Women's Contributions to Income Generation and Market Town Development

PPC/WID has recently funded S&T/RD's Settlement and Natural Resource Systems Analysis (SARSA) project to incorporate gender analysis into SARSA's "Rural-Urban Exchange" (RUE) research framework. This research framework is designed to identify interventions that foster exchange between farms and towns, so as to increase returns to farming while simultaneously promoting employment and enterprise opportunities in local towns. SARSA's gender-sensitive RUE research methodology provides guidance for incorporating women's concerns into development efforts directed toward agricultural growth and market town development. As such, it is a potential vehicle for USAID missions to expand further their development activities that incorporate women as beneficiaries and contributors to economic development. PPC/WID is encouraging mission activities that support the Agency's Women in Development mandate by offering matching grants.

SARSA's recently completed study, entitled "Women in Rural-Urban Exchange: Implications for Research and Intervention Identification," demonstrates that women tend to spend the income they control locally, thereby contributing to local employment and enterprise development. Men's income, on the other hand, much more often than women's leaks outside of the region in the form of non-local expenditures. The significant income multiplication associated with women's expenditures underscores the importance of promoting the returns to the crops they control and enhancing their income-generating potential in non-farm activities.

SARSA's research further reveals the diversity of women's economic activities. These activities often bridge town and farm as well as farm/non-farm categories. As a result of this diversity, interventions seeking to mitigate women's constraints to expanded income generation and multiplication need to be viewed cross-sectorally. SARSA's rural-urban exchange research examines the systemic links among agricultural production, marketing, acquisition and supply of inputs and provision of household consumption patterns. For

621

this reason, it can reveal the totality of women's economic roles and the constraints they face as they attempt to maximize the income they earn while providing for the survival of their family.

Gender-sensitive rural-urban exchange research can help identify interventions that:

- o increase the returns to women's and men's farming activity;
- o mitigate women's and men's constraints to both farm and non-farm income generation;
- o increase the multiplication effects of women's and men's expenditures;
- o increase women's and men's employment opportunities;
- o promote women's and men's micro- and small-enterprise opportunities.

By identifying the linkages between farm-based and town-based activities, rural-urban exchange research can enhance mission's ability to address particular sectoral concerns.

The Executive Summary of SARSA's report is enclosed. A copy of the full report can be obtained from:

Dan Dworkin
AID/S&T/RD/RRD
Room 608, SA-18
Washington, D. C. 20523
Phone: (703) 875-4433

6/2/88

EXECUTIVE SUMMARY

WOMEN IN RURAL-URBAN EXCHANGE:
IMPLICATIONS FOR RESEARCH AND INTERVENTION IDENTIFICATION

Jeanne Downing and Jennifer Santer

February 3, 1989

This report has been prepared by the Settlement and Resource Systems Analysis (SARSA) Cooperative Agreement with the support of the Office of Women in Development, U.S. Agency for International Development.

Settlement and Resource Systems Analysis (SARSA) is a project of the Regional and Resource Development Division, Office of Rural and Institutional Development, Bureau for Science and Technology, U.S. Agency for International Development.

EXECUTIVE SUMMARY

The Settlement and Resource Systems Analysis (SARSA) project, within S&T/RD/RRD, has developed an applied research framework to guide research of income generating and multiplication processes in specific rural regions. This framework, called "rural-urban exchange" (RUE), is a practical tool for identifying interventions that foster exchange between farms and towns, so as to increase returns to farming while simultaneously promoting employment and enterprise opportunities in local towns.

SARSA RUE research places particular emphasis on local income multiplication effects because of their centrality to regional economic growth. Regional income multiplication involves the spending of income, generated initially through agriculture and marketing, on nonfarm goods and services sold and/or produced within the region. Local spending multiplies the initial income by becoming earnings for nonfarm entrepreneurs in nearby market towns, thereby promoting employment and enterprise opportunities. Market town development, in turn, improves agricultural productivity by increasing farmer access to markets, inputs, and services. This dynamic of agricultural income generation and multiplication, if sustained, is fundamental to regional economic growth.

Women's roles in agriculture in Sub-Saharan Africa have been fairly well documented. Women make important labor contributions to both food and cash crop production. However, because of the smaller incomes typically earned by women in comparison to men, women's direct impact on the cash economy has often been viewed as insubstantial. This study demonstrates both conceptually and empirically that as a result of their expenditure patterns, women make significant economic contributions to the town building process within rural African regions.

WOMEN'S CONTRIBUTIONS TO INCOME GENERATION AND MULTIPLICATION IN THE KUTUS REGION OF KENYA

Analysis of marketing surveys from a SARSA rural-urban exchange study in the Kutus region of Kenya reveals some marked differences between male and female marketers' channels of income generation and multiplication. More than 85 percent of the female marketers in Kutus specialized in the trade of food-related commodities, while about the same percentage of male marketers sold predominantly nonfood-related commodities. Although there were more retail than wholesale male marketers, long-distance wholesale traders were more often men than women. This finding was confirmed by data showing that male marketers travelled more than two and a half times the distance that female

marketers travelled in purchasing inputs, and were much more likely to operate in markets in addition to Kutus.

Male marketers were clearly more mobile than females, with their household responsibilities and their greater labor contributions to the family farm (as revealed by the data). Male marketers' access to distant, more lucrative markets likely contributed to the significantly larger revenues male marketers were able to generate as compared to females. Both the average monthly sales and average input expenditures of male marketers exceeded those of females by about 200 percent. The start-up capital that male marketers stated they accumulated from previous income generating activities exceeded women's by over 250 percent. (No one in the sample had obtained a formal loan.) This evidence demonstrates that women's marketing channels in Kutus are much more geographically circumscribed and undercapitalized than men's.

Both the limited mobility of female as compared to male marketers and women's provider responsibilities produced gender-specific channels of income multiplication. Female farmers in Kutus purchased food for the most part from traders in the open air market, who were predominantly women. Female marketers, in turn, were much more likely than men to purchase their inputs locally; more than 65 percent of female marketers as compared to 20 percent of male marketers purchased inputs inside the Kutus region. Moreover, fifty percent of female marketers and only 12 percent of male marketers purchased locally produced inputs. The propensity of female marketers to spend locally means that the income they generate redounds to the local area, contributing to rural economic development. Men's nonlocal spending, on the other hand, represents a loss of potential income to the region.

The findings presented in this study have important implications for A.I.D efforts aimed at promoting both agricultural and market town development. Previous WID research has shown the importance of women's incomes to child nutrition and education as well as fertility rates (Blumberg, 1988; Safilios-Rothschild and Mourugu, 1987); this study further reveals that getting resources into the hands of women will be critical to increasing the regional income multiplication that underlies rural regional development.

Gender-sensitive analysis of Kutus data showed that, because male and female marketers generate income through different channels, different interventions are often needed to promote their separate activities. For example, because of their provider responsibilities, women have a greater tendency than men to split their time between farm production and town-based marketing activities. Furthermore, because women make frequent, small purchases to provide for their families' daily needs, they tend to make repeated trips between farm and town. Thus, while the scope of their mobility appears to be limited to the region, female marketers are very mobile within this limited geographic

boundary. Consequently improved roads, recommended by SARSA for the Kutus region, will have a significant impact on freeing up women's time. SARSA suggested that road investments be targeted to networks used by farmers growing coffee, which appears to be a male crop; gender-sensitive RUE research indicates the importance of improving roads commonly used by women farmers and marketers.

Analysis of gender-disaggregated data from Kutus also suggested that loans tailored to small-scale female entrepreneurs would help mitigate the undercapitalization of women's economic activities. However, rural-urban exchange research, that examines the links between farm and nonfarm activities, also indicates that women may not be willing or able to expand their marketing activities even with greater access to credit. Female marketers in Kutus claimed that a constraint to expanding their business was the difficulty of spending more time away from home and their families. About half of the female marketers in Kutus devoted more than 50 percent of their work week to the family farm, where they could be close to their families and still be productive. Thus, interventions for increasing women's income generating and multiplying potential need to examine women's roles in rural-urban exchange -- including acquisition of inputs, agricultural production, marketing, processing, and consumption - - to understand fully their constraints and how these might be mitigated.

Analysis of Kutus data suggests that because women have a higher propensity to spend earnings locally than men, interventions that increase the returns to women's crops will be important to increasing regional income multiplication effects. The importance of women's contributions to local income multiplication is supported by other research in the subject area of rural-urban linkages. Haggblade, Hazell, and Brown, 1987; Hazell and Roell, 1983; King and Byerlee, 1977; and Simmons, 1976 indicate that household consumption expenditures, and especially those that are food-related, are most important to regional income multiplication effects in Sub-Saharan Africa (as compared to those associated with either backward or forward linkages with agriculture).

A GENDER-SENSITIVE RURAL-URBAN RESEARCH FRAMEWORK

This study underscores the importance of gender analysis to rural-urban exchange research, and more explicitly, provides guidance for incorporating gender analysis into SARSA's Rural-Urban Exchange (RUE) research framework. In doing so, this study examines those gender issues relevant to the identification of effective, gender-sensitive interventions that promote women's and men's income generation and multiplication potential in rural regions. Moreover, by incorporating gender analysis, it provides a basis for further enhancing the capabilities of SARSA's RUE

research framework to capitalize on the development potential of rural-urban exchange, and provides the Agency with an effective intervention planning tool.

NEED FOR FURTHER RESEARCH

SARSA research is based on the premise that sustainable dynamics of income generation and multiplication promote both agricultural growth and market town development. To the extent that these are key Agency objectives, improved concepts and methodologies for identifying interventions that bring this dynamic about should be a high priority. As shown by the forgoing analysis, gender differentials figure prominently into the identification of interventions for promoting income generation and multiplication in rural regions. To date, research in the subject area of rural-urban linkages has not examined sufficiently how gender influences individuals' ability to respond to changed economic incentives. This study is meant to provide an analytical framework and methodological basis for such further investigation.

ASIA AND THE NEAR EAST
ROLLING AGRICULTURAL RESEARCH AGENDA

February 14, 1988

ANE Rural Economic Sector Strategy

During the process of developing the ANE Rural Economic Sector Strategy a number of researchable questions have arisen. Answers to these and others that may arise during strategy implementation, provide a valuable source of information to guide ANE's commitment of its human and financial resources. For example, if ANE staff knew what factors were required to establish an effective and efficient cereal price stabilization program, this would assist in designing ANE investments in support of government reorganization of grain stabilization programs. Also, if we knew the areas and types of investments needed to assure continued growth in cereal yields in the region we could target our support of agricultural research more tightly.

These and other researchable questions that will arise during strategy implementation will form the basis for an ongoing research program supported by the ANE Office of Technical Resources. Research areas that make up the current agenda are outlined below. As research results become available, they will be shared with Missions and other donors, and new items added to the agenda for examination.

1. Demand Diversification

Economic diversification of agriculture is largely demand-driven. It is very likely, given past rates of growth in income in ANE client countries, that a significant diversification in food production and consumption has begun and will continue through the 1990's. A more in-depth understanding of the dynamics of demand and its sensitivity to specific policy instruments is required to anticipate the implications of diversification.

2. Price Stabilization

Food grain price stabilization is essential to stimulate investment, promoting a flexible policy environment conducive to diversification and protecting consumer and producer welfare. Yet managing stabilization is a complicated and often very expensive affair. Studies of actual price stabilization activities in the region are needed to identify the appropriate roles for the public and private sectors, to articulate the impact of stabilization on investment, employment and increased demand; to identify practical management rules and procedures institutions should use to assure more effective programs and practical steps agencies can take to retreat from uneconomic interventions.

3. Cereal Productivity

There is preliminary evidence that regional rice and wheat yields growth has slowed, even though a substantial gap remains between farm and research station yields. Research is needed to identify what components are causing the gap, what effect these components have on yields, what types of targeted research is needed to address these constraints and whether or not national and/or international research centers are capable of carrying out the required research.

4. The Role of High-Tech Research

During the recent symposium on agriculture in the 1990's sponsored by ANE, participants indicated that although bio-technology will play an important role in agricultural research in the long run, it is highly unlikely that it will produce high yielding varieties, similar to those available at the start of the Green Revolution, within the next ten years. The basic question is, can this research be speeded up? Analysis of the research currently underway is required to determine if it is focusing on the appropriate questions, is research conducted in the public and private sector complementary, if there is adequate public and/or private resources being devoted to the types of bio-technical research needed in developing countries, and if this research is focused and managed in a way that it will produce the required results in the least amount of time.

5. Irrigation Productivity

There is disagreement among professionals over the productivity of irrigation investments. Some contend that irrigation systems already built are not maintained or managed properly and that new investments should be curtailed. Opponents, although they agree that there are problems, argue that all available evidence suggests that irrigation remains a viable investment option. Analysis is required to identify and quantify increases in productivity that have resulted from past irrigation investments, what impact poor operation and maintenance and/or management are having on system productivity and whether it would be more productive to improve current system management or to continue investing in new irrigation systems.

6. Natural Resources Planning and the Development Process

There is a growing concern over management of the natural resource base in developing countries. One of the critical issues is how natural resource concerns can be included as an intrinsic part of the development process. Specifically, how do you incorporate sound natural resource management principles into a long-term sustainable agricultural production program.

1/19

A conceptual paper which explores this area and lays out specific recommendations on how natural resource management principles can be merged with agricultural production objectives under conditions of increased population and income-led demand growth is required.

7. Agricultural Trade Pattern in ANE

The past decade has seen major changes in trading patterns between developing and developed countries. Many countries in the ANE region have become much more competitive in a wide variety of agricultural products. Some countries have placed heavy emphasis on increasing non-oil exports to replace lost oil revenues. Others are strapped with expanding foreign debts. A careful look at these changing trade and debt patterns is required to determine what effect they have had on trade and agricultural policy in the region, countries in the region, if they represent a real threat to U.S. trade policy, what impact changes have had on specific U.S. commodity groups and if there are appropriate mechanisms to ameliorate negative impacts.

8. PL 480

As development assistance funds shrink, A.I.D. is placing greater emphasis on the use of PL 480 proceeds to implement its development program. Discussions within A.I.D. are ranging from use of PL 480 proceeds to encourage and support sectoral adjustment efforts, to restructuring PL 480 legislation to make it more flexible in supporting specific A.I.D. projects. While discussions are continuing, outside observers are projecting a tightening of Congressional control over PL 480 resources. A careful analysis of the current PL 480 situation is required to determine if changes in PL 480 legislation are possible, what changes would be most complementary to A.I.D.'s project implementation role and specific changes that would be required to make PL 480 a more effective instrument in sectoral adjustments.

13

ADO WORKSHOP BRIEF

Status of ANE Strategy in Science and Technology

Robert F. Ichord
ANE/TR/ENR

I. Role of Science and Technology in Economic Growth

As part of the analytical agenda of the ANE Bureau, ANE/TR has been assessing the role of science and technology, broadly defined, in the economic growth of ANE countries. The ANE countries have experienced over the past decade reasonably steady rates of economic growth, especially when compared with AID-assisted countries in Africa and Latin America. In a number of these countries, economic growth has been accompanied by a significant increase in their scientific and technological capacities.

The relationship between science and technology and economic growth is though a complex one. To begin to understand and test the relationship, we have sponsored work by Dr. Charles Weiss on a framework that links stages of technological development and mastery with characteristics of the human resource base, the productive sector, the institutional and technical infrastructure, technology policy, and financial development. Attached is a summary of this framework and a brief description of the stages and substages. It is currently being tested in the cases of Tunisia, Thailand, and Sri Lanka.

My preliminary analysis suggests the following distribution of ANE countries within the stages:

The first stage is one characterized by emerging islands of modernization in the economy. In this substage, Yemen is still just breaking out of the traditional technology substage, Bangladesh, Nepal, and Burma have a few modern technologies, and Sri Lanka, Indonesia, and Tunisia have well-developed islands of modernization.

The second stage Weiss calls the struggle for mobilization and mastery of more advanced and widespread technology capacity. Within this stage, Morocco, Jordan, Egypt, the Philippines and Pakistan have established mastery of most conventional technologies. Finally, in our region India and Thailand are clearly in a transition to newly industrialized country status, even though there is considerable dualism in both economies.

The framework appears to be useful in identifying general constraints to technological modernization and opportunities for investment. It is important to note that countries may be underdeveloped or overdeveloped on certain of the profile characteristics and that their ranking may not coincide with income levels. We hope next to identify S&T policy issues that countries face at a particular substage.

II. Current AID Investments in Science and Technology

Although the increasing pace and significance of science and technology is contributing to its emergence as a new arena of development policy, it is in many ways an old concern of AID. AID has historically supported the development of scientific and industrial technology institutes. The Korean Institute for Science and Technology (KIST) is the most celebrated example.

In the current ANE program, Dr. Peter Delp found that 46% of the active projects are science and technology related. Total funding for these activities was roughly estimated at \$431 million.

Agriculture projects related to science and technology constituted the largest sector with 31% of the active projects. Health, energy, and natural resources followed with 16%, 14%, and 10% respectively (see attached tables).

The science and technology related projects of the ANE Bureau fall roughly into three categories:

- (1) Research, human resources, and institutional development;
- (2) Broad-based S&T;
- (3) Approach premised on constraints to access;

Below some of the modalities of programming in each category are noted:

Research, Human Resources, and Institutional Development

- Research and technology development in traditional AID sectors, e.g., agricultural research;
- Enhanced training capabilities: scientific and technical training programs and specialized training institutes;
- Direct support of researchers; Office of Science Advisor grants;
- Regional research collaboration and support of international research institutional network: IRRI Small Farm Machinery; F/FRED; CGIAR.
- Centers of Excellence: Institutional Excellence project in Pakistan.

Broad-Based S&T Approaches

- S&T cooperation and bilateral agreements: India and STI;
- S&T umbrella: Egypt and Thailand projects
- Commercialization of technology, venture capital; PACT and PACER projects in India;
- Regulatory, standards and quality control: India pharmaceuticals.

Approaches Premised on Access Constraints

- S&T Information access and network: NTIS, Egypt Entechnet, VITA;
- Appropriate technology: ATI.
- Market and Technology Access: MTAP project of S&T.

III. Priorities for the Future

The Bureau goal of sustaining and enhancing economic growth in the ANE region necessitates a concern with increasing productivity and competitiveness. Science and technology is critical to both these dimensions of the problem, as is macro and micro economic policy. Dahlman, Ross-Larson and Westphal state: "The central issue of technological development in the developing countries is not acquiring the capability to invent products and processes. It is acquiring the capability to use existing technology -- to produce more efficiently, to establish better production facilities, and to use the experience gained in production and investment to adapt and improve this technology in use." If we accept this premise the following would seem to emerge as possible priorities for the ANE region in the 1990s: technology commercialization policy; standards and quality control; and development of technical managers.

Technology Commercialization Policy

New technologies are available and emerging from the laboratory that are not being adopted in the developing countries of Asia and the Near East. These technologies are more efficient and generally have reasonable payoff periods. Helping countries identify the market and non-market barriers to the widespread use of these technologies is a basic priority of AID. In some cases, the problem will lead to a focus on adapting the technology to local markets. In other instances, pricing and regulatory policies, for example intellectual property protection, may need to be reformed. As in India, the availability of venture capital may be a key constraint. AID can play a diagnostic and catalytic role in promoting policies and innovative institutional approaches suited to the particular situation.

6/23

Standards and Quality Control

If the products of ANE countries are to compete with imports and in regional and international markets, they must be of good quality. Two basic objectives are needed: (1) to maximize quality assurance and process control from an existing process technology and (2) to develop new technologies with greater potential for quality. The focus of quality control strategy is shifting to direct monitoring and adjustments during the production process from simple, end-of-production testing when the correction of defects is too late to prevent extra costs. The introduction of improved standards and measurements is critical to providing incentives for improvement in quality and for implementing corrections in the production process that result in higher quality products. The potential exists to work with U.S. industry groups (e.g. ASHRAE) as well as the National Institute of Standards and Technology in developing this area. The ASEAN-US Center for Technology Exchange has some experience in this area.

Development of Technical Managers

The creation of a cadre of skilled technical managers becomes a critical path investment to increasing efficiency, productivity and competitiveness. Managers must understand the technology innovation process and its potential in their industry. AID is well-placed to provide assistance in the development of this kind of human capital.

IV. Next Steps in Strategy Development

I see several next steps in the development of an S&T strategy for the Bureau:

(1) The Bureau will convene a workshop on March 23-24, 1989 in Washington, D.C. that will bring together distinguished economists and technology policy experts to review lessons in science and technology and their implications for AID priorities in Asia (see attached list).

(2) Some of these ideas on technology policy, standards and commercialization will be developed in the design of a new ASEAN project that links trade and investment and technology commercialization emphases.

(3) The Advanced Developing Countries of Thailand and Tunisia will develop CDSS's that consider the role of science and technology in developing a "new relationship" program.

634

(4) A mid-term evaluation will be conducted for the PACT project in India which may provide some first lessons on this innovative approach to technology commercialization.

(5) AID is in the process of developing an approach and guidelines for dealing with the intellectual property rights issue and its applications to federally-funded international S&T cooperation activities, as required by the Omnibus Trade Act.

#1252C



International
Technology
Management
and
Finance, Inc.

Draft: February 10, 1989

SCIENTIFIC AND TECHNOLOGICAL CONSTRAINTS

TO ECONOMIC DEVELOPMENT:

An Analytic Cross-Country Framework

CHARLES WEISS, JR.

Prepared for the Asia and Near East Bureau of AID by
International Technology Management and Finance, Inc.,
1200 18th St., N.W.
Washington, D.C. 20036 USA

636

C. The Stages of Scientific and Technological Development⁹

In this section, we elaborate a framework of cross-country comparisons which enables us to better understand how scientific and technological development can contribute at various stages to the broader goals of economic development and the equitable distribution of its benefits, and to identify points at which interventions to promote scientific and technological development can overcome constraints to economic growth.

1. As we have already pointed out, in contrast with taxonomies developed for other purposes in development economics, scientific and technological development does not necessarily correlate with per capita income. On the contrary, some of the poorest countries in the world -- India and China are the most obvious examples -- are also among the most technologically developed. Conversely, some of the richest oil producers in the Persian Gulf rely almost entirely on turnkey projects, many which will be operated by foreigners for the foreseeable future.

⁹. This analytic framework is an elaboration of the analysis found in C. Weiss, "Pathways of Technological Development," in M. Kamenetzky, R. Maybury and C. Weiss, Chapter 4 in Choice and Management of Technology: A Training Program for Decision Makers, (World Bank, Washington, D.C., 1986).

2. The scientific and technological development of developing countries may be divided into two main stages: a first stage in which islands of modernization emerge in different parts of the economy; and a second stage, during which the country struggles for mobilization and mastery of technology throughout the economy. At the end of the second stage, the country has achieved the broad international technological competitiveness typical of the advanced industrialized countries. Yemen, Nepal, Kenya, Sri Lanka and Tunisia may be thought of as examples of countries in various substages of the first stage; Colombia, Thailand, India and Taiwan are at various stages of the second. Representative countries from each of these stages are listed in Table II-1.

3. The characteristics of countries in each of the six substages of these first two stages of scientific and technological development are laid out in some detail in Table II-2. This table, which takes up many typewritten pages, may be visualized as a large matrix with the different stages and substages of scientific and technological development defining one axis, and the different aspects of that development defining

the other axis. The entries in this matrix corresponding to each substage give its characteristic status in each of the six aspects of scientific and technological development:

- * General state of the economy
- * Scientific and technological capacity in the productive sector
- * Technology policy
- * Financial institutions
- * Human resources, and
- * Scientific and technological infrastructure

In order to illuminate the basic structure of Tables II-3, a skeleton of the matrix form of this table is shown as Table II-2. Table II-4 uses the same information as Table II-3, but reorders it so as to make clear how the characteristics of a particular aspect of scientific and technological development progresses from one substage to another.

4. From our preliminary empirical review, it seems likely that a given country at a given time is likely to have the characteristics associated with a given substage in all aspects of its scientific and technological development. The assemblage of these typical characteristics thus constitutes the typical profile for that substage of scientific and technological development.

5. This hypothesis was tested in more detail in the pilot country studies described in the final section of this report. For each pilot country, we have established a profile by identifying the substage it has attained in each aspect of its scientific and technological development. Based on these judgments, we have assigned each pilot country to a substage of overall scientific and technological development. Our hypothesis that a country maintains more or less uniform rate of advance in the different aspects of scientific and technological development was in large part verified. On the other hand, it might be argued that we have simply adjusted our typical profiles to accommodate the findings in this rather limited sample. Only more extensive tests in many countries can thus verify this hypothesis properly.

6. The First Stage of Scientific and Technological Development. In the first stage of scientific and technological development, islands or enclaves of capacity to manage technology gradually develop in the midst of an essentially traditional economy, until they become quite numerous. The distinguishing feature of the first stage is that these "islands of modernization" remain largely isolated from each other, and do not fuse into a functioning scientific and technological system.

7. The first stage of scientific and technological development is divided into three substages. The very earliest

substage of national scientific and technological development, which we have called substage 1a, is now found in a few, relatively remote countries like Bhutan, Guinea-Bissau, and the Yemens. Literacy is low, people with even secondary education are relatively rare, there is very little industry or scientific infrastructure, and practically the entire economy uses traditional technology whose scientific basis is unknown to its user. Even patterns of thinking are pre-scientific in the great majority of people. Table II-1 encapsulates this stage with the phrase "economy based on traditional technology."

8. At the second substage of the first stage, denoted "first emergence" in Table II-3 and typified by such countries as Ethiopia, Haiti, Nepal and Papua New Guinea, much of the population is still isolated from contact with modern technology, and much economic activity still takes place in small firms and farms in the "informal" or "unorganized" sector, using traditional technology. But pockets of modern technology management are beginning to emerge.

9. Even at this stage, these countries are able over a period of ten or fifteen years to develop some parastatal agencies or private industries that meet international standards for competence, especially if they are forced to compete on the international market or (in the case of a domestically oriented parastatal such as a power or telephone company) if they are run

with a sustained commitment to efficiency in both economic and technological matters.

10. In the small modern sector of the economy, serious manpower shortages may remain at all levels of technology -- the more so since the government is the usual employer for new technical graduates. On the other hand, the government is now sufficiently effective that its macroeconomic policy does make its influence felt on the choice and diffusion of technology. For example, the technology chosen by small farmers depends on the prices they receive for their crops, the technology chosen by entrepreneurs depends on the prices they pay for raw materials and capital, and the quality of their products depends both on the competitive pressures induced by imports, and on the requirements of the export market. All of these are strongly influenced by government policies.

11. By the third substage of the first stage of scientific and technological development, denoted "islands of modernization" in Table II-3, modern small industry has begun to develop, and there are many enclaves of capacity to choose, operate and manage modern technology. Modern technology is still imported, mainly as equipment or turnkey plants. Some of the larger private firms and parastatals, including public utilities, have substantial technological capacity to assess objectives, to choose, acquire and operate technology, and to negotiate with

multinational corporations. In many countries at this stage of development, non-governmental organizations with few links to formal scientific and technological institutions are active in diffusing and sometimes in developing low-cost technology for use in urban and rural community development, including tiny enterprises.

12. By this substage, a country has established a reasonable base of human resources, basic scientific and technological infrastructure, a few well established universities, and the beginning of a basic research capability. It also will have applied research laboratories in a few critical areas, especially agriculture. Research projects are numerous and sometimes of high quality -- although typically underfunded, poorly coordinated and carried out with limited attention to practical application.

13. On the policy side, macroeconomic and trade policies have a definite impact on scientific and technological development, but are rarely formulated with these effects in mind. Similarly, financial institutions are increasingly competent in their dealings with borrowers, but are not generally competent to deal with specifically technological issues.

14. Scientific and technological development at the end of the first stage is thus patchy, with areas of high competence

interspersed with sectors in which a much lower level of capacity has been attained. Economic policies are well established and affect the course of scientific and technological development for better or worse. The supply of technically trained manpower, while still a constraint, is no longer overwhelming. On the other hand, the educational system is still geared to the personnel needs of the government bureaucracy and lacks the institutional flexibility and the contacts with the business community it needs to adjust to the changing demands of the labor market. This level of scientific and technological development is typified by such countries as Kenya, Sri Lanka, Tunisia and Guatemala.

15. The Second Stage of Scientific and Technological Development. This is divided into three substages. The first of these is denoted "mastery of conventional technology" in Table II-3, and is typified by Colombia, Malaysia and Turkey. At this point, industrial exports are growing rapidly, and quality and quality control, although still not optimal, are rapidly improving. Capacity to master the operation of imported technology is reasonably widespread in larger industry, many firms are beginning to make investments of their own resources in order to develop technological capacity, and there is some capacity to adapt technology and to innovate in order to maintain competitiveness. In this substage, the enclaves of technological capacity developed earlier have evolved stronger links with the

rest of the economy through subcontracting, technical assistance to local suppliers, and movement of experienced personnel. Negotiating skills with multinational corporations are now reasonably strong, and are beginning to focus on technology per se rather than purely on business arrangements. Scientific and technological manpower is in reasonable supply, and most scientific and engineering disciplines are well established. The educational system is making its first efforts to free itself of unnecessary restrictions and to become more responsive to the needs of the economy.

16. At this substage, a country begins to establish research associations and subsectoral product support centers to provide technical support services for firms too small to provide them for themselves, e.g. advice on productivity improvements, and testing and technical assistance services to promote improved quality and quality control. Local design and engineering capacity is fairly well developed in the larger firms and in independent public and private consulting and engineering organizations, especially for civil works and for power and other infrastructure projects. The quality of local research is reasonably good, as is coordination and research coordination, but links to the productive sector are still weak.

17. On the policy side, the government begins to pay serious attention to the impact of its economic policies on

scientific and technological development -- and indeed, this is probably the first point at which it has the technical capability and the effectiveness to undertake to implement a coherent policy in this area. Development banks are now competent to assess conventional technology in investment proposals.

18. The second substage of the second stage of scientific and technological development is the transition to newly industrialized country typified by Thailand, India and Mexico. In these countries, many subsectors of industry are competitive on world markets, and exports are growing rapidly. At this stage, capacity to assess, choose and operate conventional imported technology becomes general throughout the economy. The local capital goods industries are well established, as are technical services and consulting and engineering industries. Negotiating skills vis-a-vis multinational corporations are strong, and the overall business climate becomes more mature and stable.

19. More and more subsectors develop the capability to act as their own prime contractors, unpackaging the overall technology into components acquired from different sources and taking on themselves the responsibility for integrating the overall operation and ensuring its operating efficiency. Imported technologies are mastered to the point where they begin to be reexported, often at prices competitive with those offered

by their original suppliers. Technological capacity extends beyond choice of technology to adaptation and innovation, occasionally even at world class. Private research and development begins to be important, as do applications of advanced technology in agriculture and manufacturing. Financial institutions begin to change their procedures and policies to keep pace with these important changes.

20. Scientific and technological infrastructure proliferates, and scientific and technological institutions begin to come to grips with the problem of improving their relations with the productive sector of the economy. Basic and applied research improves in quality and quantity and in some fields may gain international recognition. The management, administration and coordination of research also improve, and specific institutions are established for the financing of innovation. Science teaching in primary and secondary schools begins to improve, as does the awareness of science among the general public. On the policy side, there are systematic efforts to integrate technological considerations into economic policies and vice versa, to seek the opinion of the business community in decisions affecting scientific and technological development, and to make strategic investments in capability for managing advanced technology.

21. The third substage of the second stage of scientific and technological development is the culmination of newly industrialized country status typified by Brazil, Korea, Singapore, and Taiwan. In these countries, technology is a major factor in industrial competitiveness on world markets. Manufactured exports are competitive with developed countries across a wide range of products, although at the lower ranges of technology and labor productivity. Advanced technologies are well established in many fields, and expatriate scientists, engineers and technical managers are returning in response to the expanded professional opportunities they now perceive.

22. For the first time, the focus of scientific and technological development shifts from activities promoted or supported by government, to those financed and executed by the productive sector in the interests of protecting its own competitiveness for purely commercial motives. The major investments in research and in the building of local technological capacity are those of private industry. Business and government collaborate closely in technology strategy and policy. The stock market and other risk capital institutions are well developed. The country is technologically ready to take on a mature role in the world economy.

TABLE II-1: Representative Countries at Various Stages of S & T Development

STATES OF DEVELOPMENT:	Asia Region	Latin America and Caribbean	Sub-Saharan Africa
Emerging Islands of Modernization			
1a Traditional Technology-based Economy	Yemen Laos	Surinam	Other Sub-Saharan Countries
1b First Emergence	Nepal Papua N.G.	Haiti Guyana	Ethiopia Burkina Fasso
1c Islands of Modernization	Sri Lanka Tunisia Indonesia	Jamaica Peru	Kenya Ivory Coast Zimbabwe ??

Struggle for Mobilization and Mastery			
2a Mastery of Conventional Technology	Iran Malaysia Turkey	Colombia Argentina	
2b Transition to Newly Industrialized Country	India Thailand	Mexico	Republic of S. Africa?
2c Threshold of Technological Competitiveness	Singapore Taiwan Hong Kong	Brazil	

able II-2: Matrix of Stages and Aspects of S&T Development Paths

ASPECTS OF S & T DEVELOPMENT:

STAGES OF DEVELOPMENT:	Techno-logical Capacity in the Productive Sector	Tech-nology Policy	Financial Institu-tions	Human Resources	Scientific and Techno-logical In-frastructure
Emerging Islands of Moderni-zation					
1a Trad-tional Tech-nology-Based Economy					
First Emergence					
1c Islands of Moderniza-tion					
Struggle for Mobilization and Mastery					
2a Mastery of Conven-tional Tech-nology					
2b Transition of Newly Industri-alized Country					
2c Threshold of Tech-nological Competi-tiveness					

TABLE 9: Annualized LOP Funding of ANE Projects Related to Science and Technology
(Excludes Projects that are largely capital or commodity transfer)

	(\$000)										
	Agr	Enrgy	HM	NR	Pop	PS	Ed	S&T	Feas	Total	Percent
ANE Regional	\$3,929	\$1,200	\$1,000	\$2,323	\$0	\$955	\$6,476	\$0	\$0	\$15,883	4%
Bangladesh	6,000	19,143	900	925	0	2,786	0	0	0	29,754	7%
Burma	12,169	0	0	0	0	0	0	0	0	12,169	3%
Egypt	18,967	6,902	23,638	3,370	5,900	2,682	0	6,872	3,757	72,088	17%
India	13,079	4,500	5,967	21,447	4,997	0	0	6,420	0	56,410	13%
Indonesia	23,958	1,750	5,580	3,884	4,550	0	1,600	0	0	41,323	10%
Jordan	5,500	1,788	3,500	0	0	6,345	0	0	0	17,133	4%
Morocco	5,483	5,021	525	0	4,578	6,857	0	1,800	0	24,263	6%
Nepal	7,209	0	0	8,445	667	0	424	0	0	16,744	4%
Oman	5,689	0	0	0	0	0	0	0	0	5,689	1%
Pakistan	23,813	15,000	0	3,125	10,571	0	8,571	0	0	61,080	14%
Philippines	6,836	2,753	9,252	2,695	0	2,500	0	0	0	24,035	6%
Sri Lanka	5,239	0	2,954	893	0	0	0	1,429	0	10,515	2%
S. Pacific	1,182	0	0	0	0	0	0	0	0	1,182	0%
Thailand	5,917	0	714	5,714	0	0	0	5,000	0	17,346	4%
Tunisia	1,429	0	1,300	0	0	714	4,966	0	0	8,409	2%
Yemen	5,503	0	3,428	0	0	0	8,896	0	0	17,827	4%
											0%
Total	\$151,903	\$58,055	\$58,757	\$52,820	\$31,263	\$22,839	\$30,934	\$21,521	\$3,757	\$431,849	100%
Percent	35%	13%	14%	12%	7%	5%	7%	5%	1%	100%	

Key to Table Columns:

Agr	Agricultural Sector	PS	Private Sector, if not otherwise categorized
Enrgy	Energy Sector	Ed	Education Sector
HM	Health & Nutrition Sector	S&T	Science and Technology, Umbrella or otherwise uncategorized
NR	Natural Resources Sector	Feas	Feasibility Studies
Pop	Population/Family Planning Sector		

Key to Rows:

ANE Asia, Near East, and ANE regional projects
others are countries or regional office (S. Pacific)

TABLE 4: ANE Projects Related to Science and Technology, Based on Broad Definition

COUNTRY	SECTOR OR AREA									Total Number	Country Percent
	Agr	Energy	HN	NR	Pop	PS	Ed	S&T	Feas		
ANE Regional	3	2	4	5	0	4	7	3	0	28	12%
Bangladesh	3	2	2	1	2	1	0	0	0	11	5%
Burma	3	0	0	0	0	0	0	0	0	3	1%
Egypt	5	7	9	1	1	7	1	4	1	36	16%
India	8	5	4	5	4	0	0	4	0	30	13%
Indonesia	4	1	3	2	1	1	1	0	0	13	6%
Jordan	2	1	1	0	0	5	0	0	0	9	4%
Morocco	2	4	1	0	1	2	0	1	0	11	5%
Nepal	4	0	0	5	1	0	1	0	0	11	5%
Oman	3	0	0	0	0	0	0	0	0	3	1%
Pakistan	4	5	0	1	1	0	1	0	0	12	5%
Philippines	5	4	4	1	0	1	1	0	0	16	7%
Sri Lanka	6	0	2	1	0	0	0	1	0	10	4%
S. Pacific	1	0	1	0	0	0	0	0	0	2	1%
Thailand	8	0	1	1	0	0	0	1	0	11	5%
Tunisia	4	0	3	0	0	1	2	1	0	11	5%
Yemen	4	0	2	0	0	0	3	0	0	9	4%
Total	69	31	37	23	11	22	17	15	1	226	100%
Percent by Sector	31%	14%	16%	10%	5%	10%	8%	7%	0%	100%	

Key to Table Columns:

Agr	Agricultural Sector	PS	Private Sector, if not otherwise categorized
Energy	Energy Sector	Ed	Education Sector
HN	Health & Nutrition Sector	S&T	Science and Technology, Umbrella or otherwise uncategorized
NR	Natural Resources Sector	Feas	Feasibility Studies
Pop	Population/Family Planning Sector		

Key to Rows:

ANE Asia, Near East, and ANE regional projects
 others are countries or regional office (S. Pacific)

652

TABLE 6: Percent of S&T Related Projects to All ANE Projects by Country

Country	Total S&T-Related	Country % of ANE	Active Projects	S&T % of Active Projects
ANE Regional	28	12%	65	43%
Bangladesh	11	5%	25	44%
Burma	3	1%	6	50%
Egypt	36	16%	83	43%
India	30	13%	40	75%
Indonesia	13	6%	39	33%
Jordan	9	4%	24	38%
Morocco	11	5%	21	52%
Nepal	11	5%	16	69%
Oman	3	1%	6	50%
Pakistan	12	5%	31	39%
Philippines	16	7%	46	35%
Sri Lanka	10	4%	25	40%
S. Pacific	2	1%	15	13%
Thailand	11	5%	16	69%
Tunisia	11	5%	14	79%
Yemen	9	4%	16	56%
Total	226	100%	488	46%

Note: "ANE Regional" projects include all non-bilateral projects;
 S. Pacific includes Papua New Guinea
 Source: "S&T Related" Projects (Broad Definition- Table 4);
 "Active" Projects tabulated from FY-1988 Project Control Regist

652

"Science and Technology Policy: Lessons for Developing Asia"
An ANE Bureau Conference Organized by the
Yale Economic Growth Center

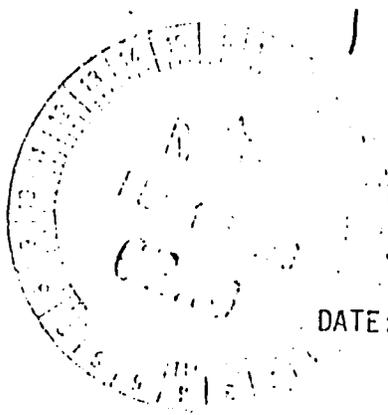
March 23-24, 1989, Washington, D.C.

Preliminary Program

- 1 Professor Anil Deolalikar (University of Pennsylvania), "R & D and Technology Purchase in India"
- 2 Professor Robert Evenson (Yale University), "Intellectual Property Rights Issues"
- 3 Professor Robert Lipsey (National Bureau of Economic Research), "R & D by Multi-national Firms"
- 4 Professor Richard Nelson (Columbia University), "Government and Technology Policy"
- 5 Professor Howard Pack (University of Pennsylvania), "Industrial Efficiency and Technology Choice"
- 6 Professor Gustav Ranis (Yale University), "Science and Technology Policy in Japan and the East Asian NIC's"
- 7 Professor Nathan Rosenberg (Stanford University), "Lessons from Economic History"
- 8 Professor Vernon Ruttan (University of Minnesota) and Professor Carl Pray (Rutgers University), "Lessons from Agriculture"
- 9 Dr. Frances Stewart (Oxford University), "Technology Transfer and Indigenous Technology Change"
- 10 Professor Maurice Teubal (Hebrew University and University of Pennsylvania), "Industrial Policy, R & D and Technology Choice"
- 11 Professor Raymond Vernon (Harvard University), "R & D Policies and Trade Performance"
- 12 Charles Weiss, (International Technology Management and Finance, Inc.) "A Framework for Assessing LDC Capacity for Technology Generation and Absorption"
- 13 Professor Larry Westphal (Swarthmore College), "Development of Technological Capability"

UNITED STATES GOVERNMENT

Memorandum



Copy
P178
ADD
KAD

TO : All Office Chiefs
FROM : OD/PE *PK*
SUBJECT: Japanese ODA Process

DATE: February 15, 1989

Below is the text from Tokyo 2380, a recent cable from the Tokyo Embassy. It is a very useful description of the process by which Japan administered its official development assistance program.

Recipient's Request. As a matter of policy, the GOJ does not propose foreign assistance -- it must be requested. This GOJ circumspection stems from its reluctance to seem to interfere in other countries' internal affairs. Thus the formal process for extending an ODA yen loan begins with a project loan request from a foreign government to the Japanese Embassy (or a visiting delegation), usually in the form of a note verbale. In practice, especially in the Asian recipient nations to which most of GOJ ODA flows, the process begins much earlier with suggestions by private Japanese suppliers and trading and consulting firms to recipient government officials about projects that might qualify for ODA loans. Such firms also exert influence in Tokyo on the various ministries involved in ODA decisions and spending. Given the GOJ's weak aid field presence, these private companies are Japan's de facto agents responsible for project identification.

Feasibility Study. The Embassy transmits the host government's request to MOFA's Economic Cooperation Bureau (ECB) in Tokyo. The Overseas Economic Cooperation Fund (OECF -- the main administrator of yen loans) also learns about the request soon after it has been received in Tokyo. The prospective borrower provides two types of supporting documentation. One is information attesting to the technical and financial feasibility of the project. If MOFA decides that this information is inadequate, the ECB instructs the Japan International Cooperation Agency (JICA) to do a feasibility study. JICA does some of its own studies, but often hires an outside consultant, who is almost always Japanese. In either case a survey team is sent to the recipient country as part of the technical cooperation extended by JICA. The recipient also submits an implementation program, which states its intention to implement the project and what measures it will take to do so. Subsequent changes to the scope and schedule of the project spelled out in the implementation program are normal as new information comes to light in subsequent studies.

Government Missions. Two separate GOJ missions then usually travel to the recipient country. The first comprises officers from MOFA, Ministry of Finance (MOF), Ministry of International Trade and Industry (MITI), Economic Planning Agency (EPA) and sometimes OECF. It does macroeconomic analysis and negotiates general aspects of the loan with borrower country officials. Since

655

borrowers usually request more than one project at a time, one mission would probably examine several loans. An OECF mission follows and performs detailed appraisal of the project(s) in question, loan amount, relation to the total economy, environmental assessment, and technical aspects. (Note: OECF assures us that its project appraisal comes before exchange of notes, notwithstanding various GOJ-published project flow charts that show it coming afterwards.)

Building consensus in Tokyo. Armed with this knowledge, officials from MOFA, MOF, MITI, and EPA convene in "four ministry negotiations" in Tokyo to achieve consensus on the project. Reaching a decision on a loan package to a particular borrower requires several meetings, with officials of varying levels participating depending on the specific topic. OECF sometimes also takes part. The resulting consensus is then presented to the full cabinet for its approval. Cabinet action is largely pro forma. Other ministries that might have a position on a proposed project will have learned about it and already weighed in informally.

Exchange of notes. Cabinet approval allows the GOJ to exchange notes on the loan with the recipient government, a procedure usually handled by Japanese Embassy officials and the relevant local ministry. The notes spell out loan amount, terms, project, tying status, etc. Public announcement follows the exchange of notes.

Loan Agreement. OECF and the recipient government then negotiate a formal loan agreement. The loan agreement fixes the scope of the project, loan amount, terms, charges, implementation procedures, procurement guidelines, tying status, and disbursement modalities. The loan agreement includes much the same information as the notes but in greater detail. OECF says review in Tokyo by other ministries is not necessary because OECF's negotiating guidelines are clearly established. The loan agreement is often signed in Tokyo by the Chairman or President of OECF and the borrower country's ambassador. Another press release accompanies its signing.

Bidding and Tying. The recipient government is then responsible for inviting tenders for bids to supply equipment and services needed by the project. Nonetheless, OECF supervises the process closely to ensure that it conforms to guidelines laid down in the loan agreement. Japan recognizes three tying statuses:

- 1) General untied - firms from all countries may bid;
- 2) LDC-untied - only Japanese and developing country firms may bid;
- 3) Japan tied - only Japanese firms may bid.

Different tying statuses may apply to different projects within one country. Within one project a different status may apply to procurement of equipment and consulting services. For example, it is quite common for the latter to be Japan tied or LDC-untied but the construction portion to be general untied. Borrowers can and should state a preference for the general untied status, but prior to the exchange of notes, because at that point the tying status is set.

66/6

Within each tying status, Japan recognizes four types of tendering:

- 1) Open tender - any eligible firms bid after public announcement;
- 2) Limited tender - a limited number of qualified (according to the tying status) firms are invited to bid;
- 3) Quotation - specific firms are invited to submit a quotation, and bidding per se does not occur;
- 4) Negotiated contract - the recipient government directly chooses a supplier and, without any tendering at all, enters into direct contract negotiations.

According to official policy, the GOJ prefers open tender. If the recipient prefers some other procedure, it must explain its reasons in writing and obtain OECF's consent.

Execution. Contracts are signed between the borrower and the supplier, but OECF ensures that they comply with the loan agreement and that the supplier is competent to fulfill the contract. OECF executes letters of commitment, whereby it promises to pay contractors for goods once delivered. OECF disburses funds directly to the contractor after delivery. OECF is also responsible for loan supervision, usually handled by OECF's local representative, or by people from Tokyo if special expertise is needed. OECF also is responsible for project evaluation after completion. A special team from Tokyo is usually needed for this.

CoFinancing

Because there have so far been few instances of projects cofinanced by the GOJ and other bilateral donors, it is not yet clear how a cofinanced project cycle would differ from that described above. OECF says the basic pattern would be the same. It stresses, however, the importance of prior agreement among interested parties, in particular countries, to pursue cofinancing opportunities before specific projects are requested. OECF alone could not make such a policy decision; MOFA and other ministries would have to be involved. The experience of the aborted USG-GOJ cofinancing arrangement in Jamaica illustrates the need to ensure that overseas GOJ reps are speaking with full authority of Tokyo headquarters' agencies.

Under the GOJ's system, a cofinanced project would still start with a request from the recipient country. However, the potential recipient should specify its desire for cofinancing by Japan and another donor. The GOJ recognizes two sorts of cofinancing, which differ according to the degree of commingling of funds.

- 1) Joint Financing - The share each participant provides is determined in advance, and as additional funds are required, they are provided according to this ratio;
- 2) Parallel (or split) financing - each participant is responsible for financing and executing specific parts of a total project; funds are not commingled. The GOJ has cofinanced projects as well as program loans. OECF says it has cofinanced projects with bilateral donors (UK, FRG, Switzerland) as well as MDB's (IBRD, ADB, IDB). Regarding the UK-cofinanced project -- a hydropower project in Sri Lanka -- a British Embassy contact says that HMG would have preferred joint financing but decided administrative technicalities on the GOJ side made this more trouble than it was worth and so settled for parallel financing.

GOJ contacts have often told us parallel financing is easier to arrange. Procurement for cofinanced projects in all countries is supposedly generally untied, but the GOJ has told us that they would need to study whether parallel cofinancing involving USG grant and GOJ ODA loan would indeed qualify as "cofinancing". Post believes that there are various possibilities within each of the two broad types of cofinancing, and that the GOJ will respond flexibly to creative proposals.

cc: MButler/JSBlackton, CD

128

Mr. Mustapha FARIS
Chairman and General Manager
of National Bank of Economical Development

Opening Address of ANE/ARDO CONFERENCE

Your Excellency Mister Ambassador,
Ladies and Gentlemen,

It is a real pleasure for me to welcome you in the kingdom of Morocco the oldest friend of the United States of America. I am particularly happy to point out that we have just started the third century of our good relationship under the guidance of his Majesty the King HASSAN II and President georges BUSH.

We, as Moroccans, appreciate the way the United States have tackled their development : using progressively their natural and human potential to build a strong nation where every citizen is committed in a common effort.

Agriculture is developed with a high degree of performance as well as Industry and Services : education, finance, public and private sectors are contributing greatly to this challenge.

Development is a long term effort. It is a permanent commitment involving a good number of generations.

Since 1956, when moroccan independence was restored, our country has initiated a balanced development process based on agriculture, industry, tourism and manpower training as long term priorities.

We attach a high value to individual initiative and encourage the promotion of private enterprise and foreign investments.

The rapid growth in population, the high rate of rural migration towards urban centers, the long period of severe drought, the uncertain international economical environment together with the increased external debt make our challenge more difficult.

However we initiate adequate reforms in order to face the situation and strengthen our strategy for the future.

659

Looking ahead to the increase in population of 60 % projected for the year 2000, the government is giving very high priority to the agricultural and rural sector.

Through the Economic Development Plans that were implemented since Independence, Agriculture has always been placed at the head of sectorial priorities.

This constant policy of agricultural development had highly positive results. As a matter of fact, in spite of climatic variations, agricultural production developed considerably during the last three decades. Our effort concerned both traditional crops (cereals, leguminous plants etc...) and modern industrial crops (cotton, sugar-beet, and sugar-cane) in order to improve the coverage of the country's food needs and develop its exports.

The first place given to Agriculture in development policy can be explained by the importance of the country's agricultural potential and by the fact that this sector provides work and support to about half of the population. Agricultural production contributes for about the fifth of GDP formation and represents more than the third of the country's total exports.

However, despite these efforts, Morocco's potential in the production of food and fiber is far from being fully realized. The potential for increasing cereals output on the basis of existing technology has been estimated at 60 %. Use of recent technology and improved cultural practice at the farmer's level for other crops could raise the yields 2 or 3 times more,

- Achieving the objective of 1 million hectares under irrigation ;
- Developing and mobilizing improved technologies and management to provide for stable yields and increased output even with the expectations of recurring droughts ;

660

- Enhancing the orientation, regulation and technical control roles of the Government and its agencies in training research and extension ;
- Increasing gradually the participation and responsibilities of the private sector in the development process.

These are the highlights of our strategy for the agricultural sector which plays an important role by satisfying food requirements, improving rural people's income and contributing to Moroccan needs of hard currencies through exports.

This sector has to protect and take care of the natural resources that constitute the basis of its production and also promote agri-business to ensure a higher value of its products.

You are here to discuss and adopt a strategy of agricultural development for the 1990's. Your meeting in this country and in the I.A.V. HASSAN II is highly symbolic. Within our country to country relationship, the Institute has experienced for 20 years a successful partnership with famous American Universities. We are proud of the results of these cooperative efforts based on long term commitment, on mutual confidence and mutual respect.

We all learn that we can do more and better when we put our expertise together and know how to deal with these problems that are becoming universal : food, education, natural resources, and human dignity are the key words for today and tomorrow.

Thank you for coming and good success for your Conference and for the future of our cooperation.

**THE CONVERGENCE OF
INTERDEPENDENCE AND SELF-INTEREST**

**REFORMS NEEDED
IN U.S. ASSISTANCE
TO DEVELOPING COUNTRIES**

A Review and Recommendations By:
The Phoenix Group

Published By
**The International Trade and
Development Education Foundation**

February 1989

662

Executive Summary

The Phoenix Group is a private citizens task force formed to review U.S. foreign assistance activities. Its Chairman is the Honorable Jack Hood Vaughn. Its principal conclusions are:

Current U.S. foreign assistance policies and programs are targets of widespread and continuing criticism. The world is vastly changed since the basic U.S. foreign aid law was enacted nearly three decades ago. Now, with a new Congress and Administration in Washington, is the time for serious review and reform.

To be justified, U.S. foreign aid programs must be in the U.S. national interest. This concept is logical and evident. Aid to developing countries does serve U.S. interests. Improving their economies improves their value as trading partners. Aid targeted on their environmental concerns helps our environment. It is also a way to combat global pollution, reduce mass migration of people from one country to another and to help reduce global tensions.

To be effective in an age of tight federal budgets, limited U.S. foreign aid funds should focus on key Third World problem areas and not be diffused by addressing so many objectives as is now the case. U.S. bilateral assistance should concentrate on those programs in which the United States performs well — in training and education, technical assistance, research, information and management, and policy guidance. Programs requiring large funds transfers should be left to international institutions.

Major problems facing Third World countries are in the areas of debt, food security, natural resources management and the environment, energy, health and human welfare, population, management capabilities, and private enterprise development. The report makes specific recommendations for U.S. aid in each area.

The U.S. foreign aid administrative structure needs a major overhaul. Military assistance should be administered by the Defense Department and charged to the defense budget. Political/security-related assistance should be charged to and administered by the State Department. For development assistance, there should be a Presidential-level council assuring adherence to priorities and government-wide coordination. An AID-successor agency organized along problem-solving lines is required for Third World problems, and most U.S. aid missions overseas must be replaced by problem-solving, results-oriented, binational task forces.

To undertake serious reforms, Congress should scrap the obsolescent Foreign Assistance Act of 1961 and write a new law. To aid implementation, policy direction and oversight, Congressional leaders should vote funds that are available until expended, using two-year aid appropriations bills. Congress should also link authorizing and appropriating legislation to improve clarity and consistency in the law.

Table of Contents

Executive Summary	3
Table of Contents	4
Introduction	5
Chapter I. The Setting	7
Chapter II. Why Foreign Aid?	8
Chapter III. Third World Development: Problems and Solutions	10
A. Third World Debt	10
B. Trade	12
C. Food Security	14
D. Natural Resources Management and the Environment	16
E. Energy	18
F. Health and Human Welfare	20
G. Population	21
H. Information and Training	22
I. Private Enterprise Development	24
Chapter IV. Overhauling the System	26
Chapter V. Legislation and the Congress	30
Chapter VI. Conclusions and Recommendations	32
APPENDIX The Phoenix Group	34

Introduction

One year ago, several among us noted that criticisms of U.S. foreign aid programs were rife both within and outside the "foreign aid" community. High-level leadership was lacking. Aid programs were criticized by even AID's staunchest defenders for failing to achieve their intended goals, and in many cases, for achieving nothing. The time lapse from project conception to implementation was far too long, usually spanning years. Red tape angered bureaucrats and non-governmental participants alike. AID was allegedly top-heavy with personnel. Programs tried to do too much, rather than addressing a few clearly defined goals well. Funding available for foreign assistance fell far short of demands and had shrunk in real terms. Public support for foreign aid programs was deteriorating and criticism included allegations that too much aid is used for political or military purposes, or that some projects were hurting the environment, or that certain aid activities were detrimental to U.S. export interests. In recent years, Congress usually had failed to pass a foreign aid authorization bill, and the aid appropriation often was lumped into a year-end Continuing Resolution. Further deterioration in the program seemed harmful to our country and to others. The time had come for review and reform.

We knew that others had come to similar conclusions about the timeliness of a foreign aid review. What we could offer, we felt, was a reassessment of the most fundamental premises of the aid program based on years of firsthand experience with foreign assistance programs. (See the Appendix for an identification of the Phoenix Group.)

The Group held its first meeting in December, 1987, in the Phoenix Restaurant of Arlington, Virginia, and subsequently became known as the Phoenix Group. It met regularly thereafter throughout 1988. A key question, reached early in our deliberations, was whether to make our recommendations in terms of changes to existing U.S. foreign aid programs and structure, or to reexamine every aspect of U.S. policy toward developing countries. There are crucial developing country issues beyond the range of U.S. bilateral aid programs. How should they be addressed?

Because of the many criticisms and given the massive changes in the foreign aid environment since the present Foreign Assistance Act became law in 1961, we unanimously decided to start from a "zero base." We would determine what was needed in today's world and fashion our recommendations according to today's needs.

We had to think through, first of all, whether there should be a U.S. foreign aid program; and if so, why? If it could not be justified, then it should be discontinued. To the extent it is justifiable, the programs should reflect the justification. We concluded that while humanitarianism continues to be a worthy

motivation for many aid programs, the basic justification for U.S. aid must be that it serves U.S. interests.

What, then, should aid policies and programs accomplish in the 1990s and beyond? The emphasis on results is vital. Without accomplishment of goals, process means nothing. Indeed, our conclusion is that process has become so much of a preoccupation in the present system that it is often an end in itself, paralyzing the flexibility needed for successful aid activities in ever-changing foreign governments. As shown in our discussions of Third World problems and institutional reforms, our proposals call for fashioning foreign aid as a problem-solving program.

We devoted our examination almost entirely to economic aid. Security and military assistance also need review. For those programs, we recommend a major budget and administrative restructuring.

As our discussions proceeded, a number of other common themes keep reappearing. They include:

- U.S. aid is spread too thinly over too many activities, with resulting under-performance. Budget restraints require a narrower concentration of U.S. aid; and the aid should focus on urgent problems which the United States is well equipped to solve.
- Large capital resource transfers should be left to multilateral development banks.
- The United States can and should take a lead role in international applications of foreign economic assistance. It should strengthen cooperation with development banks and other multilateral institutions. It should promote coordination with other donors such as Japan and West European nations. Such leadership will provide greater returns for the limited sums the United States itself will have available to spend on overseas economic assistance.
- Greater use should be made of non-governmental organizations, particularly by strengthening indigenous NGOs, who are often well positioned to understand what is needed in developing countries and how to deliver it.

These principles are further enunciated in the discussions and recommendations in this report as we address particular problem areas. The sum total of our recommendations profoundly redirects and restructures the way U.S. foreign aid is now carried out. If these be criticized as "drastic" proposals, so be it. Adopting these reforms will allow our foreign aid programs to concentrate on the most pressing Third World problems affecting our own interests. We think the recommendations are necessary and practically achievable if there is a will to achieve them. Conversely, not to attempt at least some reforms along these lines, in our opinion, will add to a burden of criticism of U.S. aid programs that already threatens their future.

Finally, we wish to acknowledge the contributions to our review from others who shared thoughts and research with us, including participants in the Michigan State and House Foreign Affairs Committee studies. Of course, what we say here is strictly our responsibility.

I. The Setting

Since the current legislative framework for U.S. foreign aid was spelled out in 1961, the world — and the place of the United States in it — has changed in ways that are almost impossible to overstate. These changes have called into question the most basic assumptions about assistance to developing countries.

Developing countries, never neatly lumped under the rubric "Third World," have become more diverse. So have their problems. Newly Industrialized Nations (NICs) have advanced so that many have world class scientists and entrepreneurs and the ability to provide their citizens with far more than basic needs. Many other nations have slipped backwards.

How all these countries will fare, however, is an open question. Indebtedness, hardly a concern at all two decades ago, is now the number one problem for many developing countries. Once ignored issues of population growth and environmental degradation have become recognized as major obstacles to development. Technological advances leading to increased automation will set back some successful developing countries who have relied on low wage rates to be competitive. So dramatically has the world changed that even the manner of global tension has changed, with terrorism one of the hallmarks of contemporary times.

Change has come as rapidly and unpredictably in the United States. The once dominant concern about the spread of Communist influence to developing countries has given way to anxiety about Americans' ability to compete internationally. Almost overnight, it seems, the United States has shifted from the world's largest creditor nation to the world's largest debtor nation, dependent on foreign capital and, at the same time, not certain how to correct its budget or foreign trade deficit. Likewise, as part of a process of global integration, Americans have come to see that connections with developing countries go far beyond politics and economics. Global warming and destruction of the environment in developing countries; international drug traffic and increasing addiction in those countries; widespread health problems, including AIDS, among poor peoples — all have implications that Americans cannot ignore.

The United States is no longer the world's dominant aid donor. And it can no longer act as if it is. But in an age of increasing interdependence, it cannot afford to ignore the problems of developing countries — or the need for flexible strategies for working together with these countries to solve those mutual problems.

II. Why Foreign Aid?

We are in a new era, with the cold war receding into the past and the United States learning to share world power. The rationale for foreign aid programs after World War II, or in 1961 or the 1970s, may no longer be valid. But any reassessment of programs first demands a contemporary response to the question: "Why Foreign Aid?"

One basic answer is that aid fills a humanitarian need. Americans traditionally are generous in helping the less fortunate. Outpourings of private and governmental assistance abroad came from the United States long before the institution of regularized aid programs after World War II. However surges of widespread popular support for humanitarian aid programs are relatively short-term. They relate to emergencies. There is not the same broad humanitarian interest in longer-term assistance for foreign economic development. If this is to be overcome, policymakers must be able to demonstrate that aid serves American interests.

In sum, a strong humanitarian rationale may underlie a great deal of U.S. aid to developing countries. But aside from disaster assistance, foreign aid programs must be justified according to whether they are in the self-interest of the United States.

Self interest reasons for foreign aid are manifest:

Economic assistance for the poorer developing countries (the richer ones do not need such aid) is in the U.S. self-interest. The U.S. benefits from their economic growth. The larger the incomes of other countries, the greater is their ability to purchase U.S. goods and services. The Third World holds enormous potential as a growth market for U.S. sales. The U.S. environment clearly gains from protection of the global environment, much of which is affected by the Third World. U.S. health and energy concerns interrelate with those of developing countries. Improvements in living conditions of poor populations abroad tend to lessen the disasters that evoke U.S. humanitarian aid and may reduce over the long-term, internal pressures that could erupt into instability adverse to U.S. interests.

Aid for foreign policy and military reasons — as distinct from economic development assistance, the focus of this report — is justifiable as an adjunct to U.S. diplomacy and defense. Just as it is in the United States self-interest to have political and military friends and allies, so is it in our interest to devote some aid to this purpose.

Each program — whether humanitarian, economic, foreign policy, or security — must be weighed in the national interest and one assistance program must not be counterproductive to others. One of the major means of fitting these programs to U.S. interests and maintaining their focus lies in the funding and institutional segregation proposed below: applying humanitarian and economic

aid through a developmental organization; foreign policy aid through the State Department, and military aid through the Defense Department.

A mistake of the past has been over-ambitious expectations of what economic development aid can achieve, often because it was confused with other non-development assistance efforts. To return economic aid to more finite, practical objectives, does not demean its benefits.

Particularly with the tight restrictions on funding in the foreseeable future, it will be vital to focus economic aid objectives and achievements clearly in terms of the U.S. national interest. We will not have resources to squander in diffusion.

The focus will be necessary for maintaining the requisite public support. When an American asks "why foreign aid?", the answer needs to be evident: it is in the U.S. interest. And when that is the answer, the program will have public support.

III. Third World Development: Problems and Solutions

Innumerable problems confront developing countries. Given limited budget resources, the United States should concentrate on the most urgent, overarching needs, as outlined below.

A. Third World Debt

Debt is the single greatest threat to Third World development. Developing countries owe \$1.3 trillion to creditors from industrialized nations. For many poorer countries, the burden is intolerable. The debt-service ratio for 22 low-income African countries is projected by the World Bank for 1988-90 at more than 30%, more than double their capacity to pay. Developing countries are financially hemorrhaging. Since 1984, they have repaid more to creditors than they have received in new loans. The situation for some poor countries is reminiscent of the debtors of another age who were imprisoned for nonpayment — and then were all the more unable to pay because they could not work. Poor countries need capital to grow.

Heavy indebtedness casts a shadow over virtually every aspect of development. It dries up capital for private enterprise. Emphasis is placed on earning foreign exchange, such as production of export crops, at the cost of more balanced development needed for a healthy economy. Environmental concerns are dismissed. Longer-term needs such as education, health and technology transfer from abroad are sacrificed.

Much can be said about who and what is to blame for the Third World debt burden. But whomever is to blame, Third World debt is an American concern. The debt makes it difficult for developing countries to import U.S. goods, the debt exacerbates global environment problems. Overall, debt raises the specter of dangerously destabilized world financial markets. It follows that the United States should be doing what it can to alleviate excessive Third World debt.

The United States unfortunately is itself a bad example on debt. We Americans have the world's largest governmental debt and the largest trade deficit. Yet we have the means to cure our own excessive borrowing; and we can and should exercise leadership in attacking the Third World debt problem.

First, the United States must urgently, and on a country-by-country basis, promote relief on official debt owed by developing countries. As an initial step, we recommend that the new Administration extend all new economic assistance on a grant basis to avoid adding to existing debt loads. The Administration should offer to write off debts owed the U.S. government by the poorest indebted

countries. This offer should be linked to other creditor nations taking similar steps.

Second, the Baker plan on debt is inadequate. There is no escaping the need for commercial debt forgiveness. While the President cannot make commercial banks take such action, he can make clear that banks should expect no help from his Administration if they do not find ways to step up the flow of new capital into developing nations.

Third, rigorous conditionality is essential if developing nations are to work their way to renewed prosperity. The United States must help ensure that multilateral development banks take the lead in carrying out structural adjustment programs. As part of this, the United States must demonstrate a continuing commitment to those institutions by shouldering its fair share of the funding.

Fourth, as important as conditionality is, steps must be taken to offset the hardships that such programs put on the poorer segments of society. Specifically, the United States should urge the International Monetary Fund and the multilateral banks to support job-creating projects and policy reform designed to ensure that the poor do not bear the brunt of austerity and where possible, benefit from the reforms that accompany it. Sharing the burdens of austerity in an equitable manner also can strengthen political support for the success of needed reforms.

B. Trade

Countries with higher incomes present better markets for U.S. export sales than impoverished countries. U.S. economic aid promotes income growth in the recipient countries. Because international trade is increasingly important to the economic well-being of the United States and a worthy objective of U.S. promotional efforts, and because the developing world is of increasing importance as a market, the potential long-term trade benefits to the United States serve as one of the strongest self-interest arguments for U.S. aid programs.

An immediate benefit for U.S. employment and businesses derives from the purchase of American goods and services for the programs. An estimated 150,000 jobs in America are directly linked to foreign aid activities. A high portion of U.S. bilateral aid is spent in the United States under "Buy American" policies; and the international aid organizations to which the United States contributes also buy substantial amounts of U.S. goods and services.

However, these benefits do not dictate that aid programs should be tied to trade promotion. Linkage of aid with trade development has been attempted by U.S. officials over the years, largely with ineffective results. The prospects for hybrid aid-trade success are no better in the future. This is why:

The American business community may welcome specific U.S. government interventions abroad which it perceives as of immediate benefit to U.S. business, but some American businessmen fear that U.S. taxpayer dollars are being spent to stimulate competition from developing countries. Many U.S. businessmen are surprised to discover that AID's Bureau for Private Enterprise focuses on stimulating private enterprise in developing countries, rather than promoting U.S. business overseas. Many U.S. businesses are interested in overseas activities such as joint ventures, but often not under the terms dictated by AID.

On the government side, AID officials tend to feel more comfortable with programs under government control, and in dealing with other governments and officials, than with the risks of the private sector. Aid professionals in development programs tend to be insensitive to or unenthusiastic about commercial promotion of U.S. products.

A recent blueprint of how not to combine aid and trade relationships is presented by the activities under the Congressionally mandated "aid and trade" missions programs. The intent was to send U.S. agricultural trade missions to developing countries to expand U.S. agricultural sales there in conjunction with ongoing U.S. aid programs. The result of this legislation has been to force a bureaucratic exercise spending substantial sums and man-hours without substantive change in aid programs or increased U.S. agricultural sales beyond what could be expected from the USDA export programs already available.

The United States has a wide array of commercially-oriented concessional export instruments ranging from the Export-Import Bank to the USDA's credit programs. More effective packaging of U.S. export subsidy availabilities is desirable, with the unambiguous target of helping U.S. exports.

However, we do not believe that economic aid programs should be directed

at both economic growth in the recipient countries and at U.S. export promotion. Such an approach confuses goals. Obviously, U.S. foreign aid officials should have greater sensitivity to U.S. commercial interests in countries where there are U.S. aid programs. It is also obvious that long-term benefits will accrue to U.S. trade from foreign economic development. But the aid programs themselves should not be forged into trade instruments.

C. Food Security

A perennial challenge for most of the developing world is achievement of food security — access by all people to enough food for an active and healthy life. An estimated 750 million women, men and children in the poorest countries suffer from chronic malnutrition or undernutrition, either because of a lack of income to purchase adequate food or because of the inability to grow their own.

The United States has been a leader in the "war on hunger" in the Third World. It is in the U.S. interest to continue and strengthen these efforts. In addition to the obvious humanitarian gain, improved food security abroad enhances U.S. security by reducing pressures for political upheaval. Further, adequately fed people in urban and rural areas are better producers, aiding economic development, and helping to make their countries better trading partners.

The immediate outlook for food security in much of the Third World is not promising. Commercial food imports of 87 developing countries are projected to rise from 43 million tons in 1980 to 57 million in 1990 and to continue increasing in the following decade. Food aid requirements are estimated to climb from some 9 million tons in 1980 to 44 million tons in 1990. Population growth and environmental degradation in many of the poorest countries, including virtually all of Sub-Saharan Africa, is outpacing agricultural production, further eroding the prospects of food security. Deteriorating production in Sub-Saharan Africa is resulting in rising food aid needs; by 1990, about 45% of total global food aid will be needed there. Notwithstanding spectacular gains from the Green Revolution in India, more than a quarter billion Indians lack the purchasing power to meet minimum nutrition needs.

The long-term answer in the war on hunger is to raise incomes in poor countries to the point where people can buy enough food either from local production or through imports. A major first step is to increase domestic agricultural production in the needy countries. This avenue of development is dealt with in "Natural Resources Management and the Environment" below. It is an area of aid activity in which the United States excels.

In the meantime, food aid should be continued and strengthened where necessary to improve rural and urban infrastructure and to meet the gap until domestic production and commercial importing power increase. The United States, already a provider of about 60% of global food aid, has a natural comparative advantage in this area of assistance. It is the world's largest agricultural exporter and has 35 years of food aid experience under P.L. 480 alone.

Especially with increasing austerity in sight for the foreign aid budget, food aid is a valuable resource not only for alleviating hunger directly, but also, for spurring economic development. U.S. food aid shipments currently total some \$2 billion a year, more than AID's entire bilateral development budget. A structure for more effectively administering this vital resource is proposed in Chapter IV.

There has been continuing opposition in some U.S. quarters to helping farmers abroad increase their yields. The argument is that larger food production

in developing countries diminishes U.S. agricultural sales there. We do not subscribe to that proposition, nor does the U.S. Department of Agriculture. Numerous studies have shown that economic growth in developing countries stimulates commercial markets for U.S. farm products, particularly grains. Since the poorest countries are largely rural, a necessity for development is improvement in agriculture. U.S. agricultural exports clearly stand to gain over the long run. The International Wheat Council has estimated that developing countries, which consumed 40% of world grain imports in the 1960s, will account for nearly 80% by the year 2000.

A further consideration in the coming years must be the effects of domestic U.S. farm policy on international food security. In earlier years, U.S. farm production and related policy development was largely domestic-oriented. But with the internationalization of much of U.S. agriculture, price fluctuations attributable to policy changes or weather conditions can impact on agricultural markets throughout the world, especially on developing countries with fragile agricultural economies. We support also the current U.S. effort in GATT to eliminate export subsidies on agricultural products, in the interest of both American farmers and of their counterparts in the Third World.

A more stable international food security system is vital not only for the United States, but also for the entire world.

D. Natural Resources Management and the Environment

Wise management of the natural resource base — of soils, forests and water — is the foundation upon which sustainable development depends, especially in the poorest countries. It is key to the increased agricultural production necessary to keep up with population increases. It is fundamental to maintaining a livable global environment, which affects all countries. It is in the clear interest of the United States, as a constituent of that environment, to help poor countries address natural resource and environmental problems.

Unfortunately, the trend in most developing countries is rapid deterioration of the resource base: the destruction of tropical forests with attendant soil loss, downstream silting, floods, invasion of hydroelectric and irrigation dams and other facilities. The result, as dramatically evident in Bangladesh recently, are terrible hardships that exacerbate poverty. Across Africa, Asia, and Latin America, forests are being cut down at ten times the rate they are being replaced. In Africa alone, the rate is 29 to 1. Fragile lands in the Sahel and South Asia continue to deteriorate.

United States interests are served by efficient, sustainable use of natural resources in the developing world. Deforestation and desertification contribute as much as 20% to "greenhouse" warming effects, which threaten to inundate our coastal areas. Deforestation also results in the loss of thousands of plants and animals whose potential value to science and medicine will never be known.

For too long, those who worried about increasing agricultural production seemed at odds with environmentalists. It is clear now that both are dealing with aspects of the same problem. Agriculture, forestry, water management and environmental protection must be tackled together in a long-term U.S. commitment to help achieve increased, and sustainable, food production.

Obtaining sustainable results requires responsible natural resource management. Resources must be used in ways that avoid degradation and encourage long-term buildup of the resource base physically, while providing sufficient income for farmers.

We believe that achieving sustainable growth requires especially targeting those who live on marginal lands, "resource poor" women and men who rely on uncertain rainfall in highlands, drylands and forests where farming is always difficult. Clear evidence exists that such smallholders can be productive.

Because U.S. assistance funds are limited, priorities even in helping this target group must be devised and implemented carefully to achieve the most benefits from the resources available. U.S. development programs that concentrate on environmental improvement demonstrate clearly America's interest in the global environment. In this context, we recommend:

First, our nation should target poverty and environmental degradation where they are most severe — in Sub-Saharan Africa, which has experienced negative growth in the 1980s, South Asia, with its heavy concentration of poor, and in those Latin American and Caribbean countries which have difficult environmental problems and pockets of dire poverty.

Second, the United States' agricultural research and extension tradition should be put to the task of assuring sustainable, ecologically sound agriculture, including cooperative U.S.-developing country programs of research and training devoted to small scale, low-input farming. This would include cognizance of the roles of both women and men in agricultural production, development of new high-yield drought and disease resistant dryland crop varieties, new crop mixes, improved rotation and tillage methods, nitrogen fixation techniques, and better systems of fertilization, pest management, water conservation, storage, and food processing; and farming techniques that incorporate trees, livestock management, and building the resource base.

Third, the United States must press recipient countries to reform policies that adversely affect farmers' use of land and their choices of technology, and to eliminate incentives that lead to forest destruction, or growing inappropriate crops on vulnerable lands.

Fourth, we should emphasize capacity building, both institutional and individual, including government mechanisms, local academic and research facilities, and appropriate activities in the private sector. Among the latter are improved storage, transport, processing, distribution, and marketing, as well as support for small-scale, rural-based industries based on efficient use of domestic resources.

Fifth, the United States should support research directed towards realistically increasing access to farm land, where that will increase production and improve the management of that land. Land tenancy can be important to improved production, as well as being good for the environment.

E. Energy

One of the clearest cases for U.S. self-interest in foreign aid lies in the energy field. First, poorly planned energy use in one nation harms the environment everywhere. Second, both industrialized and developing countries need energy for growth.

If developing countries were to use energy at the rate of industrial countries, global energy consumption would be five times its present rate. The United States must help developing countries pursue wise energy policies, while itself pursuing conservation at home.

Developing countries' energy processes too often are wasteful and environmentally destructive. The goal should be to increase energy availability through conservation and increased efficiency, and through generation of more power in ways that do not degrade the environment.

The benefits of such actions will apply to both the urban and rural areas. But special attention should be given to the energy practices of the rural poor, for often they are both contributors to, and victims of an environmental degradation spiral of no evident escape. Every day women and children range farther through the countryside in search of agricultural residues and firewood, which provide household fuels for half the people in the Third World.

As discussed earlier, forests are being denuded at a rapid rate. The burning of fossil fuels and the destruction of forests causes soil erosion, engenders respiratory disease, and raises carbon dioxide levels in the atmosphere. The pollution crosses national boundaries and enters the global system, as in the "greenhouse effect" on the earth's temperature.

The United States should address energy problems by example, through international leadership and in its bilateral aid programs:

First, through the IMF, World Bank, and other multilateral and bilateral forums, the United States should foster economic rationalization of energy policies in developing countries. Subsidy and pricing systems which favor fossil fuels and promote wasteful energy practices must be reformed. Energy efficient, non-polluting machines must be encouraged. Energy investments by international donors which hitherto have gone primarily into large power-generating stations (primarily hydroelectric), creating their own environmental problems, should be shifted to smaller, less polluting and renewable energy generators.

Second, U.S. aid should foster energy savings through helping to provide efficient technologies in place of traditional types of consumption which are wasteful and costly. Cooking in an earthen pot over an open flame uses eight times as much fuel as a simple gas stove and aluminum pot. A kerosene dipped wick uses the same amount of energy as a 100-watt electric bulb, but gives only one-hundredth as much light. Energy development assistance which emphasizes increased energy efficiency for poor urban and rural households and for basic agricultural processing, will both relieve poverty and mitigate adverse environmental effects.

Third, U.S. aid should promote development of renewable, nonpolluting

energy generation in poor countries. A priority should be reforestation and agroforestry for fuelwood and protection against environmental degradation. Mini hydroelectric generation should be supported where viable. Solar-thermal and solar-electric devices are practical for many applications. Economical techniques are available for converting agricultural wastes into fuel.

G. Population

F. Health and Human Welfare

No aspect of human existence is at once so personal and yet of such universal concern, so much a prerequisite of well-being and development potential, as good health. It is essential to increased productivity and, through the improvement of family health and longevity, to lowering birth rates. Virtually no country can hope to escape the consequences of illnesses in other countries. It is clear that health in developing countries affects us in the United States; that better health for their populations helps not only them but all of us.

United States and international efforts already have scored notable successes against global scourges. Smallpox has been erased with an important assist from U.S. aid. Cholera has been subdued through treatments developed under U.S. aid funding. Current vitamin A experiments indicate effectiveness not only against blindness, but also in reducing child morbidity and mortality.

In the poorer developing countries, the war on ancient diseases — cholera, typhoid, polio, measles and leprosy — still has a long way to go, though the remedies are well known to the West. Other scourges such as malaria, have defied eradication thus far. New diseases arise: AIDS, threatening hundreds of thousands of lives in the United States and around the world, may have begun in the Third World. Clearly, early detection there would have given scientists in industrialized countries a head start in finding remedies.

Progress in health is made incomparably difficult among the poorer populations because of malnutrition. Perhaps two-thirds of the women, men and children in Africa, and a large number of others in less developed countries, are malnourished and thereby more vulnerable to diseases and infections. While the causes of infant and child mortality are often ascribed to pneumonia, dysentery, or other diseases, malnutrition is often the root cause.

Narcotic drugs are a health threat to developed and developing countries alike. Increasingly Third World countries, particularly drug producing countries, have themselves awakened to the threat to their societies from the rapid increase in the use of mind-altering substances such as heroin and cocaine, especially in their growing urban areas. Their increased concern is an aid to our own campaign against drugs.

Rapid population growth in poor countries is an enemy of development:

- In developing countries with high fertility and excessive birth rates, the health of many mothers and children is jeopardized by the lack of family planning. In the developing world, a quarter of the population is women between ages 15 and 45 who spend most of their lives pregnant, lactating, recovering from these two, or recuperating from abortion. At least half a million women in the Third World die annually of complications of pregnancy, childbirth, or abortion. These circumstances make it more likely that the children too will die. The death rate for children in developing countries is 20 times that of children in advanced nations.
- Children under 15 comprise nearly half the population in the developing world. They need public services in health and education, particularly for girls and young women. In a poor country with such a large portion of the population below working age, the government is hard put to fund adequate services. The increasing population of abandoned children, poorly nourished and without education, is one of the most tragic consequences of rapid population growth.
- Unemployment and under-employment is endemic where there is rapid population growth. The economy cannot grow fast enough to create enough jobs for the newcomers entering the labor force.
- Rapid population growth puts pressure on the resource base, increasing the atmospheric and other environmental degradation noted earlier.

The United States has a clear interest in strengthening its population program assistance to the Third World. Poverty and unemployment have trans-national effects in causing migration, such as illegal entries into the United States. It is clear that the United States has a significant rationale for supporting family planning activities throughout the Third World. Slow economic growth in developing countries with high population growth rates reduces their potential for trade; it also creates regional instability and may eventually cause resource wars. An overpopulated, hungry Bangladesh, for example, sandwiched between nuclear-capable India and China, is not in the U.S. interest; nor is this a unique situation. Yet, U.S. policy in the population field in the past few years has been unclear and often contradictory.

Most developing countries have recognized that economic development is jeopardized by rapid population growth. They are changing from apathy to action in the population field. Even where governments are apathetic, aid through NGOs can often be effective. The United States must resume its leadership in international population assistance by speaking out forcefully in favor of family planning programs and by maintaining funding for successful programs.

H. Information and Training

The United States is an acknowledged leader in education and training. Its graduate schools are heavily favored by foreign students. Developing country bureaucracies and businesses are showing increased desire for changes in their economic environment in the direction of Western concepts of "effectiveness." Improved training and education is one of the best ways to obtain the most out of the U.S. development dollar.

A major cause of the "performance gap" between what is intended under a foreign aid project and what actually happens is the ability of those using information and management resources in the recipient country, to get the job done. A project to increase agricultural yields and reduce soil loss through improved tillage cannot succeed without transmitting information to farmers. A business-person who has received foreign aid credit to invest in a promising charcoal plant must find accountants needed for the financial side of the operation. Information and management capabilities taken for granted in an industrialized nation are often lacking in the Third World.

The need for training developing country participants in aid programs has long been recognized. The United States has trained literally hundreds of thousands of such participants since President Truman's Point Four program. While much of this training has been effective, much has been ineffective. The training too often has not been sufficiently relevant to the situations the trainees will face at home. Many trainees sent to the United States did not return to their home countries, or if they did, were unable to obtain employment suitable to their newly acquired skills. Many engaged in studies that raised their academic standing, but did not contribute to economic development in their homeland.

The United States should improve its training and education programs so that:

- Programs are packaged specifically to apply to situations trainees will face in carrying out development activities in their countries.
- Information and management packages reflect locally developed definitions of the problems to be addressed.
- Higher priority is assigned to programs for reform and modernization that will improve the environment for carrying out sustainable development work.

While applying "appropriate technology" to training programs, the United States should continue to provide higher education to developing country students in specialized areas of science and technology, agriculture and agricultural research, and medicine. In placing more emphasis on the "management" element of training, the content must not be lost. Because of the importance of women in the economies of developing countries, more women should be included in U.S. training and education programs, particularly those relating to health and agriculture.

Improvements in the training process must involve programs with U.S. universities and other training institutions. Too often these organizations act like "hiring halls," employing outsiders rather than devoting their own best personnel

to the job. In many cases, good information and management packages also can be provided by businesses, NGOs and other non-academic organizations. Throughout U.S. educational and training assistance programs, there should be increased reliance on trainers from developing countries.

level, and involvement of the U.S. business community, is needed to insure a rationally consistent U.S. policy in this area.

I. Private Enterprise Development

The U.S. interest in larger, more vigorous private sectors abroad is self-evident. There is a worldwide trend toward freer markets. Expanded economies mean expanded markets for U.S. sales. Free enterprise systems abroad are more compatible for U.S. businesses than state-controlled economies. From a developmental standpoint, an economic activity achieving success (reproducibility) in the private sector thereby achieves sustainability, and often can generate income growth many times larger than the original aid input.

While AID has made private sector development a major theme for many years, it has proceeded only with much stumbling. AID itself is a bureaucracy, staffed largely by professionals with non-business backgrounds, who naturally tend to be more comfortable dealing with other bureaucracies and government-run institutions. Ventures into the private sector involve risks and many unknowns in new fields.

U.S. assistance to Third World private sectors may involve macro-economic advice to governments on developing market economies; incentives to encourage such policy reforms; and technical assistance for private enterprises, financed directly or through intermediaries. The goal is to promote economic growth, increase employment, production and income in a liberalized environment.

The experience of the past several years suggest that AID has attempted an excessively wide variety of interventions in developing country private sectors. U.S. aid to private sectors should focus on two areas:

- **Small Scale Enterprises.** Most off-farm employment in developing countries is through businesses having fewer than 50 workers. The resourceful "informal sector" prevalent in poorer and state-dominated economies typically features micro-enterprises, consisting of no more than several persons. Aid programs combining technical assistance/training and credit for small enterprises have proven to be particularly effective. These small businesses are vital to economic development. While such programs already exist in many countries, significant opportunities exist for expanding them and reaching into rural areas. More credit and training programs through local intermediaries would be self-sustaining and highly cost-effective in promoting economic growth.
- **Macro-Economic Policy.** Too many developing country policies stack the deck against private enterprises, particularly small ones. Aid to small businesses cannot succeed under governmental constraints seriously impeding their freedom and profits. The United States can play an important role in advising governments on the benefits of market economies, on how to move toward them, and in specific areas such as privatization, capacity building, and communication with entrepreneurs at the grassroots.

The United States must take into account simultaneously the impact of its other policies on private sector development abroad. It is inconsistent to promote a developing country's export capability, and then deny the U.S. market to that export. Coordination at the highest U.S. governmental

Developing countries face a wide array of problems. But the United States must concentrate its assistance on a manageable number of issues. It can be helped in charting this new course by greater coordination with developing countries and with other donors. Within the U.S. government there must also be better coordination and a strong, results-oriented focus.

The foregoing section has described the priorities for action. The following section proposes an organizational structure through which these priorities can be implemented.

IV. Overhauling the System

In order to carry out the policies and programs cited above effectively and efficiently, we propose major restructuring of the federal government's aid apparatus. The reforms are in line with the themes we have outlined: providing for leadership and coordination of foreign assistance at the government's highest level; assigning funding to the agency responsible for its administration and results; focusing on problem-solving, not process, accompanied by flexibility in means of aid implementation overseas; concentration on areas in which the U.S. interests are most vital; and restructuring which would result in fewer personnel, reduced overhead expenses and greater efficiency. The reforms would be as follows:

Budget and Agency Assignments

- Military assistance and sales should be administered by the Defense Department, and should be paid with defense funds, not the 150 Foreign Affairs Account as it is now. This would reinforce the primary justification for U.S. arms aid, that it is helpful for the defense of the United States. The State Department would provide foreign policy guidance for the program.
- Aid applied for security-related or political reasons, e.g. a substantial portion of current Economic Support Fund (ESF) monies, should be administered by the State Department. The State Department would carry the burden of requesting and justifying these funds before the OMB and Congress. Here again, to avoid confusion in aid programs, the funding responsibility and administration for a program should be placed with the agency whose mission encompasses the program. The Department should create an Office of Foreign Operations to administer these support funds.
- To the extent that one agency acts as a service agency for another in implementation of aid programs, the administrative costs would be charged to those programs and not against the servicing agency's budget or programs.
- Bilateral development assistance would continue to be funded through a foreign affairs account but under a new organizational structure. This reform would start at the top of the U.S. government apparatus and extend into the field abroad as outlined below.

A New Development Aid Structure

Our proposal outlines changes at three levels; (1) The White House and Cabinet level, (2) the Agency level, and (3) the Mission/field level:

(1) The White House and Cabinet Level:

First, we believe that U.S. policy and activities promoting economic development in the Third World require stronger attention from top levels of the

U.S. government and more effective coordination with other donors and among the various departments of government that impact on those activities. The institutional reflection of this priority should start at the White House level. We strongly recommend the creation of an International Cooperation Council that would include representation at the Cabinet or immediate subcabinet level by such departments as State, Agriculture, Treasury, Defense, Commerce, Energy, etc. It would be chaired by the President's International Cooperation Advisor, who would head a small (circa 15 member) staff quartered in the Executive Office Building. The International Cooperation Advisor would be charged with the responsibility for ultimate coordination of U.S. assistance policies and activities with relation to developing countries. Among issues to be coordinated, for example, would be U.S. economic and military assistance.

The Council would have subcommittees suitably chaired for special purposes. For example, the Food Aid Subcommittee, now a component of the Development Coordination Committee, would continue as a subcommittee under the Council. The Council staff would include a Senior Advisor on Food Aid, replacing the present Assistant to the President on Food Aid and Trade, who would chair the Subcommittee.

Under this major restructuring, the Development Coordination Committee (DCC) and the International Development Cooperation Agency (IDCA) would be abolished, their functions being performed under the White House-level Council. The Agency for International Development would be replaced as described below.

(2) Agency Level

Second, our model creates a successor agency to AID called the Development Cooperation Agency (DCA), a frequently suggested name. DCA would be headed by an Administrator with Executive II (deputy secretary) rank. He would be a member of the International Cooperation Council and would report to the President.

The DCA would have five major administrative offices: 1) budget and finance, 2) policy planning and coordination, 3) public and legislative affairs, 4) legal counsel, and 5) inspector general. It would also contain programmatic offices related to DCA-managed activities. These would be 1) an Office for Foreign Disaster Assistance and Refugee Affairs, 2) an Office of Food for Peace, carrying out the food aid functions now in AID's Bureau of Food for Peace and Voluntary Assistance, and 3) for non-governmental organizations, an Office of NGO Cooperation which would report directly to the Administrator and have responsibilities beyond those currently exercised by the Food and Voluntary Assistance Bureau. It would make direct inputs into the top levels of the Agency, providing an effective voice for NGO interests within DCA as well as liaison between DCA and the NGO community. It would insure that the unique contribution of NGOs plays a central role in all agency activities.

DCA's cooperating divisions would be aimed at problem solving. Broadly speaking, the divisions would be targeted on the following problems:

- How to make the world a more healthy and sustainably productive place
- How to make individuals more healthy and productive
- How to insure that information and scientific developments are widely disseminated on a timely basis and used in economic development

- How to help societies organize themselves to insure that the resources of the private sector contribute significantly to development.

The operating divisions would take advantage of the reverse linkages into the scientific, academic, and knowledge sectors of the United States, and the forward linkages with developing country and regional organizations, attempting to deal with these same issues on a more localized basis. Partly for this reason, it would be appropriate to call them "Institutes." The four would be:

- The Institute for Natural Resource Management. As its name suggests, this unit would be involved with activities dealing with natural resources, agriculture and forestry, environmental concerns, energy, and those elements of rural development with links to natural resources management.
- The Institute for Health, Population, and Nutrition. This unit would be involved with health, child survival, family planning, narcotics education programs, nutrition, and other health-related elements of food security.
- The Institute for Human Resource Development. This unit would be involved with science and technology, information sciences and communications technology, development management and general participant training.
- The Institute for Private Enterprise. This unit would be involved with private enterprise promotion and would take over the present activities of the Trade and Development Program.

3) The Mission/Field Level:

Third, at the Mission level, several operational modes would be employed. The choice depends on a country's circumstances. For the poorest countries in which institutional and resources capabilities are virtually nonexistent (e.g. Haiti, Burma, certain African states), the traditional U.S. mission structure would be retained. Also, in addition to regional programs such as are in place for the Pacific and Caribbean islands, a regional approach could be taken for smaller groups of African nations rather than requiring separate U.S. missions in each one.

In a sharp departure from the current system, the majority of programs under our proposal would operate in the Third World through binational facilities on a model with some parallels to the "servicio" concept common in U.S. development assistance to Latin America in the 1950s and 1960s. This system would perform as follows:

- They would be organized around sets of specific problems or issues that the United States and the host country seeks jointly to address (e.g., stopping wanton destruction of forests, immunizing children against disease).
- They would operate with an integrated binational staff of managers and technical experts, including women who are often organizers and managers of education and services.
- The cost of the operation would be shared between the United States and the host country according to prior agreement. While the majority of funding would come from the United States, the host country would also be expected to contribute significantly to the individual projects or programs.
- Priorities, work plans, etc. would be jointly set by the United States and the host country.

- U.S. team leadership would report to the DCA representative in each country, who in turn would be a member of the U.S. "Country Team," reporting to the Ambassador.
- Each binational development team would have significant flexibility in the allocation and use of its funds.
- Binational teams would be backed up managerially and technically by the appropriate Institutes within the DCA in Washington.
- In countries where there are multiple U.S. programs, a DCA Country Coordinator would be responsible for orchestrating the activities of the binational teams as well as carrying out directly those programs not falling within their parameters (e.g. P.L. 480 programs).
- Direct implementation of programs and projects largely would be through both U.S. and indigenous PVOs, NGOs, research centers, universities, cooperatives, unions, other democratic institutions, and contractors.

Administrative Reform

The requirement for reform in the way U.S. assistance is implemented long has been a priority. As we have noted earlier, process had become an end in itself with attendant costs and delays. We believe that the organization proposed here has a number of important implications for greater program effectiveness, including reduction of administration costs. The reasons are several:

- The Americans assigned to the development teams would be of a different background than many in Missions today. They predominantly would be technical managers, combining technical expertise with knowledge of development project implementation. Emphasis in personnel would be less on programmers and money managers and more on those with practical experience in problem-solving, policy development and institution-building.
- We believe that these Americans should be assigned to their posts for longer periods than currently are common in AID. We suggest a five-year commitment be considered a minimal overseas posting and an involvement of up to 10 years be permitted when there is programmatic justification.
- The binational teams will require fewer U.S. official personnel abroad because the host country will provide at least one-half of the required personnel for the teams.
- Greater use would be made of nongovernmental organizations, both through linkages in the United States and in the host country. NGOs often are best positioned to understand what is required to reach the grassroots with programs. We expect that NGO liaison committees would exist not only in Washington, but also at the country level, representing both indigenous and international organizations.

Regarding personnel generally, we recognize the world's best organizational structure is wasted unless it has the right people in the right jobs. AID has long been criticized for having too many generalists. Particularly with its emphasis on problem-solving, the new DCA will need more specialists with practical experience.

V. Legislation and the Congress

If Congress is to reform and significantly improve the U.S. foreign aid program it should scrap the present basic aid statute -- the Foreign Assistance Act of 1961 -- and write a new law. The 1961 Act has grown to book size over the years with succeeding waves of amendments, each attuned to then-current sentiment. Many provisions are now obsolete. A number are redundant. Some seem inconsistent. Restrictions and reporting requirements plague administrators. Overall, the plethora of provisions has increased the potential for ambiguity and confusion in both policy and implementation.

Starting with a clean slate for its new law will give Congress its best opportunity to set forth new directions in clear and consistent terms. Provisions from the old law should be continued only when they meet the new tests. Congress thereafter would continue to amend the law periodically, of course. We would hope, however, for greater restraint than in the past. (The foreign aid authorization which passed the House last session, H.R. 4977, was 378 pages!)

One prime legislative need is to provide longer and more flexible time frames for project planning. Most foreign assistance appropriations must now be obligated within the year of enactment, or the fund will return to the Treasury. The result too often is a bureaucratic rush to commit money to activities with inadequate preparation. Without the artificial deadline, the funding can proceed in a more careful, professional manner. The taxpayer gets more for his dollar. The best remedy is for Congress to appropriate foreign aid amounts on a "no-year" basis, (i.e. available until expended) as it does for many other programs. Congressional oversight can ensure against excessive amounts in the pipeline.

Congress, likewise, should pass foreign aid bills covering longer periods. A one-year cycle allows little time to digest a new statute and review its implementation before preparations start for the next. The authorizations measures, setting policy and money ceilings, enacted in recent years have been two-year bills. Aid appropriations are annual. Congress should consider and pass two-year aid appropriations measures.

Congressional leaders also should consider some form of linkage between foreign aid authorization and appropriations bills. In recent years, the authorization bills often have failed to win enactment, while the appropriations have passed as separate measures or in year-end omnibus continuing resolutions. The bills of the Appropriations Committees frequently carry policy terms of their own and dollar amounts less than that needed to implement the intent of the authorizing committees, which are supposed to set policy.

Cooperation between the leaders of the relevant Committees in linking foreign aid authorizations and appropriations is a practical possibility if there is the will. In 1985, Ethiopian famine assistance legislation (H.R. 2080) was introduced in the House with sponsorship including principal members of both Com-

mittees; companion measures subsequently emerged from both Committees. Such linkage contributes to Congressional accountability: What Congress says it wants done, it should vote the money to achieve. Further, the enactment of linked measures sends a clearer signal of Congressional intent to those charged with carrying out the programs.

Finally, consideration should be given to creating a joint House-Senate Committee on Foreign Assistance. Its members would come from the several Committees of Jurisdiction in aid activities. The joint body could provide comprehensive, integrated Congressional views and oversight on aid matters, just as the Congressional Joint Economic committee does in its area. To avoid any new expense, the Committee could be staffed from the existing Committees of Jurisdiction.

VI. Conclusions and Recommendations

Foreign aid, properly designed and implemented, is in the U.S. interest. Unfortunately, U.S. aid programs today fail to achieve what they should. They are subject to a confusion of goals, insufficient attention to implementation and operational details, and excessive red tape. The emphasis on rewards are too much on process, too little on results. Limited aid funds are diffused over too many activities, not concentrated on those which the United States performs best. Congressional handling of aid legislation is in disarray. Public support is lacking.

There is little prospect for a turnaround in the deterioration of U.S. aid programs unless major reforms are undertaken. Reforms in aid programs and structure must recognize the massive changes that have occurred on the world scene since the present foreign aid law was originally enacted in 1961. The situations in which the United States, developing countries and industrialized nations find themselves now are far different.

Principles that should be followed in designing and executing aid programs include:

- All programs should be conceived and judged according to their service to the U.S. national interest.
- The emphasis on implementation of foreign aid must be on results, not process.
- With limited U.S. funds available for aid, programs should concentrate on a few activities, not be dispersed widely as they are now. Mass resource transfer programs should be left to international development banks. New U.S. economic assistance to developing countries should be on a grant basis.
- Aid should be concentrated in those areas in which the United States performs best, such as in technical assistance, environmental protection, food aid, training and education, and private enterprise.
- Aid to developing countries should be directed to problem-solving in areas of greatest importance for their economic growth. Such problem areas, and recommendations for U.S. action in them include: debt, food security, natural resources management and environment, energy, health and human welfare, population, training and education, and private enterprise development.

A basic overhaul of the present aid structure is required to achieve the above recommendations. We suggest:

- Funding and implementation of military assistance should be the responsibility of the Defense Department, with State Department policy guidance. The funds should be charged to the defense account.
- Funding and implementation of economic assistance provided for foreign policy (i.e. "political") purposes should be the responsibility of the State Department.

- A White House-Cabinet level Council should be established to provide top-level leadership and coordination for U.S. foreign assistance.
- An agency for bilateral aid to developing countries should be established as a successor to AID. It should be organized so as to focus on solving particular Third World problems in which the United States has the best expertise as an aid donor.
- The overseas aid mission system should be revamped to allow greater organizational flexibility to suit different country circumstances. In many countries, binational development teams should be established to deal with particular development problems, and would be operated jointly by the United States and the host country.
- A greater role should be allowed for nongovernmental organizations because of their special knowledge of needs in the field and ways to meet them.
- More coordination is necessary with other bilateral and multilateral donors.
- Rather than amending the existing obsolescent Foreign Assistance Act of 1961 to carry out the proposed reforms, Congress should discard it and enact a completely new law. Congressional leaders also should consider enacting "no-year" appropriations for foreign aid, passing two-year appropriations bills, and linking authorizing and appropriations bills to provide clearer directions and accountability in foreign assistance legislation.

While our recommendations may seem drastic to some, we believe strong measures are in the interests of the United States and are necessary to restore health to a deteriorating aid program. The changes we have recommended are all achievable, if there is a will. We believe the time to start on them is now with the new Congress and Administration.

*The Phoenix Group
Washington, D.C.
January, 1989*

Appendix The Phoenix Group

Jack Hood Vaughn, Chairman

JACK HOOD VAUGHN is a former Director of the Peace Corps, Ambassador to Colombia and Panama, and Assistant Secretary of State for Latin America. A businessman and consultant, he has been active recently as an advisor on international private enterprise development and environmental protection. His development-related work has included long-term assignments in Iran, Senegal, and Mauritania. Mr. Vaughn also has been an executive with the Planned Parenthood Federation of America, World Population, and the Children's Television Workshop.

Janet Welsh Brown

JANET W. BROWN, Ph.D., is a Senior Associate at the World Resources Institute in Washington, where she directs policy research on the connection between U.S. economic and security interests and international resources, environment and population issues. She also directs a new program on emerging technologies and international development. She is a coeditor and coauthor of the recently published *Bordering on Trouble: Resources and Politics in Latin America* and editor of the forthcoming book *In the U.S. Interest: Resources, Growth and Security in the Developing World*. Dr. Brown previously was Executive Director of the Environmental Defense Fund and Science Policy Program Director at the American Association for the Advancement of Science.

Nelson Denlinger

NELSON DENLINGER is Executive Vice President of U.S. Wheat Associates, Inc. He has served on the staff of the late Senator Hubert H. Humphrey and on the Agriculture Committee of the U.S. Senate. Previously he was with the U.S. Agency for International Development.

Lewis Gulick

LEWIS GULICK, Ph.D., is Vice President, TCR Services, Inc. Dr. Gulick is a former Senior Staff Consultant to the U.S. House Foreign Affairs Committee with staff responsibilities for foreign assistance legislation. He is also a former diplomatic correspondent for the Associated Press.

John Maxwell Hamilton

JOHN MAXWELL HAMILTON, Ph.D., has served in the U.S. Agency for International Development, on the staff of the House Foreign Affairs Subcommittee on Economic Policy and Trade, and at the World Bank. A former journalist, Dr. Hamilton is author of *Main Street America and the Third World*.

Daniel E. Shaughnessy

DANIEL E. SHAUGHNESSY is owner and President of TCR Services, Inc., an international trade and development consulting firm. He has held executive positions in AID, both in the United States and abroad, as well as in the Department of Agriculture. He served on the U.S. Senate staff and was Executive Director of the Presidential Commission on World Hunger.

John H. Sullivan

JOHN H. SULLIVAN, Ph.D., is Vice President of Development Associates, Inc., a Washington-based management and government consulting firm. Dr. Sullivan was AID Assistant Administrator for Asia from 1977-1981, and Senior Staff Consultant for the House Committee on Foreign Affairs from 1973-1977 with staff responsibilities for foreign assistance legislation.

Charles Sykes

CHARLES SYKES is Assistant Executive Director of CARE and Director of its Washington Liaison Office. From 1961 to 1980, Mr. Sykes served with CARE in Greece, Algeria, Poland, Pakistan, India, Egypt and the Dominican Republic.

(Institutional affiliations cited are for identification purposes only)

The International Trade and Development Education Foundation is an educational organization incorporated in the State of Virginia with nonprofit, tax-exempt status under Section 501(c)(3) of the Internal Revenue Service Code.

The Foundation's Board of Directors believes that the United States derives significant benefits from international trade and development activities, and that it is in the public interest to provide factual information related to such activities. One of the Foundation's means of achieving its objectives is through sponsorship of publications.

This document is one such publication. It is a study which was undertaken by the Phoenix Group on needed reforms in the U.S. Foreign Aid program. It is being issued at this time because of the continuing substantial interest in the subject matter.

BOARD OF DIRECTORS

President	Daniel E. Shaughnessy
Board Members	Lewis Gulick Davis Helberg Raymond A. Hoehle Victor Skiles Charles Sykes Herbert J. Waters
Executive Director	Raymond A. Hoehle
General Counsel	A. Mark Christopher

Networking ARDOs in Asia and the Near East

ANE/TR/ARD

January 22, 1989

Feature Articles

A COUNTRY TYPOLOGY FOR RURAL SECTOR STRATEGIC ANALYSIS

A deficiency of past agricultural sector and country development strategy efforts has been the lack of a consistent, unifying perspective or framework for analyzing a country's development status and relating this to the range of possible AID interventions. A common result has been a lack of specificity or focus in programs--we have been all over the map, both literally and figuratively. The analytic background for the ANE Rural Sector Strategy proposes a three-fold typology of development stages for addressing this problem.

The Strategy itself takes an income-oriented approach to development, viewing increasing incomes and changing demand as the primary determinants of structural change in agriculture, within the context of national food security. Drawing on the past two decades' development experience in Asia and Near East countries, three stages on a linear development trajectory are posited: low income agricultural economies; low income transitional economies; and middle income industrializing economies. The basic determinants of the three stages are per capita income and economic structure, the latter as measured by the relative share of agriculture and industry in national GDP. Countries in the first category are those in which per capita incomes are less than \$250 per year and agriculture accounts for more than 50% of GDP; the second group consists of countries with per capita incomes of \$250-\$750 per year, an agricultural sector of less than 35% and an industrial sector of more than 25%; the last group includes countries with per capita incomes above \$750

per year, where agriculture accounts for less than 20% and industry more than 30% of GDP.

Using these criteria, ANE countries fall into the following groups:

I. *Low Income Agricultural Economies*

Bangladesh	Nepal
Burma	Afghanistan

II. *Low Income Transitional Economies*

India	Sri Lanka
Pakistan	Indonesia
Yemen	Morocco
Philippines	Egypt
South Pacific (average)	

III. *Middle Income Industrializing Economies*

Thailand	Tunisia
Jordan	Oman

The economic structure of countries in each group differs. For example, per capita incomes range from an average of \$161 in the low income agricultural economies to \$962 in the middle income industrializing economies. These differences stem from the differential growth rates over the past two decades. On average, low-income transitional and middle-income industrializing countries grew 60 and 250 percent faster, respectively, than the low-income agricultural economies. In addition, the rapid growth evident in the latter two types of economies was accompanied by substantial adjustment in economic structure, with the importance of agriculture as a source of new income and growth declining relative to the industrial and services sectors. (continues on p.2, col.2)

ARDO CONFERENCE UPDATE

What should our agriculture and rural development strategies be for the 1990s? What type of programs should we undertake? What resources, including USDH professionals, will be needed to design and implement the programs? These are some of the key questions to be addressed at the upcoming ARDO Conference to be held in Rabat February 19-24, 1989. The theme of this conference, "Responding to the Challenge: Agricultural and Rural Development Strategies for the 1990s," appropriately reflects these concerns.

Preparations for the upcoming conference are well underway. Responses to invitations have been very positive. Dr. Robert Paarlberg, from the Harvard Center for International Affairs, will provide the keynote address. Other guest speakers and resources include Drs. Richard Goldman (Harvard), Theo Panayotou (Harvard), Derek Beyerlee (CIMMYT), Larry Busch (University of Kentucky), Richard Bawden (Hawkesbury College), Carol Adelman, William Fuller, Cliff Lewis, Laurance Bond, Duane Acker, David Bathrick, Eric Chetwynd and Richard Meyer. In addition, we expect one or more Hill Staffers to attend the Conference.

Copies of the draft strategy document, which will serve as the focal point of discussion during the Conference, will be sent to the field about January 20. Mission participants to the Conference are encouraged to review thoroughly (continues on p.5, col.2)

CONTENTS

Feature Articles	1
Projects and Resources	5
Mission Views	8
Bits and Pieces	10
ARD Bulletin Board	12

EDITORIAL

On the eve of ANE's 1989 Agricultural and Rural Development Officers Conference, I would like to convey the excitement which I feel about the nature and content of 1990's-type thinking. As I have pointed out earlier, this is the most intense period of re-assessment of how AID does business since the New Directions Mandate in the mid-1970's. Especially remarkable is the fact that the ANE Bureau, and our Agriculture and Rural Development Division in particular, is playing a prominent role in this review. The Bureau has staked out leadership roles in preparation of its Agriculture, Natural Resources, Science and Technology, and Health strategies. While not all readers will agree with every point in our draft agriculture strategy, it contains one of the most convincing analyses available of how agriculture contributes to sustained economic growth.

The country-growth typology (see article, p. 1) refines the analysis to account for the diversity of country settings in a way that makes programmatic and developmental sense. By broadening the definition of "agriculture" to include private roles in the provision of agriculture inputs and the transporting, processing, and marketing of agricultural output; consideration of exchange rate and trade regimes, natural resources and institutional arrangements related to the collaborative exchange of science and technology, the analysis firmly establishes the relevance of

agricultural issues in discussions of development strategy and overall economic growth.

The Administrator's Task Force Report and the Hamilton sub-Committee Report on re-drafting the Foreign Assistance Act, both of which I expect to have available in Rabat, will give you an idea of the centrality of our emerging strategy as we gear up for the challenges of the 1990's. We are counting on you to join with us in revising and finalizing a document which can speak with intellectual authority and provide programmatic guidance in the coming decade.

Jim Lowenthal

A COUNTRY TYPOLOGY FOR RURAL SECTOR STRATEGIC ANALYSIS (continued from p. 1, col.1)

Clearly, major adjustments in agriculture occur as economies develop and transform. The facilitation of these transitions must be the focus of a rural sector development strategy.

Available data and experience to date suggest that the majority of countries pursue, at least initially, policies and programs to assure food security. The resulting combination of investment and policy measures has resulted in the successes realized to date, and led to the point at which structural adjustment in the more successful countries becomes essential if growth is to continue. The normal development path starts with introduction of new, high yielding cereal varieties combined with improvements in rural infrastructure (roads and irrigation) and favorable government price policies. Surpluses generated in agriculture then typically find their way into other sectors through lower real food prices and increases in the demand for manufactured goods and services which result from higher agricultural incomes.

As yield increases begin to slow, labor

(particularly better educated, young labor) begins to move out of agriculture and into other, faster growing sectors of the economy. Expansion in these sectors leads to declines in the rate of growth and, subsequently, in the relative size of the agricultural labor force, and a decline in the proportion of national income generated by agriculture. Increases in urban incomes, which continue to be supported by low food prices, lead to shifts in consumer demand away from basic cereals and toward processed and higher quality foods. During this process, the source of growth in agriculture shifts from production to processing, marketing and transportation for both domestic and, possibly, export markets. And it is at this point that creative thinking and significant policy and program change are called for, because the combination of policies and programs contributing success in boosting basic cereals production and increasing national food security (e.g., large irrigation investments for cereals production, input price subsidies) may be the very programs and policies inhibiting further transformation of the sector.

Currently, most of the ANE countries benefit from surpluses in agricultural output, increasing employment in agricultural production and the beginnings of non-agricultural expansion. Only a limited number of countries (the lowest group) continue to have serious problems with the production of major cereals; the majority have begun to expand non-cereal production and move toward a relatively smaller, more productive agriculture. The middle income industrializing economies have moved almost completely beyond the realm of traditional development assistance to one of partnership in trade, science and technology, and environmental interests.

Clearly, USAID country programs should reflect these differences, and it is upon this three-stage typology that ANE's Rural Sector Strategy is based. In the lowest income countries, the

Editorial Board

Gregg R. Baker, Chair
Stan Peabody, Production Advisor
Vera Meenan, Production
Ray Morton
Jeff Lee
Teri McCoy

ANE/TR/ARD is committed to the development of this forum for the exchange of technical, administrative, professional and social information among ANE's ARDOs. The emphasis is on a multi-channel process of information diffusion rather than the one-way channel of AID/W to the field. All submissions from ANE's ARDO's are welcome in this spirit.

Strategy calls for continuing to emphasize basic cereals production and institutional development; in the middle (low-income transitional) category the focus moves to promotion of policies and programs to speed the transition away from an agriculture-based economy through reducing barriers to trade and commerce, promoting agro-based industries and more efficient capital markets, and supporting sound policy analysis. Finally, in the middle-income industrializing countries, the strategic focus would move to information exchange, networking, trade and collaborative research.

*Martin Hanratty
Charles Uphaus*

ADVANCED DEVELOPING COUNTRIES (ADC): THOUGHTS ON NEW MODALITIES

I. Background Assumptions

- A. In real terms, A.I.D.'s financial resources will continue to decline.
- B. ANE ADC's will continue to want access to U.S. advances in new knowledge, science, skills and technologies (NKSST).
- C. It will be in the U.S.'s best interest (economic, social, scientific and political) to share NKSST.
- D. A.I.D. relations with ADCs need to be more symmetrical and based on mutuality of interest.
- E. A.I.D. can find means by which to be relevant and responsive to the interests of ADC's and the U.S., yet be fiscally responsible without heavy, paternal hands-on management.
- F. A.I.D. relationships with ADCs can be effective and efficiently managed through intermediaries without large A.I.D. overhead staff, particularly process staff, and without large dollar amounts per sector.

G. A.I.D. can find a way to attract and have access to professionals that can develop peer relationships with sectoral leaders in the ADCs and the U.S.

II. New Modalities: Important Characteristics

A. A.I.D. support in ADCs needs to be targeted on building linkage mechanisms based on mutuality and symmetry of interests that allow real time interaction by the relevant/interested individuals and institutions through intermediaries.

B. The current A.I.D. HB 3 project mode was developed from a history of capital projects. In ADCs this tightly planned and patronizing project approach is neither necessary nor appropriate.

C. H.B. 4 states that non-project assistance is generally for transfer of resources to provide short term relief to economic constraints. Non-project assistance, however, is appropriate to finance bilateral links between the U.S. and ADCs.

III. Some examples of non-projects program assistance in agriculture

A. Agriculture Policy

- Support for IFPRI and ADC country institutions to carry out policy research;
- support for World Resources Institute and Natural History Societies to examine public policy choices important to preserving tropical forests.

B. Agribusiness

- Support to Chambers of Commerce a/o professional associations that encourages U.S. and ADC agribusiness links;

- Support to the Industrial Council for Development, Agri-Energy Roundtable a/o the Senior Executive Service Corps to expand their international response capabilities.

C. Science and Technology

- Grants to link the U.S. Land Grant University community with the Indian State Agricultural Universities;
- PASAs to link USDA's ARS with ADC counterpart agencies;
- Support to IARCs to expand their links/cooperation with ADCs.

D. Human Resources Development

- An endowment that encourages two way post-doc/sabbatical exchanges.

IV. Financing

A. A condition of symmetry, and mutuality of U.S./ADC relationships is consistency and reliability.

B. Possible New Resources of Funding.

1. PL-480 Title I or III. However, these are not usually reliable over extended periods and probably not acceptable to ADCs.
2. Forgiveness of all or part of old loans with the amount repayable being set aside to establish a local, joint USAID/ADC administered account with the interest earned on the principal used to finance the bilateral linkage activities.
3. Loan rescheduling whereby the repayable principal and interest, say over the next 10 years, would be set aside and the interest earned over this period used to build up an endowment to finance linkage activities.

4. A special act of Congress to establish an endowment for ADC/U.S. linkage mechanisms.
5. Contributions to establish a linkage endowment from private U.S. and ADC corporations designed to match U.S. and ADC governmental contributions.

*Charles H. Antholt
World Bank*

The study noted various generic issues and problems as we attempt to track Agency obligations against the focus statement or other specific areas in response to queries from Congress and special interest groups and A.I.D. management. These include data base uniformity and appropriateness; issues in project classification; multiple effects of investments, and double counting, disproportionate influence of bureaus and countries with large amounts of funding; differential impact potential of different purpose categories; and, potential impact of non-project dollar assistance and local currencies.

The Joint Sector Council's Working Group is exploring ways to address these problems and issues. One clear result of the analysis was increased sensitivity to demonstrate quickly and accurately ARDN funding trends and obligations in specific sectors.

Michael Korin

AGRIBUSINESS FOOD MARKETING STRATEGY STUDY BEGINS

ANE/TR/ARD has contracted for a study to provide new insights into components of an agribusiness strategy for the region. Mission representatives will have the opportunity to discuss and contribute to the study at the upcoming ARDO Conference in Rabat.

Primary responsibility for the study will be with the S&T/RD Agricultural Marketing Improvement Strategies (AMIS) Project. Abt Associates is the prime contractor, and the Postharvest Institute for Perishables (PIP) of the University of Idaho and Deloitte Haslins and Sell are subcontractors.

The study will review AID, other donor, and financial institutions' experience with agribusiness private sector development, especially since 1980. Review of secondary sources, agribusiness interviews and discussions with Mission

representatives at the ARDO Conference will all contribute to the study.

Case studies of U.S., international and indigenous agribusinesses in selected ANE countries will be used to identify contributors and constraints to past successes and failures. The focus will be on the role that donors have, or could have played in contributing to success, and the implications for the ANE agribusiness strategy. Resources that missions can use for refining and implementing the strategy also will be identified.

For further information, please contact ANE/TR/ARD Bob Armstrong or Gregg Baker.

Gregg Baker

AGRIBUSINESS: MY EXPERIENCE IN INDIA

Two years ago, at the request of the Director Cylke, I looked into developing a project that would support the expansion of agribusiness in India. The major issues facing us was how to be *relevant* and *responsive* to Indian agribusiness in a way that would be *flexible* and in *real time*. There were three other parameters that were also important. First, as suggested, was that whatever we did had to be low budget. This meant a budget on the order of 2 to 2.5 million per year. Secondly, whatever we did had to put a minimal overhead burden on USAID staff. Lastly, we wanted to develop a program based on *mutuality* of interest between the U.S. and India, a program that would serve the developmental interests of India as well as be of direct economic and political interest to the U.S.

The first year was spent traveling and talking to agribusinessmen through India. Two major conclusions came out of our preliminary work. First the 100 to 150 million new middle class consumers were bringing extremely profound changes to the structure of demand for agricultural products.

AGRICULTURE, RURAL DEVELOPMENT AND NUTRITION PORTFOLIO REVIEW

A working group of the Joint Sector Councils of Agriculture, Rural Development, Natural Resources and Nutrition with assistance from Chemonics International has completed a review of the Agency's ARDN portfolio (DA and ESF) and its relationship to the sector focus statement. Data was obtained from A.I.D. central and geographic bureaus on 1,009 dollar-funded projects which were active during the FY 84 to FY 89 period or proposed for FY 90.

Approximately 72 percent of the entries, representing 57 percent of the obligations, were directly attributable to specific goals of the focus statement. The remaining 27 percent of the entries, representing 43 percent of the obligations, while related to all focus goals, were not specifically attributable to any. Such activities were commonly in the purpose categories of sector support, human resource development, and planning/policy analysis.

Over the 1984-89 study period, income enhancement accounted for 20 to 25 percent of obligations, food production and consumption accounted for 20 to 25 percent, and natural resources accounted for 9 to 15 percent. Discerning trends in the data proved very difficult. One cause of the lack of trends may be because the focus statement was introduced as program guidance only in May 1987.

They wanted higher value added products and a wider diversity of choice. At the same time, because of a shrinking world resulting from modern communication and transport facilities, India has continued and indeed rapidly increased its trade in agricultural inputs or products. Secondly, slowly but significantly the GOI has loosened its controls on industry and trade. Indian businessmen use the term "wave of liberation" to describe changes in the business climate in India over the last few years. Together these factors have lead to significant new investment opportunities in agribusiness. These in turn are serving to rapidly diversify and increase productive employment opportunities in rural India.

As expected, we did not find access to capital to be a major concern of the Indian agribusinessmen we met. More important to them were: market information (where were markets and what was being demanded); which companies have similar product lines that might be interested in collaborative arrangements; how to reduce costs or improve the quality of their product line; sources of new technology either for product use or for processing/marketing; and sources for technical assistance for everything from market analysis and advertising to engineering.

With this background we formulated a six-part effort to provide the basis for a USAID supported agribusiness program.

1. Financial support for the ECS to expand their capability to respond to informational requests about U.S. agribusiness;
2. Support for the Industrial Council for Development, an industrial association that is willing to provide to new businesses short-term services of their members' staff for the cost of travel and per diem;
3. Support for the Agri-Energy Roundtable/India Chapter, which is a forum for agribusiness concerns in India;

4. Support for the International Executive Service Corps to expand their capacity to respond to requests from entrepreneurs;
5. Support for business associations such as the All India Seed Association, and
6. Support for public sector institutions like the Indian Institute of Management/Ahmedabad to host seminars, workshops, and carry out research aimed at fostering the growth of agribusiness in India.

Conceptually all of these interventions can be carried out without A.I.D.'s direct management and therefore little overhead staff. Also, none of these are high cost initiatives, particularly if the concept of cost sharing with business is introduced. This is a particularly important concept because it tests the depth of the interest of businessmen and not just a program. Investments in agribusiness present important strategic opportunities in modernizing the agriculture sector, a sector that can be described in India as rapidly transforming from a much more diversified, higher value added agriculture.

*Charles H. Antholt
World Bank*

ARDO CONFERENCE UPDATE *(continued from p.1, col.3)*

the document and discuss the relevance of the strategy to the host-country setting and projected Mission activities with their Mission colleagues. A key objective of the Conference is to reach consensus on the strategy. Input from participants will be used to finalize a strategy after the Conference.

Enthusiasm and support from field personnel for arranging this Conference has been great and we look forward to the same level of participation at the Conference. Through active dialogue and deliberations we can arrive at a strategy which will lead ANE Bureau

agriculture and rural development activities in the 1990s.

Michael Korin

Projects and Resources

IQCs FOR MANAGEMENT CONSULTING SERVICES

AID has signed IQCs with Training Resources Group and Coverdale-Atlas to provide management consulting services to missions and AID/W offices. These IQCs are intended to provide a simple and efficient mechanism whereby AID/W bureaus and offices as well as overseas missions can call upon such services. These contracts were signed on September 18, 1988 and will be effective for three years.

The services to be provided under these contracts are to include but are not necessarily limited to: 1) Assessing organizations to achieve a better defined and broader consensus on where they are going and what they hope to attain programmatically as well as organizationally, in the short as well as the long term; 2) assessing how effectively people are working together to achieve desired results in missions or offices, identifying problems, and facilitating improvement efforts; 3) working with organizations to identify and encourage those organization values or working norms which are appropriate for and can best support performance for each particular organization; 4) assisting in team building, more open communications, and running more effective meetings; 5) and, helping to identify causes for and approaches to resolving conflict.

Activities involved in carrying out these services can include data gathering, interviews, organization and facilitation of retreats, consultation with individual managers and work units, guided problem-solving, and some training.

These IQCs were established in response to a growing demand for such services stimulated by AID's senior management and mid-level management skills courses, although the IQCs are available for any management improvement efforts whether stimulated by AID's management courses or not.

Bureaus, missions and offices must supply their own funding for services requested. Services are requested through issuance of delivery orders (see uniform procedures for issuance of delivery orders under IQCs: 5th Edition issued by M/SEK/OP on February 3, 1987). Individual requests for services under these IQCs are limited to 120 calendar days.

Training Resources Group and Coverdale-Atlas are encouraged under these IQCs to market their services and may be in touch with you in this regard. Questions regarding these IQCs should be addressed to your contracting officer and/or to the project manager Henry P. Johnson, PFM/PM, SA-2, Room 316, Tel. (202)-662-2280.

Roberto L. DeVivero
PFM/PM/TD/PMT

ISPAN UPDATE

ISPAN has undergone a few important changes since October. After review by ANE/TR/ARD and the Project Steering Committee, the FY89 Annual Plan was adopted in principle, subject to funding availabilities. The Plan establishes a more proactive stance vis-a-vis the analysis of regional irrigation issues and the articulation of future investment strategies in the sector, while outlining a coherent set of inter-related initiatives in technical assistance, applied studies and support of regional institutions.

Changes in the Technical Support Center include the appointment of Kathy Alison, formerly of USDA/OICD, as Program Manager, Human Resources Development and

Information. Kathy is well known to ANE irrigation staff for her excellent facilitation work at the Regional Irrigation Management Workshops in Karachi and Kathmandu. Her appointment is a full-time position, replacing John Petit, who had a two-thirds time appointment. One of Kathy's first activities will be to develop an ISPAN HRD strategy in coordination with Dr. Zanete France, HIM's new Training Officer.

In early January, Bob Thomas assumed the role of interim Project Manager, replacing Fred Basley. Bob is a senior staff of CDM, ISPAN prime contractor. He will stand in while CDM continues to search for a suitable permanent Project Manager, devoting primary attention to establishing reliable management procedures in a number of areas.

In the field, ISPAN staff worked on several very interesting activity development assignments. In India, Gil Levine of Cornell University began a consultation process with the Irrigation Department of the Government of Maharashtra designed to establish a "think tank" in the Department.

Peter Reiss visited the Philippines to discuss a proposed applied study of farmer managed medium scale irrigation systems to be undertaken jointly by Central Luzon State University and Cornell. In Thailand, Peter concluded final preparations for an applied study/evaluation of the North East Small Scale Irrigation Project. Finally, Peter assisted the Mission in Indonesia to plan a mid-term evaluation of the Small Scale Irrigation Management Project and conceptualize an applied studies program for the project.

Tony Garvey visited Dhaka to assist the Mission to develop at least three scopes of work for a) an irrigation component of the agriculture sector study to be prepared for the forthcoming CDS; b) a proposed technical network focusing on the Ganges and Brahmaputra River

Basins; and c) a study program designed to help the Government of Bangladesh prepare a long-term flood control/irrigation strategy. In Sri Lanka, Tony started the process of developing a policy support program which would help the Irrigation Department in the areas of cost recovery and water-user participation.

Finally, ISPAN launched the Eastern Waters Study described below.

Stan Peabody

ISPAN LAUNCHES EASTERN WATER STUDY

Following Bangladesh's disastrous flood in August and September, the ANE Bureau constituted the Eastern Waters Working Group to keep abreast of the situation and establish a forum for consideration of long term solutions to problems in the Ganges and Brahmaputra River Basins. Almost immediately the Task Force assumed responsibility for preparing a report to Congress required by H.R. 5389, the *Bangladesh Disaster Assistance Act of 1988*. The report should identify efforts to develop regional programs for the area that provide irrigation water in the dry season and promote better flood control and mitigation mechanisms.

In preparation for the report, Mike Korin, ANE/TR/ARD, headed a technical task force which prepared an outline of the report and scope of work for a background study of the issue, which is executed by ISPAN. The ISPAN team started its work in early November and will submit its final report to the Eastern Waters Working Group by March 30, 1989.

The Eastern Waters Team consists of three prominent individuals with long term association with the region: Prof. Peter Rogers, Gordon McKay Professor of Environmental Engineering and Professor of City and Regional Planning at Harvard University, team leader; Peter Lydon, former retired Foreign Service

Officer, and Prof. David Seckler, Director of Agricultural Policy and Resource Development at Winrock International and Professor of Agricultural and Resource Economics at Colorado State University. Tony Garvey, Eastern Waters activity manager at ISPAN, is a prominent expert on water management problems in the Eastern Waters region.

The team will present a seminar in Washington in late January, complete a draft report in mid-February and visit the region in early March before submitting its final report.

Stan Peabody

THE WORLD BANK'S ANNUAL AGRICULTURAL SYMPOSIUM

Innovations in Resource Management was this year's theme of the World Bank's annual Symposium was held in mid-January.

Patrick O'Brian of the USDA Commodity Economics Division provided the backdrop for the Symposium by first painting an extremely rosy picture--crop yields have increased, trade has increased at a rate double that of world food production, real prices of commodities have declined, etc. However, although the *health* of the world agriculture has seldom been better, its *risk* has probably never been greater. The risk factors--regional disparity, petroleum-based technological dependency, groundwater contamination and other environmental costs, and trade dependency (an unstable situation by governments, like the U.S. and the EEC increasing commodity costs, rendering benefits of trade less certain.)

The two-day symposium's plenary sessions included two themes: (1) an overview of Bank experience in the management of common property natural resources, and (2) biotechnology. The latter sessions covered a review of the State of the

Art, Impact on Production and the Role of the Private Sector. Prof. Fred Buttel, Cornell, summed up the impact session by noting that the more advanced developing countries, such as Thailand, would share with the industrialized countries benefits from advances in biotechnology. Rice, wheat and corn will see no real yield increases for some time.

The initial breakout groups included topics relating to water, land tenure and forestry research. Of particular interest were opposing conclusions arising from research in Africa (where tenure had limited impact on production) and Thailand (where tenure had substantial impacts on profitability, yields, credit, and land improvements.) The breakout session on competing demands for water resources ultimately focused on internal institutional and policy questions which affect the Bank's ability to deal with complex water resource management issues. The second day's breakout groups were devoted primarily to livestock and cropping systems in Africa and Latin America.

A copy of the most relevant papers will be sent to the head of each ARD Office within three to four weeks.

Dennis Weller

LOCUST UPDATE

Bugs! Bugs! Bugs! Where are they now? That's a question presently being debated by our entomologists. In parts of Africa we seem to be in a lull between the winter and spring invasions. Much of the Sahel is inactive. Vegetation in the Western Sahara and northern Mauritanian region has dried up. Tunisia and Algeria report clear skies. The earlier activity in West Africa has sharply declined; however, there continues to be a steady northerly movement of small swarms along the coastal areas into southern Morocco. This is keeping the Moroccan control program in full swing with 5,000-

10,000 hectares being sprayed daily. Since October a phenomenal 2 million hectares have been treated. This has been an extremely costly campaign for the GOM and donors, but the rich agricultural areas of the Souss Valley have been protected and overall crop losses have been minimal.

Despite the locust problem in Morocco, reduced activity in the traditional breeding areas has led OFDA's entomologists to scale back estimates of the scope of this year's expected spring invasion of North Africa. Present thinking is that the cyclical movement of swarms out of Western Sahara/Mauritania across the north will be less than half of what it was last year. If true this would bring some measure of financial relief to these countries, who along with donors spent more than \$100 million on last year's campaign. Of course, locust activity is extremely unpredictable and we could have a different forecast for you next week.

On the other side of the continent attention has focussed on the Red Sea coast where recent reports indicated extensive locust activity in Sudan's wadis and delta area. George Cavin, locust expert, was hurriedly dispatched to the area but after a week of surveying was unable to find any significant insect populations. Best guesses at this point are that swarms moved on to Saudi Arabia and were concentrating there. FAO entomologist George Popov will assess this area in the next few weeks, which should give us and other donors a better idea of the dimensions of the plague and what we can expect in coming months.

ANE Missions -- USAID/Morocco is putting the finishing touches on a \$10 million amendment to its original \$3.5 million locust control project. The Mission sees locusts as a serious long-term threat to North Africa and is taking an aggressive approach in dealing with it. This project, the first of its kind in the Agency, is considered a model, and several Missions in ANE and AFR have

sought further information about it. TR/ARD has mailed out copies of the PP to some Missions that are considering possible development of their own projects. If indeed we are in the midst of a longer-term problem, then Missions will have to implement more comprehensive approaches to locust control which go beyond OFDA's emergency assistance. To some extent this is already taking place with Pakistan procuring locust control commodities through its Agricultural Commodities Project, Tunisia developing GOT greenness mapping technology, and Jordan and Yemen putting aside existing project funds for locust control. Any Missions interested in obtaining copies of the Morocco PP can contact Paul Novick (202-647-7217) in TR/ARD. USAID/Pakistan has been out in front in recognizing the potential locust problem and has moved quickly to head off a possible spring invasion by procuring \$1.7 million of pesticides, airplane parts, trucks and other commodities on an emergency basis. The Mission was the first to invoke ANE's new emergency procurement waiver, which allows for fast procurement of commodities without full and open competition -- when there is a situation of "unusual and compelling urgency" (see STATE 403749 (12/14/88) for more information).

AID/W Activities -- ANE/TR recently prepared documentation for Ambassador Vernon Walters and Assistant Secretary of State Richard Murphy for their discussions with UN Secretary General Peres de Cuellar on locust survey and control problems in the Western Sahara. The importance of this dialogue was heightened in light of the tragic downing of the U.S. spray plane by the Polisario last December. FAO has now been charged with studying the technical requirements of eliminating locusts in this major breeding area. The Polisario incident shockingly portrayed the dimensions of the locust control problem -- one not just technical but also highly political in nature. Effective control will only

come about if there is an international consensus on addressing the problem. This was alluded to at the recent conference in Fez, Morocco where the idea for an international *Action Force* was proposed. This concept -- attacking locusts in their major breeding areas (some of which are under military conflict) -- is felt by many entomologists to be the only effective way to reduce the locust threat to manageable proportions. There has been discussion of this Action Force at the committee level of the United Nations, and FAO (with the support of AFR/TR's Carl Castleton) has been preparing a draft technical strategy. Given the realities of obtaining international approval of a joint plan of action and soliciting donor financial support, we don't expect this strategy to be implemented any time soon. However, the first steps have been taken to find a more comprehensive solution to an international agricultural threat.

For the time being pesticides seem to be the only effective, short-term deterrent to locusts. However, there is much concern about the longer-term environmental implications of heavy and continued use of these toxic chemicals. Recognizing this concern S&T and the Bureaus have formed a task force on *locust control research*. This group is surveying the work that has already been done on alternatives to pesticides and is preparing an agenda for new research. This is an important new initiative that we'll continue to report on in the future.

The *1989 Locust Control Workshop* will be held in Dakar February 6-9. This is the first gathering for Mission and AID/W locust control officers since the Harper's Ferry Conference of January 1987. Much has transpired since then so this will be a good opportunity to share information on the past campaign and be brought up to date on the myriad technical aspects of control operations. Further discussions will continue at the ANE ARDO Conference in Rabat February 19-23.

Despite the recent decline in locust activity, OFDA/DLTF will continue to survey the worldwide situation and issue weekly forecasts. Missions are encouraged to continue reporting locust activities in their respective countries to Kate Farnsworth, DLTF.

Paul Novick

Mission Views

ARDO CONFERENCE PLANS - COMMENTS FROM THE FIELD

Manila - USAID/Manila recognizes the excellent thinking and discussion that has resulted in the present strategy and supporting documents. This effort demonstrates the acute awareness of professionals in the agriculture, natural resources and rural development disciplines in the vital importance of the linkages of these disciplines with the broader sectors of macropolicy, trade, export, finance, transport, etc.. However, our expectations should not be too high because the broad diversity of countries AID assists will make it difficult to reach consensus at the conference.

While the focus on *the 1990s* has been frequently used by many well-intentioned exercises in the U.S., key changes will really effect not only the 1990s, but also beyond.

A practical suggestion: let us take a field visit/break in our intense conference schedule in the middle of the week instead of at the end. Two hard days, then a change of pace, then two more intense days will reap better results.

Regarding the speakers, all are individually stimulating and internationally recognized in their expertise. However, present agenda does not show how they will be used on the agenda. Also, agenda does not state how their expertise will marry with the ARDOs vast amount of

international field experience. My hope is that they will *guide* us to better conceptually understand and not *speak down to us*. Therefore, our concern is not about the individual's contribution; our concern is that the management of the conference succeed in providing the needed time and opportunity for the ARDOs to arrive at some solid consensus with actionable recommendations.

Our concern, too, is that appropriate natural resources participants from the field and AID/W also be present. Also, what roles are envisioned for the AID participants (no responsibilities are stated)?

Re: Para 6.C.ii, *Programmatic Resources*, what about including something on the USG's ability and willingness to respond with development resources given the USG's 2.6 trillion dollar debt? Specific emphasis should be given to AID's changing role especially with respect to the emergence of Japan as the world's largest non-military assistance donor.

The proposed special topic on higher agricultural education for the 1990s is very relevant for us. USAID/Manila is interested to discuss and learn more on how higher agricultural education not only supports longer term sustainability, but also how it can support short term rural impact.

USAID/Manila

Bangkok - USAID/Bangkok finds the proposed conference agenda quite comprehensive. Each of the ANE missions have a particular area of focus that will be of most interest to them, and we recognize the difficult reconciliation task ANE/TR/ARD has in setting the agenda for the conference. Our program has strong focus on technology development and commercialization, biotechnology in particular for the agriculture sector. We believe that this will be an emerging area of program focus for the AID program during the next decade as it is an area that will

become important in terms of U.S. commercial and trade issues and represents an area of U.S. comparative advantage. We suggest that this topic receive some attention during the conference.

We also believe that natural resources and environmental management is a second area of U.S. strength and an area in which AID will be asked/directed to do more, in particular in the context of global issues such as tropical forests, water, biological diversity and global warming. We suggest that the excellent draft of the emerging strategy for natural resources written by George Armstrong be placed on the agenda for discussion.

USAID/Bangkok

Dhaka - The Conference agenda looks thorough, even stimulating, but to our disappointment, allows insufficient time for a discussion of the technological solutions to the decline in agricultural growth rates evident in some bureau countries. We are even more dismayed at the apparent lack of agricultural scientists on the program. In fact, the only slot dealing directly with the issue of technical change, a 20-minute discussion, is being presented by an agricultural economist.

We have nothing against agricultural economists and other agricultural social scientists, nor do we downplay the importance of these disciplines to an analysis and solution of the problems affecting agriculture in the region. However, we think that biological and physical scientists are equally important to the agricultural development equation for obvious reasons.

Lest we forget, Webster defines agriculture as "the science or art of cultivating the soil, producing crops and raising livestock: farming." Technology is the application of science. The development of an agriculture and rural development strategy, as well as its presentation,

must be built around agricultural technology and should include the strong input of agronomists, soil scientists, entomologists, plant pathologists and the like, working in tandem with social scientists.

If it is not too late, we strongly recommend inclusion on the agenda of presentations by eminent agriculturalists such as Goro Uehara of the University of Hawaii, Les Swindale of ICRISAT, Don Plucknett of CGIAR, Bob Chandler, former IRRI Director and now retired, Swaminathan, former IRRI Director, Norman Borlaug of CIMMYT or Ken Ratchie, formerly of Winrock.

USAID/Dhaka

Rabat - USAID is pleased with Conference agenda and would like to make some suggestions on what might be included during certain sessions.

USAID suggests discussion on how other AID/ANE sector strategies (e.g. population, health and nutrition, private sector, energy, etc.) relate to the agriculture and rural development strategy. For example, do the various sector strategies compliment each other? If not, what is the remedy? It also might be useful to consider recommendations aimed specifically at coordinating specific components of the various sector strategies. For example, how can ag officers best incorporate country specific private sector actions into our projects?

Given the wide diversity in ANE country conditions, we believe attention should be given to how the strategy is actually expected to impact upon individual missions' programming. Conversely, since one of AID's strengths is resident missions doing country specific programming, shouldn't projects tailored to country conditions be encouraged even if they deviate from ANE strategy?

USAID believes the strategy should be screened in terms of what was worked and what has not worked in the past, and why. More specifically, what

does AID do well (e.g., ag research) and what does AID handle poorly (e.g., range management). There would seem to be a case for emphasizing what we are good at. There might also be something to learn from other regional and Bureau strategies.

FYI - Ambassador Ussery has enthusiastically accepted USAID invitation to make welcoming remarks Sunday evening - February 19.

USAID/Rabat

Tunis - Mission has reviewed the proposed agenda and offers the following suggestions:

(a) We second Colombo's recommendation that some attention should be given to the relative potential of agriculture as an employment generator. With productive employment an increasingly serious issue in several of the ANE Bureau countries, the topic needs to be addressed.

(b) Secondly, an important strategy element for discussion is development of viable private enterprises in the agriculture and agro-industrial sectors. As economies look to divestiture of parastatals and strengthening of private sector roles, there are a myriad of issues particularly associated with this movement particularly in the agriculture sector. As ANE countries diversify their agricultural economies into higher value products and marketing and processing become more important, we need to explore how to adjust our agricultural assistance strategies and look for ways to suggest private investments (including joint ventures with U.S. companies) and technological innovations in the commercialization of agriculture.

(c) Drought continues to loom large as a theme in several countries. It would be profitable to deal with strategies for recurring drought and the impact on livestock forage/feed; sources of quality replacement seed,

implications for natural resource management; aggravation by related problems such as locusts, birds, etc.

USAID/Tunis

Bits and Pieces

MEYER'S REPORT ON PERSONNEL RECRUITMENT

Richard C. Meyer has completed a report requested by DA/AID that reviews AID's system for identifying, qualifying, and employing new U.S. direct hire employees. The study, entitled *Assessment of the Foreign and Civil Services Recruitment Systems*, also includes selective reviews of the recruitment/selection procedures of other public and private organizations. The report concludes that the major components of a better recruiting system are: continuing senior management involvement; comprehensive work force planning; targeted recruitment of minority and women candidates; better treatment of clerical staff; a more professional approach, including adequate staff, space, and automation in the Recruitment Office; and, simplification of the Technical Review Committee Process.

In comparison to AID, the report finds that a number of private sector firms and international organizations practice more continuous and more targeted approaches to hiring. There is more mutual confidence and communication between recruiters and program managers, and more senior manager involvement in the recruitment process.

Meyer also has been commissioned by DA/AID to conduct a study that assesses AID staff training programs. More on this report will appear in the next issue of *Networking*. *Note: Meyer preceded his work for Jay Morris with a preliminary analysis of ARDO personnel profiles. Dick is now working on a comparison piece, the*

implications for ARDO's in the 1990s, which he will report on in Rabat.

Gregg Baker

WORKSHOP ON U.S. AID, TRADE AND FARM POLICIES--WORKING TOGETHER IN THE 1990s

Winrock International and A.I.D. (through Duane Acker's office) sponsored a workshop on January 4 and 5 to discuss the 1985 and 1990 Farm Bills, the GATT negotiations and trade issues, and development assistance. Representatives of the U.S. Farm Bureau commodity groups, U.S. cooperatives, congressional staffers, college deans, farmers and USDA and AID were in attendance. The workshop had two specific objectives: (1) to hear the views of various groups on these issues, and (2) to recommend ways to reconcile U.S. development assistance, international trade and U.S. farm policies. The first objective was achieved. On one side, the commodity groups, led by the executive director of the American Soybean Association, strongly believe that U.S. Government programs are not doing enough to support trade interests of U.S. farmers. With varying degrees of conviction, the senior leadership of other farm groups acknowledges the argument that development and increased incomes in LDCs will lead to more demand for U.S. exports.

Regarding the second objective, all agreed that AID should take more leadership in contacting and communicating with these groups. During our ARDO Conference in Morocco, we would like to hear your views on how we might more effectively deal with these issues and the senior representatives of the U.S. farm groups.

Richard Cobb

COMMENTS ON PERFORMANCE STANDARDS BOARDS

I recently served on the Performance Standards Boards (PSB) and would like

to make the following observations as we once again get ready for the EER season.

First of all, a word about the Performance Standards Boards; yes, the PSB do meet annually and do review the performance of the foreign service officers whose EERs are in the bottom 5% of those considered by each promotion panel. These EERs are referred to the PSB with the recommendation that they be reviewed for possible early retirement due to "non performance". Based on a 10% random sample of the appropriate class' EERs, the PSB develops a standard of performance for the class and determines whether the performance of those referred for review, meet the standards of their class. The PSB must determine whether a referee "fully meets", "marginally meets" or "does not meet" the standard and must state "why" or "why not". These findings are turned over to the Director of Personnel who informs the foreign service officer of the action taken by the Agency.

In the process of this exercise the PSB reads about 100 EERs and I must admit I was amazed at the great difference in the quality of these personally very important documents. During our review of the EERs, the "do's and don'ts" as well as the "norms" which affect the quality of an EER became readily apparent. It is from these two vantage points that I would like to make my comments.

Do's and Don'ts

Section II, Work Requirements: The rated officer and the rater should identify a reasonable number of realistically achievable continuing and specific tasks for the period. In the sample, the average for the EER reviewed was five tasks in each category.

Section III and IV, Evaluation of Performance and Potential: The key here is not to let the narrative become a "mystery story", the EER should be specific and clear. If the rated officer

accomplished the agreed upon tasks, a statement such as "during the rating period the rated officer accomplished all work requirements in an outstanding manner", leaves no question as to what was accomplished. Similarly, the "skill areas" to be addressed should be specifically identified, underlining is very helpful, and clearly substantiated by an example of how the rated officer used the skill to accomplish a required task. Although the EER instructions are very clear, 20% of the random sample of EER reviewed did not include specifically identified skill areas and more than 40% did not adequately substantiate the skills identified.

The "Norms" for a Standard of Performance

When the PSB developed the standard of performance for the group, the descriptors most often used to describe top performance included the following. Better than 60% of the group were described as "hardworking" (willing, productive) and 50% were well "organized", could "prioritize" their work requirements and could "negotiate". The terms "timely, thorough (persistent), persuasive (forceful, decisive), independent (selfstarter)" were the descriptors used for 40% of the group. Terms such as "initiative, good communication (written or oral), innovative, positive (dedicated), teamwork, and practical" were applied to the performance of 30% to 30% of the foreign service officers whose EERs were in the sample.

To complete the profile, an average of five of these "descriptive" terms were used to profile the performance of a typical foreign service officer. Further, she/he successfully completed an average of five specific tasks, had five continuing organizational responsibilities and effectively utilized an average of five skills to accomplish the tasks.

Perhaps, it is unfortunate that an EER is the only way that a promotion or a review board member ever gets to

know the performance or potential of an officer; but given that reality, a well documented, clearly written and specifically defined EER is a must if an officer is going to be able to compete with others in his class.

A fair EER is the responsibility of all concerned, mission management, rater, reviewer, mission or unit review panel and the rated officer. In the end, the ultimate responsibility lies with the rated officer to see that she/he gets a fair EER.

Senior ANE/TR/ARD Officer

HEAT STABLE VACCINE BEING DEVELOPED FOR RINDERPEST

S&T/AGR, in conjunction with University of California, Davis, recently announced the development of a recombinant vaccine against Rinderpest. Rinderpest is a viral disease of cattle and buffalo which kills an estimated two million animals per year in Africa and Asia. The new vaccine contains the vaccinia (smallpox) virus as a vector and is safe for human use. In contrast to the old Plowright vaccine for Rinderpest, it is heat stable and can be easily produced in-country. Dr. T.D. Yilma, the main researcher at U.C. Davis, has done initial tests at Plum Island which indicate that the vaccine is extraordinarily effective, even at exposure rates 1000 times a normally fatal dose. More tests are scheduled to be conducted in Africa and hopefully the vaccine will be available in the next one to one-and-a-half years. For more information please contact Dr. David D. Bathrick, S&T/AGR.

Sharon Fee

AG POLICY COMPUTER TRAINING FOR ANE OFFICIALS

North Carolina A & T University is developing, with ANE Bureau's assistance, an intensive four week workshop on computer-assisted food and agricultural policy analysis. The

principal objectives of this workshop include (1) to further develop proficiency in agricultural policy analysis using microcomputers; (2) to identify and evaluate the impact of alternative policy options, and (3) to gain experience in selecting and applying appropriate data and analytical techniques utilizing models developed for microcomputers. The workshop is being designed for and to senior level host-country policy analysts and decision-makers. The workshop is scheduled for May 8 to June 2. For further information contact Dr. Richard Robbins, Chairman, Department of Agricultural Economics, 1601 East Market St., Greensboro, N.C. 27411. Telephone (919) 334-7901.

Michael Kohn

BACK UP OR LONE OUT!

Four days into the final draft of the PP for the ARP. It's 2 A.M. You begin to format a new data disk for the Lotus graphs. The drive light spins. Suddenly it hits - you are formatting your data disk - you forgot to insert the new blank disk! Or ...

AGPROJ.DOC is over 20 pages long, but the DIR command shows it now has a file size of 0 bytes or "File not found." Or DIR produces a screen of squiggles and little funny faces.

The "backup believer" smiles gently while reaching for the backup diskettes. The other scenario is not pretty.

Data files are lost or corrupted due to hardware failure, software bugs, operator error or "media" defects on the disk surface. Just as old audio cassettes wear out over time, so do floppy diskettes. Data can be backed up to floppy disk, magnetic tape, CD-ROMs or even to a VCR!

Every ARD computer already has everything needed to backup files to floppy disk.

DISKCOPY A: B: copies the entire

disk in the A drive to the B drive.

COPY AGPROJ.WK1 B: copies just the spreadsheet file AGPROJ.WK1 to the B drive

COPY *.* B: copies all files in the current directory to the B drive

COPY *.DOC B: copies all files with a .DOC extension to the B drive

DOS versions greater than 3.2 provide XCOPY, a speedier version of COPY.

Make rotating backups. If the original AGPROJ.DOC file is corrupted, making a backup will produce a corrupted backup file! Make the first backup of AGPROJ.DOC to BACKUP disk #1 (using DISKCOPY or COPY). The next time AGPROJ.DOC is modified, or a new file is created, backup to BACKUP Disk #2, then to BACKUP Disk #3 and then return to BACKUP Disk #1. As a worst case, only the changes made since the last incremental backup will be lost and not the entire document.

A hard disk is fast and can store much data. The question is not "Will it fail?" but "WHEN will it fail?" The DOS COPY and XCOPY commands can backup hard disk data to floppies. The DOS BACKUP command (and its companion RESTORE) quickly backup entire subdirectories or multiple subdirectories to floppies. BACKUP combines files to produce one large file on each of several sequentially numbered floppies. BACKUP options include backing up only files which have been created or modified since the last backup. The DOS manual provides the needed information.

Commercially available hard disk backup programs such as Fast Back, PC Tools or DSBakup, provide greater flexibility and ease of use than the DOS BACKUP program. For example, disk organization can be displayed on screen and multiple subdirectories marked for backup, and the number of required floppy disks calculated.

Don't wait for a crisis to make you a backup believer. Do spend the few

extra seconds or minutes to protect the enhanced productivity of ARD computers.

Bob Blumberg

Note: Bob will be in Rabat to answer ALL your micro-computer questions.

ARD Bulletin Board

PERSONNEL UPDATE

James (Jim) Snell has recently joined the ANE/TR/ARD staff as the Agricultural Economist covering the Near East and PL 480 analysis issues for ANE. His specialties are policy analysis and agricultural marketing and he has extensive background university teaching and agricultural research. Jim was posted in Zambia for the past 4 1/2 years and served in the Philippines as an Agricultural Policy Consultant for 4 years with Kansas State University. He has a BS in Technical Agriculture from the University of Missouri and a PhD from Michigan State University.

Jocelyn Machinist joins ARD as the Chief Secretary for the Support Branch. She graduated from the University of California with a B.A. degree in Political Science with a concentration in Japanese language and social science studies.

Terri Jackson joined AID last September. After a short stint with Personnel, she moved to FFP. At FFP, she had the opportunity to work for FFP/DAA Mary Kilgour. Terri now serves the ARD Asia Branch as Clerk Typist.

After a short stint with ARD, Ray Morton joins USAID/Dhaka as an Agricultural Development Officer. Ray provided tremendous support to ARD in the areas of higher agricultural education, farm management economics and training, and AID/FAO coordination, not to mention the Networking Editorial Board. We extend our best wishes to Ray and Mary Lou!

UPDATE ON TRAINING FOR ARDO'S

A "Development for the Sustainable Use of Natural Resources" workshop will be held June 5-16, 1989 in Washington, D.C. This two week workshop will use a multidisciplinary approach for defining natural resource and environment issues. Participants will be provided with knowledge and skills: to promote a more integrative approach to sustainable development; analyze the factors and trade-offs in decisions involving natural resources, including economic, socio-cultural, agronomic, ecological and natural resource management; and, use Agency environmental regulations to strengthen planning for sustainable development. Workshop speakers will explain the importance in natural resource management. Small groups will maximize faculty-participant dialogue. Contact Dot Young, PFM/PM, TD/ECL, 308 SA-02, (202) 693 2335 for further details.

Re: Course No. 209, June 11-23, 1989, The Role of the Private Sector in Development (RPSD), Applying Business Techniques and Resources in AID's Development Work, course to be held off-site with location to be announced subsequently.

For 1989, OPM, Training Division, PFM/PM/TD, and the Bureau for Private Enterprise, PRE, have scheduled the RPSD course once during the home leave travel period this summer. The course will be offered subject to sufficient enrollment responses from the field and AID/W.

The announcement is being issued at this time to remind Bureau/Offices that only one course will be offered this year rather than two courses as was the case last year. Those who wish to enroll should advise ASAP of their interest and follow this expression with SF-182 to arrive in PM, TD no later than February 1, 1989.

The Private Enterprise Sector Council working group for training is currently reviewing last year's course evaluation and recommendations for design changes. Expected changes in this year's courses include agency project specific case studies, more detailing of field experience in implementing the agency's private sector initiative, and opportunity to acquire specific business, financial, and analytical skills. In short, while some change in course direction may emerge as a result of the course steering committee's deliberations, overall course objectives are expected to be similar to those of earlier courses. The course has already been offered eight times and received excellent to outstanding ratings from participants.

The International Meat and Livestock Program (IMLP), conducted by Kansas State University offers long- and short term courses, workshops and seminars in Kansas or in country. It provides training in genetics, nutrition, reproduction, management, health, marketing and animal food products. The courses can be tailored to fit special needs. Contact Bill V. Able, Associate Director, International Meat and Livestock Program, Weber Hall, Kansas State University, Manhattan, Kansas 66506. Tel: (913) 532 6131; telex: 417168 IMLP KS.

The University of Minnesota and Sigma One Corporation will sponsor an Agricultural Policy Seminar, "Strategies for Development and Growth," from June 12 to July 7 at the Humphrey Institute on the West Bank of the University of Minnesota in Minneapolis and in Washington, D.C.

Participants will develop the knowledge and skills to evaluate the policy making process, identify major national goals with respect to the agricultural sector, resolve goal conflicts, evaluate methods and economic models and courses of action for major policy problems, select appropriate analytical techniques which may be used to provide information for better solutions to policy problems; develop strategies to deal with economic and political change in policy planning and implementation; and, influence the policy making and management processes in their respective countries. A number of prominent speakers will participate, including G. Edward Schuh (U. of Minnesota), Per Einarup Andersen (Cornell), Vernon Ruttan (U. of Minnesota) and John Mellor (IFPRI).

The course cost is \$5,810 which includes training fee, associated costs, 28 nights lodging, meals, course field trips, insurance, books and book shipment. Fees do not cover any air or ground travel except field trips.

during the course. For more information, please contact Betty Radcliffe, UM/HHI, 235 Humphrey Center, 301 19th Ave. South, Minneapolis, MN, 55455. Phone: (612)-625-0576.

Colorado State University's Department of Agronomy, in cooperation with USDA/OICD, will offer "Problems and Practices of Irrigation Systems," an intensive international short course for irrigation practitioners from June 12 to August 4 at Colorado State University, Fort Collins, Colorado.

The course is presented in seven subject matter units. The first six units are on campus. For the last two weeks (unit 7) participants will visit irrigation projects in Colorado, New Mexico, Arizona and California.

The cost of the course is \$9,490, which includes the following: \$5,167 training fee; \$68 insurance; \$200 professional membership; \$325 orientation; \$3,730 maintenance allowance.

For more information, contact: Department of Agronomy, C117 Plant Science Building, Colorado State University, Fort Collins, Colorado 80523. Telephone: (303)-491-6517. Telex: 9109309011 CSU CID FTCN Attn: PPIS.

USDA/University of Wisconsin at Madison announce a nine-week certificate course, "Development and Operation of Agricultural Extension Programs." Intended participants include professionals from developing countries who are involved in extension or other nonformal education programs. The course will be taught in English. Session I will be held from June 5 to August 4 (application deadline: May 15); and Session II will be held from August 28 to October 27 (application deadline: July 15).

Participants will develop the knowledge and skills to: 1) apply extension educational program concepts to overall agricultural and rural development; 2) apply extension program development techniques to strengthen the linkages between research, extension, and rural families; and, 3) use the programs and efforts of government and non-government agencies as resources to strengthen agricultural extension programs.

The training fee is \$3,962; suggested maintenance allowance is \$3,660; those wishing graduate credit will have to pay additional estimated tuition as follows: \$405 (session I) and \$430 (session II).

For additional information, contact: Sharon M. Baumgartner, Training Coordinator, International Agricultural Programs, 240 Agriculture Hall, University of Wisconsin, Madison, WI 53706-1562. Telephone: (608)-262-3673.

The Humphrey Institute of Public Affairs and International Agricultural Programs at the University of Minnesota will sponsor a course on "Development Project Evaluation" September 18-29 at the University of Minnesota-West Bank campus. The course will concentrate on how to make project evaluations useful, practical and accurate. The course will be conducted by Dr. Michael Quinn Patton, International Programs Evaluation Specialist in the Institute of Agriculture, Forestry and Home Economics at the University of Minnesota.

For more information, contact: Patricia Manske, Citizen Education Program, Humphrey Institute of Public Affairs, 301 19th Ave., S., University of Minnesota, Minneapolis, MN 55455. Telephone: (612)-625-6621.

6/14

CONTACTING ANE/TR/ARDTelex: 62032386Fax: 202-647-6962

Assignment	Name	Phone (202)
<u>Front Office</u>		
Chief ARD	LOWENTHAL, James	647-8262
Deputy Chief ARD (Acting)	KORIN, Michael	647-7308
Program Assistant	MEENAN, Vera	647-8263
Chief Secretary ARD	MCCOY, Teri	647-8262
<u>Asia Branch</u>		
Branch Chief (Acting)	WELLER, Dennis	647-7340
Secretary	JONES, Vercal	647-7327
Clerk Typist	JACKSON, Terri	647-7327
Bangladesh/India/Pakistan	ALTER, Dean	647-7336
Indonesia/Philippines/So.Pacific/Burma/ASEAN	WELLER, Dennis	647-7340
Afghanistan/Nepal/Sri Lanka/Thailand	FEE, Sharon	647-7062
<u>Near East Branch</u>		
Branch Chief (Acting)	UPHAUS, Charles	647-7061
Secretary	SCOTT, Elaine	647-7365
Clerk Typist	FARRELL, Ann	647-7364
Egypt	LEE, Jeff	647-7212
Morocco/Tunisia/Italy/Poland/Portugal	NOVICK, Paul	647-7217
Jordan/Oman/Tri-National/Yemen	UPHAUS, Charles	647-7061
West Bank-Gaza		
<u>Support Branch</u>		
Asia Ag Economist	HANRATTY, Marty	647-7315
Near East Ag Economist	SNELL, James	647-7201
ANE Irrigation/Water Management	PEABODY, Stan	647-6988
ANE Institutional Management	BAKER, Gregg	647-6982
ANE Ag Business/Ag Research Specialist	ARMSTRONG, Robert	647-7271
Desert Locust Task Force	FARNSWORTH, Kate	647-0685
Research Analyst	MUSCATO, Peter	647-7219
Secretary	MACHINIST, Jocelyn	647-7167
ISPAN Technical Support Center (Rosslyn)	THOMAS, Robert	(703) 243-7911
Chief of Party (Acting)	Fax: (703) 525-9137	
	Tlx:276532(ISPAN UR)	

695

CONTACTING ARDOs IN THE FIELD

AFGHANISTAN - USAID/ISLAMABAD

Gary Lewis, ADO
Tel. 92-51-82-6161 Ext. 29
Box 4, APO New York 09614
Fax 92-51-824-086

BANGLADESH - USAID/DHAKA

Charles Hash, ADO
Tel. 880-2-235-081
Telex 950642319
Fax 880-2-411079

BURMA - USAID/RANGOON

Vacant
Tel. 82055 Ext. 285
USAID, Box B, APO San Francisco 96346
Telex 71321230(AIDRGN BM)

EGYPT - USAID/CAIRO

Ed Stains, ADO
Tel. 202-354-8211 Ext. 3215
Don Wadley, RDO
Ext. 3324
Embassy, Box 10, FPO New York 09527
Tele.: 9279993773(AMEMB)
Fax 20-2-356-2932

INDIA - USAID/New Delhi

Glen Anders, ADO (Water Resources)
91-11-608-480 Ext. 233
John Becker, ADO (Research)
91-11-608-480 Ext. 231
Telex 95303165207(ASOK IN)
95303165647(ASOK IN)
95303165269(USEM IN)

INDONESIA - USAID/JAKARTA

Marcus W. Witter, ADO
Tel. 62-21-360-360
USAID, Box 4, APO San Francisco 96356
Telex 79644218
Fax 62-21-360-644

JORDAN - USAID/AMMAN

Randall C. Cummings, ADO
Tel. 962-6-604-171
USAID, APO New York 09892
Telex 92521510 +

MOROCCO - USAID/RABAT

Rollo L. Ehrich, ADO
Tel. 212-7-33690
USAID, APO New York 09284
Telex 93331005M
Fax 212-7-68279

NEPAL - USAID/KATHMANDU

Rob Thurston, ADO
Tel. 977-1-211-144

OMAN - USAID/MUSCAT

Duncan R. Miller, AID Representative
Tel. 96-8-703-000
Telex 9263785
Fax 96-8-797-778

PAKISTAN - USAID/ISLAMABAD

H. Pat Peterson, ADO
Tel. 92-51-824-071
Box 4, APO New York 09614
Telex 952254270(USAID PK)
Fax 92-51-824-086

PHILIPPINES - USAID/MANILA

Ken Prussner, ADO
Tel. 63-2-521-7116
USAID, APO San Francisco 96528
Telex 72227366
Fax Embassy: 63-2-522-4361
USAID: 63-2-521-5241

PORTUGAL - USAID/LISBON

David Leibson, AID Representative
Tel. 351-1-726-6600

SOUTH PACIFIC - USAID/SUVA

Eric Witt, Reg. Dev. Officer
Tel. 679-311-399
Telex 7922647(USAID FJ)
Fax 676-300-075

SRI LANKA - USAID/COLOMBO

John Flynn, ADO
Tel. 94-1-21271/21520, Ext. 208, 247, 325
Jack Pinney, Engr. & Water Resources
Tel. 94-1-21271 Ext. 217, 228, 232
Telex 95421305
FAX 941-549-070

THAILAND - USAID/BANGKOK

Doug Clark, TR
David Delgado, ADO
Tel. 66-2-252-8191
USAID, APO San Francisco 96346
Telex 78887058
Fax 66-2-555-3730

TUNISIA - USAID/TUNIS

Nancy Turnavick, PDO
Ans Burgett, ADO
Tel. 21-61-781-947
Telex 93414182
93413379(AMEMB)
Fax 216-1-789-719

YEMEN - USAID/SANAA

John B. Swanson, ADO
Tel. 967-2-231-213
Telex 9482797(EMBASANYE)
Fax 967-2-251-578

AID FUNDING FOR ANE BUREAU
(\$000)

	FY 1988 (Actuals) [1]					FY 1989 (Proposed) [2]					FY 1990 (Planning Levels) [3]				
	DA	PL 480 TITLE I	PL 480 TITLE II	ESF	TOTAL	DA	PL 480 TITLE I	PL 480 TITLE II	ESF	TOTAL	DA	PL 480 TITLE I	PL 480 TITLE II	ESF	TOTAL
AFGHANISTAN	22,500	--	28,946	22,547	73,993	22,500	--	32,635	22,500	77,635	35,000	--	35,566	35,000	105,566
BANGLADESH	58,498	60,000	15,264	--	133,762	60,000	80,000	20,538	--	160,538	55,000	60,000	18,968	--	133,968
BHUTAN	--	--	1,052	--	1,052	--	--	251	--	251	--	--	--	--	0
BURMA	5,150	--	--	--	5,150	--	--	--	--	0	--	--	--	--	0
CAMBODIA	--	--	1,841	3,500	5,341	--	--	--	5,000	5,000	--	--	--	--	0
CYPRUS	--	--	--	10,000	10,000	--	--	--	20,000	20,000	--	--	--	7,000	7,000
EGYPT	--	179,500	2,626	700,000	882,126	--	170,000	1,295	930,000	1,101,295	--	160,000	--	815,000	975,000
FIJI	--	--	--	--	0	--	--	--	--	0	--	--	--	1,000	1,000
INDIA	23,600	--	109,097	--	132,697	24,000	--	67,635	--	91,635	25,000	--	85,000	--	110,000
INDONESIA	39,900	15,000	9,470	--	64,370	42,000	15,000	4,459	--	61,459	43,000	10,000	4,918	--	57,918
IRELAND	--	--	--	35,000	35,000	--	--	--	10,000	10,000	--	--	--	--	0
ISRAEL	--	--	--	1,200,000	1,200,000	--	--	--	1,200,000	1,200,000	--	--	--	1,200,000	1,200,000
JORDAN	--	--	--	18,000	18,000	--	--	--	15,000	15,000	--	--	--	35,000	35,000
LAOS	--	--	1,751	--	1,751	--	--	--	--	0	--	--	--	--	0
LEBANON	--	--	6,825	--	6,825	--	--	14,112	300	14,412	--	--	12,744	2,000	14,744
MOROCCO	12,500	36,000	12,782	20,000	81,282	12,500	44,000	14,688	20,000	91,188	12,500	35,000	15,699	15,000	78,199
NEPAL	12,000	--	1,802	--	13,802	12,000	--	1,398	--	13,398	12,000	--	--	--	12,000
OMAN	--	--	--	13,000	13,000	--	--	--	15,000	15,000	--	--	--	20,000	20,000
PAKISTAN	50,000	80,000	--	220,000	350,000	50,000	80,000	--	215,000	345,000	50,000	80,000	--	250,000	380,000
PHILIPPINES	39,998	30,000	27,947	15,000	112,945	40,000	--	13,441	298,000	351,441	55,000	15,000	16,471	160,000	246,471 + 200 m
POLAND	5,775	--	--	1,000	6,775	3,225	--	--	3,000	6,225	1,000	--	--	--	1,000
PORTUGAL	--	--	--	32,013	32,013	--	--	--	50,000	50,000	--	--	--	50,000	50,000
SOUTH PACIFIC	8,670	--	--	10,000	18,670	4,000	--	--	10,000	14,000	6,500	--	--	11,200	17,700
SPAIN	--	--	--	3,000	3,000	--	--	--	--	0	--	--	--	--	0
SRI LANKA	26,800	26,000	906	--	53,706	26,800	16,000	--	--	42,800	18,000	16,000	589	--	34,589
THAILAND	15,300	--	--	5,000	20,300	13,598	--	--	5,000	18,598	14,500	--	--	5,000	19,500
TUNISIA	--	29,900	1,676	10,000	41,576	--	10,000	--	11,250	21,250	--	15,000	--	12,500	27,500
TURKEY	--	--	--	32,000	32,000	--	--	--	60,000	60,000	--	--	--	60,000	60,000
YEMEN	22,095	10,000	--	--	32,095	21,000	10,000	--	--	31,000	21,150	5,000	--	--	26,150
WEST BANK/GAZA	--	--	1,655	--	1,655	--	--	467	--	467	--	--	--	--	0
ANE REGIONAL	18,879	--	--	10,366	29,245	19,366	--	--	22,355	41,721	18,163	--	--	--	0
ASEAN	3,600	--	--	--	3,600	3,150	--	--	--	3,150	3,260	--	--	--	3,260
TOTAL ANE	365,265	466,400	223,640	2,360,426	3,415,731	354,139	425,000	170,919	2,912,405	3,862,463	370,073	396,000	189,955	2,703,200	3,659,228
		Total PL 480	690,040				Total PL 480	595,919				Total PL 480	585,955		

[1] Source: Final FY 88 OYB. DA & ESF figures are actual obligations. Excludes International Disaster Assistance, and deob/reob. PL 480 figures exclude WFP. FY 88 PL 480 are estimates.

[2] Source: PPC control table dated 12-21-88.
[3] Source: PPC control table dated 12-21-88.
* Includes carryforward from FY 88.