

A.I.D. RESEARCH & DEVELOPMENT ABSTRACTS



**UNITED STATES AGENCY
FOR INTERNATIONAL
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TN-AAA-039

FROM THE EDITOR

Private Sector Development

Although the proper role of the private sector in economic development has long been debated, the development history of the past two decades clearly demonstrates the importance of private enterprise and individual initiative in promoting Third World economic growth and thereby helping to alleviate poverty and improve the overall quality of life in developing countries. The U.S. Foreign Assistance Act specifically directs A.I.D. to utilize the private sector in providing development assistance and to recognize "the vital role of free enterprise in achieving rising levels of production and standards of living essential to economic progress and development." With the establishment of A.I.D.'s Bureau for Private Enterprise in 1981, a major step toward achievement of this objective was taken. More recently, Congress authorized a 60 million dollar revolving loan fund to be used to encourage the U.S. private sector and lending institutions to actively promote private enterprise in the Third World.

Further efforts to be taken to increase A.I.D.'s compliance with its legislative mandate are outlined in an A.I.D. policy paper (item 255 in this issue of *ARDA*). Described is a development strategy which focuses on fostering host-government economic policies that encourage free markets and private ownership of productive enterprises, and on increasing the availability of technical and financial resources crucial to the development and operation of such enterprises. Related policy papers are "Bureau for Private Enterprise Policy Paper" (item 257), dealing with the goals, strategy, and programs of the Bureau for Private Enterprise, and "A.I.D. Policy Paper: Co-financing" (item 258), a discussion of the potential of the co-financing mechanism for involving the private sector in development.

Government Policies

The existence of supportive government policies is critical to the development of a vigorous private sector. Much of the painfully slow economic growth experienced by many developing countries can be directly traced to government policies that support inefficient government operation of key industries, manipulate prices and interest rates at the expense of production and optimal resource utilization, and restrict foreign private investment and foreign trade. In direct contrast to the poor performance of these state-controlled economies stand the considerable growth rates achieved by a number of developing countries which have encouraged private investment and competitive markets.

The relationship between public policy and economic performance is examined in several papers announced in this issue. The first of these, an A.I.D. evaluation discussion paper (item 251), shows how host country policies, together with donor interventions, have fostered vital private enterprise economies in Thailand, Cameroon, Malawi, and Costa Rica, all of which have dramatically increased their peoples' standards of living during the past 20 years. Further detail on three of these countries is provided in A.I.D. evaluation special studies, which, respectively describe Cameroon's cautious approach to economic change (item 268), examine the success of Malawi's market-oriented policies (item 269), and contrast Costa Rica's remarkable economic and social progress with its current economic crisis

(item 488). A fourth special study (item 271) shows how government overregulation of rural agricultural markets in Africa has undermined production.

Technical and Financial Resources

Institutions such as business and credit cooperatives and development banks provide essential services to the private sector. A number of papers announced in this issue discuss such institutional resources. Among these are an examination of the central role played by training, lending, and technical assistance institutions in promoting growth in the Dominican Republic (item 273) and an evaluation of the Entente Fund's efforts to strengthen the capability of six African development banks to provide credit to African-owned enterprises (item 272). Two related papers discuss, respectively, problems encountered in a loan program for craft and emerging small-scale enterprises in Jamaica (item 291) and the strengths and weaknesses of a Brazilian PVO established to provide credit to small businesses (item 274).

Investment capital, another key ingredient in private sector development, is the subject of two papers: a discussion of the possible use of local currency generated from the sale of P.L. 480 Title I commodities to foster host country private sector growth and attract foreign investment (item 283) and an assessment of opportunities for agroindustrial trade and investment in Morocco (item 284).

Another prerequisite to accelerating development through private sector expansion is access to new technology. Cited in this issue of *ARDA* are two reports on the international transfer and acquisition of technology. The first (item 497) highlights the wide variety of external factors that impinge upon the technology transfer process, while the second (item 498) provides an overview of technology transfer. Also announced is an examination of the technology and management needs of small and medium agroindustries in Kenya (item 489).

Small-Scale Enterprise

A.I.D.'s private enterprise programs have sought to foster broad-based economic growth through the development of both large and small agricultural, service, and industrial firms. Support of small enterprises, while but one part of A.I.D.'s overall strategy, offers a particularly promising means of strengthening the private sector, for in many developing countries, small firms (especially those located in rural areas) constitute a large or even predominant part of the private sector.

Accordingly, several papers announced in this issue deal with small enterprises. Research suggesting that small enterprise promotion can increase employment and hence income among the poor, enhance efficient use of capital, and promote integrative linkages throughout the economy is cited in another A.I.D. evaluation special study (item 270); this study also explores the relative effectiveness of various approaches to small enterprise development. Other papers (items 491-494) focus on small enterprise development in Egypt, Kenya, Jamaica, and Sierra Leone.

(Continued on inside back cover)

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 Washington, D.C.

ITEMS OF SPECIAL INTEREST

This issue of *ARDA* highlights a selection of evaluation reports, discussion papers, and special studies produced by A.I.D.'s Bureau for Policy and Program Coordination. The documents are categorized under topics pertinent to A.I.D.'s Forward Agenda for FY 1984. To obtain microfiche or paper copies of these reports, please refer to the Ordering Instructions in this issue.

HEALTH SERVICES/NUTRITION

Discussion Paper:

- PN-AAG-685* Reaching the Rural Poor: Indigenous Health Practitioners Are There Already
PN-AAJ-174 A Review of Issues in Nutrition Program Evaluation

Special Study:

- PN-AAJ-619* Toward a Health Project Evaluation Framework

Project Impact Evaluations:

- PN-AAJ-008* The Sine Saloum Rural Health Care Project
PN-AAJ-176 Peru: CARE OPG Water Health Services Project
PN-AAJ-621 Korea Health Demonstration Project

PL 480 FOOD AID

Program Evaluation:

- PN-AAJ-622* PL 480 Title II: A Study of the Impact of a Food Assistance Program in the Philippines

Project Impact Evaluations:

- PN-AAH-851* Morocco: Food Aid and Nutrition Education
PN-AAJ-623 Sri Lanka: The Impact of PL 480 Title I Food Assistance
PN-AAL-015 PL 480 Title I: The Egyptian Case
PN-AAL-021 The Impact of PL 480 Title I in Peru: Food Aid as an Effective Development Resource

WOMEN IN DEVELOPMENT

Discussion Paper:

- PN-AAH-725* Assessing the Impact of Development Projects on Women

POPULATION

Discussion Paper:

- PN-AAG-672* Study of Family Planning Program Effectiveness

Program Evaluations:

- PH-AAH-425* A.I.D.'s Role in Indonesian Family Planning: A Case Study with General Lessons for Foreign Assistance
PH-AAH-006 Third Evaluation of the Thailand National Family Planning Program

WOOD ENERGY

Special Study:

- PN-AAH-747* The Socio-Economic Context of Fuelwood Use in Small Rural Communities

QUESTIONS AND ANSWERS ABOUT ARDA

- What is ARDA?** ARDA, "A.I.D. Research and Development Abstracts", is a quarterly abstract journal issued by the Division of Documentation and Information, Bureau for Program and Policy Coordination.
- What is the goal of ARDA?** The goal of ARDA is to transfer development and technical information to active practitioners in development assistance.
- For whom is ARDA published?** ARDA's target audience is A.I.D. staff worldwide and selected key institutions in developing countries. Such institutions are government agencies, universities, libraries, research organizations, and other public and private sector organizations.
- What materials are abstracted in ARDA?** ARDA presents abstracts of AID-funded current and less recent research studies, state-of-the-art reports, sector analyses, special evaluations, and other documents which, taken together, describe a broad spectrum of international development experience.
- To whom do I address additional questions regarding ARDA?** Please direct all correspondence and requests for further information to:
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Agency for International Development
Washington, D.C. 20523
U.S.A.

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- Qu'est-ce qu'ARDA?** ARDA, "A.I.D. Research and Development Abstracts (Résumés sur la Recherche et le Développement de l'Agence pour le Développement International)", est une revue trimestrielle des abrégés publiés par la Division de la Documentation et des Informations, Bureau de Coordination de Programmes et Politiques.
- Quel est l'objectif d'ARDA?** Le but d'ARDA est de transmettre des informations techniques sur le développement à ceux qui prêtent assistance au développement.
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- Que contiennent les résumés d'ARDA?** ARDA présente des résumés des recherches actuelles et moins récentes financées par A.I.D., des rapports sur l'état actuel du développement, des analyses de différents domaines, des évaluations spéciales, et d'autres documents. Le tout ensemble décrivent une vaste étendue d'expériences dans le domaine du développement international.
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USER'S GUIDE TO ARDA CITATIONS

Item number	[101]	Document number
				PN-AAK-592
				MF \$3.24/PC \$28.47
Title		Soybean seed quality and stand establishment; proceedings		Microfiche/ Paper Copy prices
Author(s)		Sinclair, J.B.; Jackobs, J.A.		
Institution(s)		University of Illinois at Urbana-Champaign. College of Agriculture. International Soybean Program		
Meeting		(Conference on Soybean Seed Quality and Stand Establish- ment, Colombo, LK, 25-31 Jan 1981)		Serial title and number, date, pagination, and language
Supplementary note(s)		<i>INTSOY series, no. 22, 1982, xiii, 206 p., En</i> Published by University of Illinois at Urbana-Champaign		
Project number		93105600		Publisher
Contract/Grant		AID/ta-C-1294		

Soybean research has shown that both physical and biological factors are responsible for reduced seed quality and vigor, that stand establishment depends on seed quality, and that seed quality is directly influenced by weather conditions during seed maturation and harvest and by subsequent storage conditions. Because knowledge of these facts remains largely fragmented and is not being communicated to farmers, the International Soybean Program (INTSOY) hosted an international conference in Sri Lanka for research scientists and extensionists to correlate current knowledge on soybean seed quality and stand establishment, discuss ways to communicate this knowledge to farmers, and determine future research needs.

The conference proceedings presented in this volume include: (1) 19 invited papers and abstracts of 13 volunteered papers on soybean seed maturation, genetic differences in seeds, the effect of weather, harvesting and planting procedures, and the role of insects and pathogens; (2) 11 country reports from various Asian nations; and (3) reports from three working committees on soybean production, crop protection, and storage and mechanization

In the plenary sessions, the speakers voiced a number of proposals on what emerged as a major concern among the delegates—the importance of seed quality in expanding soybean production in tropical and semi-tropical areas. Pointed out in particular was the complexity of soybean seed production in the tropics and semi-tropics due to the high humidity and temperature levels that prevail throughout the year. Other themes sounded were the necessity for good seed to make soybean an economical crop and the nutritional importance of soybeans.

All information presented during the conference related to seed production, technology, and storage and to seed certification in tropical and semi-tropical developing countries. Such information is directly related not only to INTSOY goals, but to complementary efforts of other international donors such as the Food and Agriculture Organization's ongoing Regional Field Food Crops project in North Africa and the Middle East.

Abstract

To facilitate rapid and accurate processing of your requests for documents from this issue of ARDA, please observe closely the ordering instructions found on the page following the last abstract.



GENERAL DEVELOPMENT

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PN-AAL-007

MF \$1.08/PC \$8.45

Private sector, public sector, and donor assistance in economic development: an interpretive essay

Wolgin, Jerome M.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
A.I.D. program evaluation discussion paper, no. 16, Mar 1983, 52p. + attachment : En

To provide A.I.D. with a view of how host country policies, coupled with donor actions, have fostered vital private enterprise economies in developing countries, a study, herein presented, was made of the development history of four countries which have dramatically raised their peoples' standard of living in the last 20 years - Malawi, Cameroon, Thailand, and Costa Rica.

After briefly reviewing the structural changes in the economies of the four countries, the study profiles their private sectors, noting the types of enterprises present and the linkages between them. Next, the role of markets in development and the limitations of purely market-oriented strategies are discussed and reasons for government interventions in markets listed. Finally, each country's political economy and role in the world economy is outlined.

The study concludes that a free and competitive private sector is efficient in allocating resources and that public policies and donor interventions can, if wisely targeted, have a beneficial effect on such enterprises. Donors are encouraged - with some caveats - to help developing country governments facilitate the expression of creative energies within the private sector.

Twenty-four case studies illustrate the report's arguments.

252

PN-AAL-139

MF \$1.08/PC \$3.77

People centered planning: the USAID/Philippines experience

Carner, George; Korten, David C.

National Association of Schools of Public Affairs and Administration; U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development; U.S. Agency for International Development. Bureau for Asia. Philippines
NASPAA working paper, no. 2, Mar 1982, 21p. + appendix : En

9360096

AID/DSAN-CA-0180

Arguing that conventional planning methodologies tend to stress the expansion of modern sector economic activity and welfare measures to meet the basic needs of the poor, the authors of this report describe efforts by USAID/Philippines to develop a people-centered planning methodology aimed at identifying and relieving constraints to productive self-help action.

Available indigenous data on household survival strategies of the poor were examined in conjunction with macro-level analyses to provide a framework for determining the causes of poverty in the Philippines. Results of the analysis were used to formulate the current USAID/Philippines assistance strategy, which aims at increasing productive employment through pro-

grams to develop rainfed resources and rural private enterprises, manage local resources, and reduce fertility and infant mortality. A proposed USAID/Philippines project to begin applying the new strategy is briefly described. A concluding section of the report notes the importance of household-level data for development planning and various lessons regarding the conditions necessary for successful Mission-level innovation. An analysis of survival strategies of landless agricultural workers is appended.

253

PN-AAM-194

MF \$2.16/PC \$20.93

Dissent, objectivity and ethics in program evaluation

Hubbell, Robert L.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
May 1979, 157p. : En

Provoked by an instance in which a member of an A.I.D. evaluation team felt that inadequate attention had been given to his dissenting views, a study was undertaken of A.I.D. evaluation procedures, ethics, and objectives. Findings are herein presented.

After stating the problem and reviewing selected writings about evaluation, the author examines the codes of ethics of three professional associations/consultant organizations. A code of ethics for the emerging profession of evaluation is then presented, followed by findings obtained during interviews with A.I.D. evaluation and contract officers, Mission personnel, and evaluation contractors.

The author concludes that although the case in question was indeed an isolated instance, it contained several aspects of general concern - a scope of work which sought opinions on many subjects rather than evidence about a few, a lack of understanding of the nature of evaluation, emphasis on processes rather than project impacts, and insufficient resources with which to carry out the evaluation. Dissent, it is suggested, may be valuable in that it can bring to evaluations a breadth of vision necessary to reflect reality. Recommendations address the need to achieve both breadth and objectivity in evaluations.

A 25-item annotated bibliography, sample codes of ethics, and other supporting materials are appended.

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PN-AAM-318

MF \$1.08/PC \$1.95

A.I.D. partnership in international development with private and voluntary organizations

U.S. Agency for International Development. Bureau for Program and Policy Coordination
A.I.D. policy paper, Sep 1982, i, 12p. : En

Although A.I.D. views private voluntary organizations (PVO's) as its development partners, both as intermediaries for A.I.D. programs and as independent development agencies, historically no clear policy has governed AID-PVO relationships. To fill this lacuna, this paper defines a policy framework within which A.I.D. and PVO's can work.

The broad objectives of the policy defined herein are to: increase the economic impact of PVO programs by strengthening program integration and focusing on field programs; discourage PVO dependence on U.S. government financing;



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reduce administrative costs by simplifying management procedures and creating a central office for PVO relationships within the A.I.D. Food for Peace and Voluntary Assistance Bureau; and ensure that A.I.D. funds are used in ways that will reflect its legislative mandate, while giving full play to the unique capabilities of PVO's. To these ends, nine principles and/or requirements for A.I.D. Offices and Missions that will ensure effective implementation of the policy objectives are enumerated. The paper concludes with a set of operational guidelines for programmatic and administrative mechanisms governing the AID-PVO partnership.

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PN-AAM-324

MF \$1.08/PC \$1.69

Private enterprise development

U.S. Agency for International Development. Bureau for Program and Policy Coordination

A.I.D. policy paper, May 1982, 10p. : En

The development history of the past two decades confirms the importance of private enterprise and individual initiative in promoting Third World economic growth. This policy paper outlines A.I.D.'s strategy for strengthening private enterprise.

The paper, while noting the legitimate role of the public sector, reviews A.I.D.'s emphasis on private enterprise within the context of the Agency's central objectives and of its Congressionally-mandated task to utilize the private sector in providing development assistance. Constraints to expanding private enterprise development (e.g., inappropriate government policies, weak capital markets) are identified and ways of assessing their seriousness suggested. The primary emphasis of A.I.D.'s efforts to alleviate these constraints, it is shown, will be to encourage policy reform and improve market functioning, with focus on the priority sectors of agriculture, agribusiness, small- and medium-scale industry, and privately operated service enterprises. Other interventions will upgrade labor and management skills, stimulate technology transfer, and develop financial markets. Recommendations for implementing this strategy address A.I.D. staffing needs, project approval and procurement procedures, and appraisal of project performance.

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* PN-AAJ-618

MF \$2.16/PC \$17.55

Private sector: ideas and opportunities; a review of basic concepts and selected experience

Hageboeck, Molly; Allen, Mary B.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation

A.I.D. program evaluation discussion paper, no.14, Jun 1982, v.p. : En

* Document contains oversize pages available only in microfiche

In response to the U.S. government's emphasis on private sector initiatives in the development process, A.I.D.'s Bureau for Program and Policy Coordination has been investigating both A.I.D. and non-A.I.D. efforts to foster private enterprise as a means of increasing the resource base and momentum of development. This paper presents preliminary findings of these studies.

The first section, written from the entrepreneur's perspective, examines market processes and other key factors influencing the growth of private enterprise in developing countries. Market size, specialization, and participants are considered as is the relationship between market size and enterprise size. Among the other factors discussed are political systems and practices, governmental policy interventions, infrastructure, financial systems, sociocultural practices, and the availability of capital, business expertise, and technology.

In Section II, the authors examine the effectiveness, and so far as possible, costs of specific approaches to fostering private enterprise. These approaches have tended to take two forms: policy reforms and specific programs/projects to directly assist private enterprise, the latter including feasibility studies, promotion of business ventures through the conference approach, business clearinghouses, trade fairs, management training, technology transfer, the development of infrastructure and financial systems, and capital assistance.

The final section examines several private sector ventures which have had visible development benefits as a basis for identifying ways for A.I.D. to assess the impacts of existing and future programs. The authors find that tools are needed for evaluating both the impact of many private enterprises on the economy as a whole and the impact of a single firm on its immediate environment.

The authors conclude that (1) market mechanisms, when allowed to operate freely, will provide incentives to which the private sector will respond and (2) relatively small public sector investments can effectively stimulate private sector development resources. An 8-page bibliography, and lists of pertinent A.I.D. projects, case studies, and evaluation publications are appended.

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PN-AAM-325

MF \$1.08/PC \$2.21

Bureau for Private Enterprise policy paper

U.S. Agency for International Development. Bureau for Program and Policy Coordination

A.I.D. policy paper, May 1982, 14p. : En

A.I.D.'s Bureau for Private Enterprise (PRE) was established to develop and experiment with new initiatives in private sector development and to support and supplement the private sector development programs of A.I.D. Missions and other Bureaus. This A.I.D. policy paper describes PRE's strategy, roles, and processes.

The paper first briefly discusses the rationale and objectives of A.I.D.'s private sector initiative, noting challenges to its implementation and placing it within the context of similar international programs. A strategy for PRE program activities is then outlined: target countries and sectors are identified; potential investment modes considered; investment selection criteria presented; and planned investment reconnaissance missions discussed. The provision of technical assistance and policy advice is also treated. Next, the role of PRE within A.I.D. and PRE's relationships with other Central Bureaus are defined. Procedures for identifying, developing, authorizing, implementing, and evaluating private sector projects are then specified, the process of developing private sector policy is described, and PRE's ties with external parties are considered. Finally, FY82 and 83 funding sources are identified and a long-term budget strategy is proposed.



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PN-AAN-457
MF \$1.08/PC \$2.47

Co-financing

U.S. Agency for International Development. Bureau for Program and Policy Coordination
A.I.D. policy paper, May 1983, 16p. : En

Co-financing is a useful method of development finance which offers potential for leveraging and increasing the effectiveness of A.I.D.'s resources. Further, co-financing encourages involvement in the development process by both external private sector lenders and indigenous private firms; permits cooperation with donors who have extensive resources but little experience in assistance methods; and can strengthen A.I.D.'s influence on the development process. This policy paper reviews the co-financing experience of A.I.D. and other donors and discusses policy and implementation issues.

First, co-financing by the Organization for Economic Cooperation and Development and by Multilateral Development Banks, as well as A.I.D.'s co-financing arrangements with other official sources, are reviewed. The question of additionality – whether co-financing actually increases capital flow to developing countries – is examined with reference to co-financing with official donors, with export credits, and with commercial banks. Guidelines for Missions to use in identifying and assessing opportunities for using co-financing to encourage private sector participation in development are then presented, followed by a discussion of source/origin procurement requirements and direct private sector lending. It is noted in conclusion that care should be taken by A.I.D. to prevent loss of control in planning and implementing joint projects; and that co-financing should never become an end in itself.

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PN-AAM-019
MF \$1.08/PC \$4.42

Children and women in traditional and cash crop agriculture: a preliminary cross-section study of economic development in Guatemala

Stein, John P.

Rand Corp.; U.S. Agency for International Development.
Bureau for Program and Policy Coordination. Office of Policy Development and Program Review

Rand note, no.N-1547-AID, Jul 1982, 27p. : En
9300088
AID/OTR-G-1822

To determine the roles played by women and children in traditional and cash crop agriculture, data were gathered on 2,000 Guatemalan families, 1,000 in four rural villages and 1,000 in a larger, more modern community near Guatemala City. Results of the survey are reported in this second of two studies of rural Guatemalan families designed to support the hypothesis that economic development creates incentives to reduce population growth.

Preliminary analysis of the data showed that while the traditional subsistence crops employ mostly the heavy labor of adult men, the principal cash crops use relatively more of the light labor of women and children; thus cash crop agriculture is an inducement to larger family size. However, because in the present case the shift from agricultural to nonagricultural work involves more people than does the shift from traditional to cash crops, the net result is for economic development to reduce population growth.

Further, purchased inputs appear to be used less in traditional than in cash crops and less in villages than in the modern community. Although risk could account for this finding, it may also be due to the greater efficiency of production in cash crops and in the more modern community. Results suggest that since both children and women may be more productive in family agriculture relative to adult men than previously estimated, the shift away from agriculture reduces the incentive to population growth.

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PN-AAM-389
MF \$1.08/PC \$5.72

Woman-specific strategy statement: the case of Egypt

Youssef, Nadia H.

International Center for Research on Women; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Planning and Budgeting
Mar 1980, 41p. : En

As half of developing country populations, women represent a potentially significant but largely untapped portion of the productive labor force. This case study examines issues and strategies relevant to integrating women into the productive economy in Egypt.

Current evidence on the relationship between female education, employment, and fertility is outlined, with stress on the Egyptian context. It is recommended that women's often hidden economic activities be brought to light and measures taken to translate them into the wider economy, and suggested that improvement in women's socioeconomic status can lower fertility rates. Educational trends are analyzed, showing that Egyptian women have become literate, participated in primary, secondary, and university education, and reduced school dropout rates more rapidly than men have, and evidence is presented on women's increasing roles in agricultural and nonagricultural activities. Long-term targets for improving women's condition are outlined, and the structural changes needed to integrate women into the Egyptian economy examined, especially – due to the declining importance of agriculture – in the industrial and service sectors. The paper concludes by outlining specific actions for absorbing women into Egypt's employment structure and for targeting those women most in need of attention and those for whom integration into the economy is most feasible.

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PN-AAM-449
MF \$2.16/PC \$21.06

Priorities in the design of development programs: women's issues

Buvinic, Mayra; Youssef, Nadia H.; et al.

International Center for Research on Women; U.S. Agency for International Development. Bureau for Development Support

Oct 1980, 158p. : Bibliography p.141-158, En
9310003
AID/DSAN-C-0231

In 1979, the International Center for Research on Women and A.I.D.'s Development Support Bureau (DSB) jointly explored ways to incorporate the concerns of developing country women into DSB programs. Four background papers and two



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reports that resulted from this effort are presented in this volume.

The first two papers address the causes and consequences of sex-related biases that exclude women from economically productive work. The following three papers address, respectively, strategies for expanding women's access to credit, education, and services aimed at enhancing women's productivity and income-generating capacity. The last paper, a review of a DSB-commissioned state-of-the-art paper, identifies critical factors influencing the relationship between rural women's social status and their reproductive behavior and explores the impact of rural development projects on women's status and fertility. Appended is an 18-page bibliography (1934-80).

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PN-AAM-831

MF \$4.32/PC \$50.44

Women in development: 1982 report to the Committee on Foreign Relations, U.S. Senate and the Committee on Foreign Affairs, U.S. House of Representatives

McPherson, M.P.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Women in Development

31 Jan 1983, 395p. + appendices : En

Since 1980, A.I.D. has increasingly recognized women as important agents of development and has expanded efforts to integrate women into its programs and projects. So concludes A.I.D.'s 1982 report to the U.S. Congress on women in development (WID).

The bulk of the report is devoted to describing the status of individual projects and activities involving women which have been initiated by A.I.D.'s central and regional bureaus. Described are projects addressing the specific needs of women or girls in traditional activities, women's components of integrated development projects, and projects which train women in order to increase their income-earning capacities. A final section presents the report's conclusions, which include that: funds obligated for WID activities in FY80 and FY81 exceeded planned amounts; A.I.D.'s focus has shifted from women-specific projects to integrating WID components into regular projects; and substantial efforts have been made to sensitize A.I.D. staff to WID concerns. A.I.D.'s current WID policy is also briefly summarized. Appendices include an 89-item bibliography (1977-82).

263

PN-AAM-915

MF \$3.24/PC \$30.68

Profile of Liberian women in marketing

Kaba, Brahim D.; Smith, Joyce O.; et al.

University of Liberia; Liberia. Ministry of Planning and Economic Affairs; U.S. Agency for International Development. Bureau for Africa. Liberia

Profile of Liberian women in development, Mar 1982, iii, 231p. : En

The major roles played by women in Liberia's food markets are profiled in this study, intended for use by planners of development assistance programs.

After indicating the inadequacy of existing data on the subject, the authors define marketing in the Liberian context,

identify factors influencing the entry of Liberian women into the cash economy, and set forth a typology of Liberia's 120 different marketplaces, including estimates of the total number of market sellers and their areas of location and concentration. The roles played by different categories of women in these markets are discussed and the major constraints to women's participation in marketing identified. Activities of existing market associations are analyzed. Finally, case studies are used in developing a general profile of Liberian market women. It is concluded that although women play an increasing and controlling role in Liberia's food distribution and marketing system, especially by selling locally produced agricultural goods and imported processed foods, marketing conditions for women continue to deteriorate relative to general economic development. Policy recommendations to redress this situation are included.

264

* PN-AAN-039

MF \$3.24/PC \$31.59

Developing nations: challenges involving women; proceedings of the women in development conference

Stoecker, Barbara J.; Montgomery, Evelyn I.; et al.

Texas Tech University. International Center for Arid and Semi-arid Land Studies; Texas A and M University; U.S. Agency for International Development. Board for International Food and Agricultural Development Support Staff

(Women in Development Conference, Lubbock, TX, US, 10-11 Nov 1980)

1982, ix, 251p. : En

9311282

DAN-1282-G-GS-0116-00; DAN-1282-G-GS-0103-00

* *International Center for Arid and Semi-Arid Land Studies, P.O. Box 4620, Texas Tech University, Lubbock, TX 79409 U.S.A.*

Proceedings of a November 1980 conference on challenges and opportunities facing Third World women are herein presented.

The first section is composed of papers treating critical women in development (WID) issues and the various opportunities afforded women in A.I.D. projects. A formal paper on the development process as a whole and conference workshops on key development areas - e.g., agriculture, nutrition, land tenure - and the role played in them by women are presented in the report's second section. In section three, papers on the dynamics of social and cultural change and on the views of women in international development are provided along with a panel discussion on the role of women in culturally sensitive programs. Two papers and five workshop discussions - including case studies - on issues and alternatives in planning WID projects, along with 12 recommendations aimed at helping conference participants maintain professional involvement in the field of WID conclude the report.



GENERAL DEVELOPMENT

265

* PN-AAN-085
MF \$2.16/PC \$21.71

Women's informal associations and the organizational capacity for development

March, Kathryn S.; Taquq, Rachele
Cornell University, Center for International Studies, Rural Development Committee; U.S. Agency for International Development, Bureau for Science and Technology, Office of Agriculture

Monograph series, no.5, Sep 1982, viii, 156p. : Bibliography p.141-156, En

9310011

AID/TA-BMA-8

* *Rural Development Committee, Center for International Studies, 170 Uris Hall, Cornell University, Ithaca, NY 14853*
\$6

Development planning agencies, bound to a theory of formal organizational behavior, often overlook the political and economic importance of women's informal associations, according to this study of the subject.

Initial chapters examine the general underestimation in development studies of women's informal associations, along with the latter's nature, structure, and bases in different countries. The study's central section analyzes two types of strategies employed by women's informal associations - defensive strategies, undertaken in response to adversity or crisis, and active strategies, aimed at promoting women's autonomous development. A practical methodology for assessing the development significance of women's informal associations is set forth and used in analyzing patterns of authority and power in women's economic and ritual associations. The associations most significant for development planning purposes are found to be those capable of active strategies, purposively economic or political, and equitable in redistributing resources or power. Finally, personal and institutional linkages between informal women's associations and the formal sphere are analyzed and their implications for development planning explored. It is

suggested in conclusion that an understanding of informal women's associations can supply insight into the dynamics, structure, and possibilities of women's worlds. Appended is a 197-item bibliography (1932-81).

266

PN-AAN-433
MF \$1.08/PC \$4.16

Role of women in modernizing agricultural systems

Safilios-Rothschild, Constantina
Pennsylvania State University; U.S. Agency for International Development, Bureau for Program and Policy Coordination, Office of Women in Development

May 1981, 31p. : En
OTR-147-80-97

Although masked by class and sex biases and the scarcity of household labor and income data, available evidence, summarized in this report, indicates that women play a critical role in modernizing developing country agricultural systems.

A review of pertinent evidence from countries in A.I.D.'s major geographical regions reveals that women, in addition to their household and childcare tasks, play an active and varied role in agriculture, e.g., as producers (generally in independent small holdings), farm managers, unpaid family workers, and - especially in countries where the percentage of landless households is increasing - as agricultural wage laborers whose work is essential to household survival. On the basis of this evidence, a typology is proposed for designing agricultural projects affording men and women equal opportunity for productivity and income, and strategies are discussed to address the key rural development indicators comprising the typology - labor and land scarcity and supply, the percentage of female-headed households, and the availability to both men and women of off-farm employment. The role of women's cooperatives and associations is stressed. The study notes in conclusion that greater inclusion of women in developing country agricultural projects is needed to increase productivity and household income and food availability, diminish sex and class inequalities, and reduce female rural-to-urban migration.



Women comprise an increasingly large part of the work force in many developing countries.

Economic development of Korea: sui generis or generic?

Steinberg, David I.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation *A.I.D. evaluation special study, no.6*, Jan 1982, iv, 50p. : En
* Document contains oversize pages available only in microfiche

Korea's phenomenal economic growth since 1963 is the subject of an eight-volume study prepared by the Korea Development Institute (KDI) and Harvard Institute for Economic Development. The study findings (seven volumes have been published to date) are herein reviewed in an analysis focusing on the replicability of the Korean experience and on the extent to which A.I.D. assistance has contributed to Korean success.

In chapters covering, in turn: historical and cultural factors in Korean development; rural development; trade, industry, and finance; entrepreneurship; foreign aid; education; population, urbanization, and health; and income distribution, the author shows that Korea cannot be considered a model for other developing countries, partly because of its unique culture and history (which have both positively and negatively influenced development) and partly because development has occurred in a way and a setting that directly contradict current A.I.D. priorities: e.g., economic growth resulted from intensive export promotion benefiting urban dwellers rather than the rural poor; Korea remains a highly centralized, nonparticipatory society; private enterprise is weak and cooperatives, labor unions, and commercial banks are government-controlled; women's status is low; neither income distribution nor public health have been primary goals of the Korean Government; and education, while open to society as a whole, in practice serves to reconfer prestige on an established elite.

U.S. assistance, the author concludes, has been of only peripheral value in Korea's development, having been more effective at the project than the policy level; P.L. 480 aid has in fact inadvertently deterred grain pricing reforms. The training abroad of Koreans has perhaps been the most significant U.S. contribution. Several recommendations are made regarding future priorities for A.I.D. assistance in Korea, and the implications of the Korean experience for A.I.D. development strategies are drawn. Regarding the KDI-Harvard study itself, the author finds it an important analysis, but limited by its sole focus on economic development and its neglect of such critical factors as competition with North Korea, world market conditions, and the role of the military.

Private sector: the tortoise walk: public policy and private activity in the economic development of Cameroon

Schiavo-Campo, Salvatore; Roush, James L.; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation *A.I.D. evaluation special study, no.10*, March 1983, xvi, 55p. + 10 appendices : En

Cameroon's economic performance over the past 20 years, unlike that of most developing countries, has been remarkably

good. To help determine the reasons for this success, this paper examines the effects of public policies on private sector development in Cameroon.

Initial sections describe Cameroon's demography and its history and review political and economic development since the country gained independence in 1961. Next, the principles underlying Cameroon's public policies – national unity, political and social order, a mixed degree of government control of the economy, and a slow and cautious approach to economic development – are outlined. Specific government policies and their economic effects are then detailed. External policies are described as being nonrestrictive in regard to international payments and currency exchange, but overly restrictive in regard to commerce, especially exports. Internal economic policies regarding agriculture, finance, and industry are shown to combine direct intervention with a laissez-faire approach. Thus, the government limits its use of price controls and refrains from manipulating food crop production, but has controlled interest rates and promoted import substitution at the expense of local entrepreneurs. A review of the role of U.S. and other donor assistance to the private sector shows foreign aid to be an important source of import capacity, although increasingly overshadowed by oil revenues. It is recommended that future U.S. aid specifically support economic policies oriented toward growth. A detailed case study of one of Cameroon's parastatals, the Corporation for the Development of Cotton, is then presented, and the Corporation's success in providing economic opportunities to small farmers without destroying their economic incentives noted.

The study concludes that, while the effects of public policies on private development in Cameroon have been mixed, Cameroon's experience demonstrates the viability of a gradual, cautious approach to economic change. More detailed discussions of select items and a 6-page bibliography citing works in French and English (1954-82) are among the appendices.

Private sector and the economic development of Malawi

Wolgin, Jerome M.; Clapp-Wincek, Cynthia; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation *A.I.D. evaluation special study, no.11*, Mar 1983, xiii, 46p. + 5 appendices : En

Malawi's economic progress since independence in 1964 has been unusually rapid. The private nonagricultural economy has developed, despite a lack of indigenous entrepreneurs; per capita GDP has grown at an annual rate of 2.9%; the government has shifted from a net dissaver to a net saver; employment in the wage sector has increased over 150%; and manufacturing output has almost doubled.

Fundamental to this progress, according to this evaluation of the private sector's role in Malawi's economic development, was the government's market-oriented economic policy framework, which permitted development of private enterprise with minimal governmental interference. Three partly private and partly public holding companies were developed, which gradually gained control over much of the private economy, while management remained generally in the hands of the expatriate firms. An Investment Development Bank guided by expatriate personnel mobilized capital and acted as both lender and investor in new enterprises.

The years 1977-81, when management was subjected to increased political influence leading to bad economic decisions, brought a downturn in the economy which was worsened by the international recession. In the past 2 years a return has been made to less politicized management; the policy of easy credit is being revised and reorganization of the public holding companies is underway.

The main lesson learned from Malawi's experience is that public policies supportive of market-oriented growth are a major determinant of economic progress. A constructive approach includes: (1) reliance on market forces to determine the allocation and use of resources; (2) the ability to mobilize capital (especially foreign aid); (3) a pragmatic approach to the use of foreign capital and expatriate management personnel; and (4) government efforts to create an operating environment conducive to market development and for-profit business expansion. Political interference in economic affairs will ultimately lead to noneconomically motivated decisions, often obstructing sustained economic growth. Fifteen tables illustrate the text.

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PN-AAL-013

MF \$1.08/PC \$9.62

Evaluation of small enterprise programs and projects: issues in business and community development

Hunt, Robert W.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation *A.I.D. evaluation special study, no.13*, Jun 1983, vii, 59p. + attachments : Bibliography p.53-59, En

Current interest in small enterprise development reflects a felt need to understand the 20-30 year heritage of efforts to promote this sector, so that future programs may have optimum effects. Based on a review of literature and field practices, this paper records and analyzes evidence regarding effective small enterprise programs.

The author explores, in turn, definitions of the small enterprise sector, the effects of definition on the project design and evaluation process, and the question of project impacts on firms, individuals, and communities. He concludes that research on small enterprise interventions, though limited, suggests that such programs can increase employment and enhance income among the poor, encourage efficient use of capital, and promote integrative linkages throughout the economy.

The effects of specific programmatic (e.g., credit provision, the use of financial intermediaries) and external (political, institutional, social, and psychological) factors are considered next. The variety of factors considered is seen as suggestive of major differences in the emphases of past projects. Assumptions and evidence relating to each factor are reviewed and assessed, and observations regarding the possible advantages of one type of approach over another in particular settings are made. The primary purpose of the analysis, however, is to organize factors for the use of evaluation teams.

Finally, to further clarify the various diverse assumptions about what makes small enterprises work, three fundamentally different approaches to enterprise development - resource transfer, psychosocial motivation, and community-building - are identified and evaluated. It is suggested that awareness of these categories can provide evaluators with a sensitivity to the

large range of alternative assumptions about project inputs and sequences as well as to all possible project outcomes.

Appended are a comprehensive list of development indicators appropriate for small enterprise projects and a 7-page bibliography (1954-82).

271

PN-AAL-014

MF \$1.08/PC \$8.71

Private sector: regulation of rural markets in Africa

Bates, Robert H.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation *A.I.D. evaluation special study, no.14*, Jun 1983, viii, 42p. + attachments : En

In Africa, government agricultural pricing policies often undermine production incentives. So concludes this study of the forms and effects of government intervention in rural African agricultural markets.

The authors first review government regulation of African export crops, including coffee, cocoa, palm oil, cotton, sugar, and bananas. Although privately produced, these crops are required by law to be sold through state-controlled marketing boards originally designed to stabilize prices for the benefit of farmers. Instead, the boards have heavily taxed export crops in order to finance development of nonfarm sectors, obtain foreign exchange, and pay their own high operating costs. As a result, prices received by farmers for their crops are often less than half of international prices. Many farmers have responded by shifting to production of less heavily taxed crops, and high marketing costs imposed by the boards have played a part in dramatic declines in exports from Nigeria, Senegal, Ghana, and the Sudan. Export crop producers are also burdened by the high level of currency overvaluation in many African countries which further undermines production by reducing the value of export earnings.

In the second part of the paper, the authors show how African governments regulate domestic food prices. Marketing bureaucracies act to lower food prices but in so doing increase marketing costs and price inefficiency and weaken production incentives. Governments also use trade policies to lower food prices by banning exports, allowing duty-free imports, and maintaining overvalued currencies. The origins of these food pricing policies are traced to the need of governments to satisfy the demands of politically powerful urban food consumers for low-cost food.

In a final section, a proposal is presented for reforming the marketing boards which would entail allowing markets to make and retain a limited amount of profits to encourage efficient operation. The boards would be made accountable by including producers and cooperative society members on executive committees.

272

PN-AAL-002

MF \$2.16/PC \$24.96

Assisting small business in Francophone Africa: the Entente Fund African Enterprises program

Malley, Raymond C.; Claude, Colette; et al.
 U.S. Agency for International Development. Bureau for Africa.
 Regional Economic Development Services Office; U.S.
 Agency for International Development. Bureau for
 Program and Policy Coordination. Office of Evaluation
A.I.D. project impact evaluation report, no.40, Dec 1982, xix,
 30p. + 9 annexes : En
 6250715

The Entente Fund's African Enterprises Project is designed to develop a modern entrepreneurial business class in the five member nations of Benin, Ivory Coast, Niger, Togo, and Upper Volta. Reported here are the findings of the first impact evaluation since A.I.D. began funding the project in 1973.

A.I.D.'s objectives are to provide, through the Fund, monies and technical assistance to six development banks in order to assist African-owned companies and to encourage development and commercial bank lending to these companies. However, although 572 subloans have been made to date to develop a variety of economic sectors, these objectives have not been achieved. Subloans have been too few (many to large firms) to significantly affect national economies; four of the six banks show excessive subloan delinquency rates; and failure to implement the technical assistance plan has limited the positive achievements of borrowers. Further, the development banks as a whole, as well as the promotion centers and national guaranty funds, have not been effective in assisting small businesses. The banks' ability to extend small credits has not improved and they provide subborrowers little or no technical assistance. Reasons for the program's failure are inadequate management and insufficient resources on the part of the involved institutions, the volatile economic and financial climate in which the program has had to operate, the lack by the Entente Fund - a nonfinancial institution - of the approach and discipline needed to manage a high-risk credit program, frequent changeovers in U.S. advisors, and inadequate A.I.D. supervision.

The project has taught that: (1) subloan criteria should be well-defined, with emphasis on higher quality subloans yielding real economic returns, including increased employment; (2) implementing institutions should be carefully assessed and A.I.D. staff need credit expertise to monitor them; (3) borrowers should make reasonable financial contributions; (4) implementing institutions and borrowers need meaningful technical assistance; and (5) changes in the financial and economic climate markedly affect the success of a small business loan program.

Specific issues are discussed further in nine appendices.

273

PN-AAL-018

MF \$2.16/PC \$19.89

Private sector evaluation: the Dominican Republic

Culbertson, Robert E.; Jones, Earl; Corpeno, Roberto
 U.S. Agency for International Development. Bureau for Latin
 America and the Caribbean. Dominican Republic
A.I.D. evaluation special study, no.16, Jun 1983, xviii, 119p.
 + annexes : En

The single most important element contributing to the growth of the private sector in the Dominican Republic has been the integration, at both program and project levels, of training, technical assistance, and capital assistance. Thus concludes this paper, one of a series of country studies examining A.I.D. assistance to the private sector.

After describing historical, geographic, socioeconomic, and public policy factors relevant to private enterprise development in the Dominican Republic, the authors outline the Dominican institutional framework for promoting private sector growth, showing how lenders, training and technical assistance institutions (and organizations that support both credit and training institutions) help to bring about private sector growth as much as do external donors like A.I.D. Case studies of ten lending institutions (four *financieras*, two commercial banks, and four public sector banks) and of fourteen institutions that serve lenders by providing educational, training, and advisory services to credit recipients are then presented.

The authors find that public policy in the Dominican Republic - which has long encouraged the private sector to seek its own solutions - resulted in the private sector's discovery of the central role of training in the capital lending process. Since 1962, the entire private sector effort has been based on the principle that a financial institution must train before lending and an enterprise must be trained before borrowing. Other factors that have abetted private sector growth in the Dominican Republic include: a pervasive spirit of cooperation within the private sector; a high literacy rate and abiding belief in the value of education; and a positive attitude towards foreign assistance. Although the Dominicans have structured and carried out their own private enterprise development program, A.I.D., by being sensitive and responsive to their needs, has made several crucial contributions. Future development of this sector, as programs move to encourage entrepreneurship among lower-income strata, must, however, proceed cautiously, with consideration given to public subsidy of costly lending services.

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PN-AAL-009

MF \$2.16/PC \$25.09

Ventures in the informal sector, and how they worked out in Brazil

Tendler, Judith
 U.S. Agency for International Development. Bureau for Food
 for Peace and Voluntary Assistance. Office of Private and
 Voluntary Cooperation
A.I.D. evaluation special study, no.12, Mar 1983, xvii, 159p.
 + 2 appendices : Bibliography p.153-159, En
 PDC-0100-S-00-2019-00

Unusually high (92%-98%) repayment rates, a competent and dedicated staff, low overhead, ability to reach firms previously without access to formal credit and to attract public funding, and avoidance of political intervention are some of the strengths which have led many to consider the Northeast Union of Assistance to Small Businesses (UNO), a Brazilian PVO established in Recife in 1973, a model of how to provide credit to small businesses. Surprising weaknesses, however, such as high operating costs (ranging from 46% to over 100% of loan value), low productivity (especially in light of UNO's use of low-paid student workers), slow growth (reaching only 1% of the client population), inability to attract private sector financial support or become financially independent, and the failure of assisted firms to increase output, create new jobs, or gain

access to bank credit – cast doubt on the replicability of UNO's program. This study discusses these interrelated strengths and weaknesses in light of UNO's history, operations, and beneficiaries.

Many of UNO's weaknesses, it is argued, can be traced to the often forgotten characteristics of the small enterprise sector itself, e.g., that many small businessmen refuse to expand because of the increased managerial burdens involved or that assistance to businesses often results in saving rather than in creating jobs. Further, UNO's weaknesses are often inextricably tied to its strengths. For example, UNO's high costs and its lack of interest in "productive" clients are rooted in the same financial prudence – the decision to focus for the most part on providing established retail firms with modest amounts of working capital for ongoing activities – that has contributed to UNO's survival and good reputation.

Although UNO has produced a good organization, its small budget and limited horizons have exempted it to date – contrary to what might have been expected – from a concern for productivity, impact, or program costs. However, a major expansion and diversification under World Bank auspices currently in progress is forcing UNO, perhaps in spite of itself, to expose itself to these disciplines.

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PN-AAL-329

MF \$1.08/PC \$5.20

Rural savings, investment, and interest rates in developing countries: evidence from India

Iqbal, Farrukh

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Policy Development and Program Review; Rand Corp.

Rand note, no.N-1763-AID, Apr 1982, ix, 31p. : Bibliography p.29-31, En

9300088

AID/OTR-G-1822

While critics claim that artificially low interest rates inhibit rural savings and investment, there is evidence that such policies greatly encourage investment at a small cost in foregone savings. So concludes this study, based on a survey of 4,000 farm households in India, of the interest elasticities of rural savings and investment.

Relevant literature is briefly reviewed with an emphasis on the manner in which interest rate effects have traditionally been considered. The methodology of the present study is described and a model of interest rate determination outlined.

Detailed empirical findings for savings and investment functions are then presented. The results of stratifying the sample according to farm size are included, indicating that large farmers are more responsive to investment opportunities and interest costs. Results show that raising interest rates has a weak positive effect on savings but a relatively strong negative effect on investments. A low interest rate policy may be preferred, therefore, in countries where the rate of rural investment is below some socially desirable level. Appended are an explanation of the sample selection problem and a 29-item bibliography (1965-81).

276

PN-AAL-385

MF \$1.08/PC \$3.90

Size, composition, and other aspects of rural income in the semi-arid tropics of India

Singh, R.P.; Asokan, M.; Walker, T.S.

U.S. Agency for International Development. Bureau for Asia. India; International Crops Research Institute for the Semi-Arid Tropics

Economics program progress report, no.33, Jan 1982, 28p. : References p.26-28, En

Pitifully low farm incomes in semiarid, tropical India adversely affect human welfare and limit farmers' access to credit. This paper presents preliminary findings from the Village Level Studies (VLS) of rural income in six villages in three broad agroclimatic regions of semiarid tropical India.

The average median net annual income in the villages for cropping years 1975-76 through 1977-78 was less than \$50, with only 8% of 240 sampled households having per capita income above \$150 – the average income in India for 1976. Large farm households had significantly higher per capita income than did small farm and landless labor households. Since larger farm size is associated with larger families, total household income differences were even wider.

Farm income was found to be influenced by the agricultural labor market, the quality of the resource base, and access to productive cropping technologies. Low farm incomes also reflect the consequences of underinvestment in dryland agriculture. The authors conclude that where income levels are so low, lack of access to credit represents a substantial constraint to farmers' adoption of improved technologies. A study of rural financial markets in India is recommended. Attached is a 26-item list of references (1914-81).

277

PN-AAL-676

MF \$1.08/PC \$1.69

Effects of low interest rates on the poor in low income countries

Adams, Dale W.; Meyer, Richard L.

Ohio State University. Department of Agricultural Economics and Rural Sociology

19 Feb 1982, 12p. : En

Four problems encountered in efforts to help the poor in low-income countries through cheap agricultural credit policies are reviewed in this paper.

These arguments are that: (1) cheap credit policies force intermediaries to pay low rates on financial deposits, thus giving savers a lower rate of return and providing intermediaries with fewer deposit services; (2) loan leverage is inequitable, as lenders try to minimize their lending costs by stressing large loans to established borrowers; (3) when inflation causes real interest rates to be negative, purchasing power is transferred from lenders (or savers) to borrowers, to whom credit thus becomes a form of subsidy; and (4) loan default rates of 40-60% are common, seriously undermining the vitality of many financial intermediaries.

Although small loans to the poor may comprise the large majority of loans in default, the majority of the total value of loans in default often comes from medium and large loans held by the well-to-do. These trends nurture the concentration of income; even if they were eliminated, however, leverage would still favor the large borrower. Still, reducing the default problem and increasing the real rate of interest would at least substan-

tially lessen the problem. It is concluded that current cheap credit programs should be redirected toward encouraging savings.

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PN-AAL-716

MF \$5.40/PC \$75.79

Assessment of rural financial markets in Honduras

Graham, Douglas H.; Gonzalez-Vega, Claudio; et al.
Ohio State University. Department of Agricultural Economics
and Rural Sociology
Dec 1981, 2v. : En

A broad assessment of rural financial markets is useful prior to funding specific agricultural credit projects. In this study, nine researchers document the major factors affecting the performance of rural financial market institutions and programs in Honduras.

The report's first three chapters provide a macroeconomic perspective. The Honduran economy as a whole and the performance of its financial sector during the past two decades are reviewed, and trends in the global supply of agricultural credit and the relative performance of various institutional channels for rural credit are described. Next, the evolution of the Agricultural Development Bank's (BANADESA) loan portfolio and the bank's changing role in the rural credit scene are reviewed; BANADESA's lending costs and loan repayment experience are also considered. Subsequent chapters discuss savings mobilization in Honduras and report in detail the findings of an extensive 1981 farm credit survey. Following this, credit supervision by Honduran rural credit institutions is reviewed and a study of the role of credit in the recently formed agrarian reform asentamientos is presented. The report's final chapters analyze pricing policies and price incentives for crop agriculture and report on a field study of rural credit unions in Honduras; the potential for these credit unions to mobilize savings and to serve the credit needs of small farmers is noted. The authors conclude that a severe shortage of agricultural credit exists in Honduras. Detailed recommendations for measures to increase the supply of credit are provided. Extensive statistical data are included in the report.

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PN-AAL-728

MF \$1.08/PC \$6.63

Consequences of small farm mechanization on rural employment, incomes and production in selected countries of Asia; report of a joint ADC-IRRI workshop

International Rice Research Institute; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
(Joint ADC/IRRI Workshop on the Consequences of Small Farm Mechanization on Rural Employment, Incomes and Production in Selected Countries of Asia, Los Banos, PH, 14-18 Sep 1981)

18 Sep 1981, 46p. : En
9311026
AID/TA-C-1466

An A.I.D. project on the consequences of small farm mechanization on production, income, and rural employment in Asia

has supported both case studies and field research on mechanization. This report summarizes a workshop conducted by the two project implementors - the International Rice Research Institute (IRRI) and the Agricultural Development Council (ADC), providing abstracts of the papers presented.

The workshop's objectives were to present reports on ADC-funded case studies and some initial analyses resulting from IRRI field research. Four major topics were covered: (1) the general contributions of mechanization to development in the Asian rice-producing countries; (2) economic, technical, and social aspects of mechanization (including considerations of tractor use, postharvest operations, employment and the landless laborer, and irrigation); (3) major studies of the impact of mechanization in Central Luzon, Thailand, West Java, and South Sulawesi; and (4) industrial impacts. A final group of abstracts reviews the status of the project and its future plans.

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PN-AAL-822

MF \$2.16/PC \$23.40

Costs of agricultural lending, institutional viability, and lender behavior in Jamaica

Nyanin, Ohene O.

Ohio State University. Department of Agricultural Economics and Rural Sociology; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural Development and Development Administration
1982, xvii, 159p. : Bibliography p.151-159, En

The study reported here documents lending costs of the Jamaica Development Bank's (JDB's) Self-Supporting Farmers' Development Program (SSFDP), assesses the program's financial viability, and investigates the SSFDP's credit rationing behavior in the face of interest rate controls in an inflationary environment. The study is based on data collected from JDB records, including audited and unaudited financial statements, monthly expenditure statements, and loan account files.

The data were subjected to descriptive or tabular analysis. In addition, a cost function was estimated using a Cobb-Douglas type regression model employing the ordinary least squares estimation technique. Results showed that the SSFDP experienced high lending costs which increased substantially from 1974 to 1980. The total cost of lending ranged from about 23% of loans outstanding to almost 49%, for a period average of 26-35%. This high cost, coupled with administered low interest rates and high inflation, have compromised the SSFDP's financial viability and growth potential.

It was hypothesized that high lending costs and interest rate ceilings would force the SSFDP to alter the growth and composition of its portfolio so as to minimize losses and contain/reduce the rate of subsidy increases. Study findings show that this was not the case. It is concluded that either through choice or because of pressure by the government or the Inter-American Development Bank (the SSFDP's external source of funds), the SSFDP made no concerted or consistent effort to ration credit by non-price means so as to reduce the risks and costs in its portfolio. (Author abstract, modified)

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PN-AAL-827

MF \$1.08/PC \$2.73

Racionamiento de credito, costs de transacciones y estructura del mercado: el caso de Bolivia (Credit rationing, transaction costs, and market structure: the case of Bolivia)

Ladman, Jerry R.

Ohio State University; Syracuse University; Arizona State University; U.S. Agency for International Development. Bureau for Latin America and the Caribbean (Mercados Financieros Rurales en Paises en Desarrollo, Cochabamba, BO, 13-14 Feb 1981)

1981, 19p. + attachments : Es
9311169

This report focuses on the role of the costs of credit transactions in influencing the behavior of lenders and borrowers. The analysis of credit transaction costs in Bolivia shows how banks use transaction costs to ration credit to farmers requesting large loans. It shows, moreover, how agricultural banks that charge low interest rates exist alongside private lenders who charge high interest. If the banks desire to compete with the private lenders and gain a larger portion of the market, they must reduce transaction costs. If interest rates were relied upon to ration credit, it is more likely that a less important role would be played by transaction costs in rationing credit. (Author abstract, translated).

282

PN-AAL-848

MF \$1.08/PC \$1.04

Rural financial market performance: implications of low delinquency rates

Vogel, Robert C.

Ohio State University

American journal of agricultural economics, v.63(1), Feb 1981, p.58-65 : En

Spanish edition: PN-AAL-849

9311169

AID/TA-BMA-7

Unlike most developing countries, Costa Rica has not had a problem with non-repayment of agricultural loans. Delinquency rates in Costa Rica have in fact been lower for agricultural than for nonagricultural loans and lowest on loans to small farmers. This good performance is due largely to efficient techniques for gathering information about potential borrowers and incentives for borrowers to repay promptly to maintain access to bank loans which carry interest rates substantially below equilibrium. However, below-equilibrium interest rates imply excess demand and hence rationing. Such rationing tends to offset the benefits for the agricultural sector of innovations in information gathering, because it severely limits the access of small farmers to agricultural credit. (Author abstract, modified)

283

PN-AAL-980

MF \$1.08/PC \$6.11

Financial leverage potential of local currency proceeds generated from the Food for Peace Program to stimulate private enterprise in developing countries

Hullander, Edwin L.; Zank, Neal S.; Leachman, Christine A. U.S. Agency for International Development. Bureau for Food for Peace and Voluntary Assistance; George Washington University

2 Nov 1982, 42p. + attachments : En
PDC-0800-0-00-2095-00

Approximately half a billion dollars of local currency generated annually from the sale of P.L. 480 Title I commodities worldwide could be programmed to stimulate host country private sector growth and attract foreign enterprise. Such economic leverage potential is analyzed in this paper.

Background is provided regarding historical precedents for the use of P.L. 480 funds to promote private enterprise, and existing and required conditions for such use - the legal authorization (the Agricultural Trade Development Act of 1954), the availability of proceeds through judicious management of the Title I process, and a mechanism (such as intermediate financial institutions) for using local currency. Necessary cost-benefit conditions for private enterprise to accept a leverage offer are examined.

Financial leverage through Title I funds is demonstrated in examples where the funds are used to attract capital from both international commercial banks and domestic investment banks, and operating leverage is illustrated by the use of the funds to finance technical assistance. Combined financial and operating leverage are then demonstrated by an export financing example and an investment underwriting example.

Guidelines and recommendations to A.I.D. for implementation of the economic leverage concepts conclude the report.

284

PN-AAM-114

MF \$1.08/PC \$4.55

Agroindustries investment and trade opportunities in Morocco

Taylor, Donald M.

American Agricultural Associates, Inc.; U.S. Agency for International Development. Bureau for Near East. Morocco

15 Nov 1982, ii, 30p. : En

Morocco, because of its favorable geographic location, productive potential, and generally good investment climate, merits investigation by American agro-industrial firms as a possible investment target. This report identifies a number of specific areas of opportunity for U.S. investment and trade.

First, sectors of the Moroccan economy believed to be suitable for investment - horticultural products, livestock and poultry, fisheries, and agricultural equipment supply - are examined. Morocco's demographic, political, economic, and agricultural production situation and Government of Morocco investment incentives are then taken into account. Constraints affecting potential U.S. trade and investment, such as Morocco's traditional links with Europe, its geographic distance from the United States, and lack of knowledge about Morocco in the United States, are also investigated. The report offers recom-

mentations to encourage the growth of U.S.-Moroccan trade and to facilitate U.S. investment in that nation's economy.

Appended are profiles of specific investment opportunities and lists of U.S. firms and their areas of interest and of key Moroccan businessmen.

285

PN-AAM-224
MF \$2.16/PC \$13.13

Rural income in Mauritania

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

Rural assessment and manpower surveys, no.AS-6, 1981, iv, 80p. + 2 appendices : En

French edition: PN-AAM-130

6820211

AID/afr-C-1489

Results of a 1979-80 pilot survey to assess household cash income in Mauritania's rural sector are presented in this report.

Cash income in the sedentary and nomadic rural sectors is examined according to its various sources (e.g., traditional occupations, wages, and cash transfers), patterns of income distribution, and (for the sedentary sector only) ethnic group. Finally, the cash income structure for the rural sector as a whole is examined and budgeting patterns in the sedentary and nomadic subsectors are delineated. Results show that Mauritania's rural sector is in a period of acute economic crisis. The traditional productive sectors (animal husbandry, farming, fishing, and handicrafts) contribute less to total rural income than previously; the sector as a whole is drifting towards wage employment, especially in tertiary occupations; savings levels are low; cash transfers originating from interregional and international migrations have become important income supplements; and income distribution is uneven. Fourteen tables, 6 graphs, and 4 maps are included. Appended are additional analyses of the sampling method used in the survey and a description of the Gini index, used in the report to measure inequality in income distribution.

286

PN-AAM-238
MF \$2.16/PC \$16.51

Macro-economic simulation model for assessing development priorities

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

Rural assessment and manpower surveys, no.OP-2, Mar 1981, viii, 118p. : En

French edition: PN-AAM-151

6820211

AID/afr-C-1489

To help correct Mauritania's misguided capital-intensive development strategy, this paper presents a macroeconomic model for assessing alternative policies for growth during the period 1980-2000.

Traditional, industrial, and service sector growth policies, production functions, and investment requirements are evaluat-

ed. Gross domestic expenditures and resource gaps are then calculated and results are interpreted with regard to economic and other constraints (e.g. balance of payments and debt service) and basic human needs. A global development strategy option is proposed based on growth policies and performance since the 1960's and on calculation of financial resources and the reoriented operational goal of meeting basic human needs.

It is suggested that implementation be in two waves - medium term (1980-85), stressing the establishment of financial stability, and long term (1986-2000), stressing sectoral growth. Based on a new labor-intensive thrust and calculations of export and debt capacity, projections (fiscal, balance of payment, and investment) are made for each period.

Supporting data are presented in 69 tables throughout the report.

287

PN-AAM-243
MF \$1.08/PC \$7.54

Employment implications of alternative development strategies

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

Rural assessment and manpower surveys, no.OP-7, Jun 1981, 53p. : En

French edition: PN-AAM-156

6820211

AID/afr-C-1489

Mauritania's high level of unemployment and underemployment is one of the most serious of its economic development problems, according to this sector report.

Data (including 20 tables) on current (1977) labor supply and literacy and educational levels are presented and analyzed, and projections are made of labor availability and labor requirements for the period 1980-2000. Three major policy options to encourage the generation of employment are identified: (1) Option A - full employment as the primary planning goal; (2) Option B - a blend of social concern for employment and economic concern for the efficiency of products; and (3) the currently stressed Option C - rigorous subordination of employment to capital-intensive production.

It is concluded that although no optimistic prognosis for the employment situation is possible, employment could be increased under Options A and B by: (1) a change from capital to labor-intensive strategies; (2) regionalization of nonagricultural production; (3) literacy training; and (4) redefinition of job-specific education and training needs.

Seven tables delineating occupational groups according to rural and urban composition are appended.

288

PN-AAM-346
MF \$2.16/PC \$13.26

Econometric analysis of supply responsiveness in traditional agriculture: millet, sorghum and rice farmers in Mali

Sako, Bafotigui; Cotterill, Ronald W.
Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Africa

African rural economy program: working paper, no.36, Jun 1981, 85p. : En
AID/afr-C-1267

To help Mali attain its long-standing goal of grain self-sufficiency, this study analyzes the responsiveness of millet, sorghum, and rice farmers to price and other incentives.

Government of Mali (GOM) grain policies since independence (1960) are reviewed, and several econometric supply response models are specified and tested empirically using annual data from 1960-79. Results are used to analyze the effects of current GOM grain pricing policies. Major findings are that millet and sorghum production and sales are positively responsive to GOM pricing; that rice production and sales are positively related to official producers' prices; and that GOM subsidizing of grain imports adversely affects producers.

Since the data indicate the possibility of increasing crop production by raising farm-level prices, it is recommended that the GOM set official prices in advance of planting, improve the grain storage and agricultural input systems, eliminate import subsidies, and possibly allow wage increases for urban consumers. Research on consumer demand and price elasticities and on cash crop competition with food crops is called for.

Seven supporting data tables and a 3-page bibliography (1954-81) are appended.

289

PN-AAM-450
MF \$1.08/PC \$11.83

Effects of exchange rates and commercial policy on agricultural incentives in Colombia: 1953-1978

Garcia, Jorge G.
International Food Policy Research Institute
IFPRI research report, no.24, Jun 1981, 88p. : En
DAN-1275-G-SS-2124

To attain self-sufficiency in manufactured goods and food production, Colombia has adopted commercial and exchange rate policies encouraging first import substitution (1953-67) and then export promotion (1967-78). A series of analyses to examine the effect of these policies on agricultural incentives is herein presented.

First, general and partial equilibrium frameworks are presented, the former to assess the effects of Colombia's protectionist policies on the prices and quantities of importable, exportable, and domestic goods, the latter to assess their effects on the prices, production, and consumption of particular agricultural commodities. The frameworks are used to calculate the total surcharge on imports (by estimating the tariff equivalent of quantitative import restrictions and adding to this figure the import duties actually paid) and to examine the structure of incentives for export and determine whether they offset the indirect disincentives of import tariffs and restrictions. The final

analysis is of how the price distortions induced by Colombia's trade policies affected food production.

A summary of the study's findings leads to a concluding discussion of their important policy implications. Appended are domestic and international price indexes, analyses of the aggregate supply elasticity of food and of import and export subsidies, and a six-page bibliography, citing works in Spanish and English (1959-80). Nineteen tables are included.

290

PN-AAM-455
MF \$1.08/PC \$5.98

Employment in construction: multi-country estimates of costs and substitution elasticities for small dwellings

Strassmann, W. Paul
Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

MSU international development papers: working paper, no.3, 1982, 36p. : En
9311191
AID/ta-CA-2

Employment generation through construction depends on the degree to which certain production inputs may be substituted for one another. This study compared employment and costs generated by the construction of a minimal dwelling in seven developing countries to determine the elasticities of substituting skilled for unskilled labor and labor for non-labor inputs.

First, specifications are presented for the 24.9 square-meter concrete block dwelling used as a model. The sample, consisting of 77 firms in Tunisia, Sri Lanka, Pakistan, Zambia, Kenya, Colombia, and Peru, is then described. General findings in regard to costs, wages, and employment are presented for both the model dwelling and alternate building designs. Substitution elasticities are calculated and found to be between 0.7 and 0.9 for both labor and non-labor inputs as well as for skilled and unskilled workers. In conclusion, the author notes that the observed substitution elasticities will moderate both employment growth and rising housing costs.

291

PN-AAM-456
MF \$1.08/PC \$5.72

Some problems in operating a loan program for craft and emerging small-scale non-farm enterprises in Jamaica

Wilson, Middleton
Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Development Support. Office of Rural Development and Development Administration

MSU rural development series: working paper, no.15, 1981, 39p. : En
9311191
AID/ta-CA-2

Jamaica's Small Enterprise Development Corporation, Ltd. (SEDCO) provides technical assistance and credit to the country's increasingly important craft and small-scale (non-farm)

sectors. This paper examines criteria established by the World Bank for loans issued by SEDCO with its funds and some problems resulting from these criteria.

After sketching SEDCO's origins and the history of its dealings with the Bank, the author discusses SEDCO lending criteria, both definitional criteria – restricting the loans to manufacturers, prohibiting equity investments, and limiting the loans to \$22,471 – and evaluative criteria – requiring borrowers to provide 100% collateral and meet stringent information requirements and SEDCO to raise its interest rate from 7.5% to 11%. Problems created by these criteria are noted, as are the costs in time and money involved in evaluating loans for small projects, and the criteria's paradoxical effect of excluding political interference in individual loan issuance while generating charges that SEDCO was being controlled from outside.

It is concluded that overly narrow definitional criteria, particularly the exclusion of the service sector, may have unnecessarily limited the number of borrowers and that it may be difficult, if not impossible, at existing interest rates to cover the costs of evaluating the loan applications of very small enterprises.

292

* PN-AAM-512

MF \$3.24/PC \$29.51

Landless workers and rice farmers: peasant subclasses under agrarian reform in two Philippine villages

Ledesma, Antonio J.

International Rice Research Institute

1982, xix, 214p. : References p.209-212, En

* IRRI, P.O. Box 933, Manila, Philippines

Share tenancy on rice farms in the Philippines was abolished in 1972 to provide more equitable income and land distribution to tillers of the soil. This study examines the benefits and burdens of land reform as perceived by three peasant subgroups – amortizing owners, permanent lessees, and landless workers (the latter were not included in the reform program) – in two villages, Abangay and Rajal Sur.

Part I of the study focuses on the basic differences at the household level between landless workers and rice farmers (both owners and lessees). Discussed are the labor, income, and credit needs of one landless worker's family; labor allocation comparisons between eight families each of landless workers and rice farmers; and the families' corresponding income, expense, and credit practices. This section ends with a crossgenerational case study of land and tenure change in one tenant-farmer family.

Part II examines at the village level the formation of the three peasant subclasses mentioned above after initiation of agrarian reform. Profiles of each subclass are presented; tenure differentiation in the two villages and the economic viability of tenant farmers are discussed. Part III, moving from the village to the national level, presents the author's conclusions on land reform's problem areas and probable social impacts and suggests alternative courses of action.

293

PN-AAM-516

MF \$1.08/PC \$5.59

Savings mobilization in the third world: a case study of Peru

Burkett, Paul

Syracuse University. Maxwell School of Citizenship and Public Affairs; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural Development and Development Administration

Aug 1981, 42p. : En

9315303

AID/DSAN-CA-0198

Governments of developing countries often justify policies mandating low loan and deposit interest rates on the grounds that low-income rural dwellers are unable to save. Arguing to the contrary, this analysis of the highly successful AID-BANCOOP savings mobilization program in Peru concludes that there is a significant potential for savings mobilization in rural areas in developing countries.

After surveying the pattern of savings mobilization for all of BANCOOP's operations in Peru, the paper uses census data to describe the economic environment in the savings program's three target offices. The organization of the savings campaigns, which offered depositors realistic rates of return (30-35%) as well as prizes and/or raffle tickets, is then discussed and data on aggregate balances mobilized at each office are presented. Data on individual savings accounts and time deposits are analyzed to determine the durability of savings account balances. Differences in the behavior of accounts mobilized during campaign and non-campaign periods are observed, and the distribution of savings and time deposits by account size noted. Finally, depositors' characteristics, including sex, marital status, distance from office, and occupation, are documented and their implications for savings behavior investigated.

294

* PN-AAM-535

MF \$1.08/PC \$4.94

Economic analysis of a reserve stock program for rice in the Philippines

Te, Amanda

International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

Rice policies in Southeast Asia project: working paper, no.7,

Jul 1982, ii, 33p. : En

* IRRI, P.O. Box 933, Manila, Philippines

To help the Government of the Philippines decide whether or not to establish a program to reserve stocks of rice, the country's main staple, this report analyzes the economic costs and benefits associated with such a program.

First, an econometric model demonstrating how a reserve stock program can stabilize rice prices is presented and the costs and benefits of such a program are analyzed. Next, following a review of past trends in Philippine rice production and consumption, the econometric model is used in conjunction with a reserve stock management simulation model. Alternative strategies for acquiring and releasing rice stocks are compared with respect to their costs, benefits, and stabilization effects on rice prices, as well as gains and losses to consumers and producers. Finally, rice outputs and prices for the years 1978-92 are projected under simulations involving the pre-

sence or absence of a 300,000 MT reserve in conjunction with the presence or absence of foreign trade opportunities. Seventeen tables and three figures are included.

295 **PN-AAM-584**
MF \$1.08/PC \$5.59

Apartheid, the job ladder, and the evolutionary hypothesis: empirical evidence from South African manufacturing, 1960-77

Porter, Richard C.

University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Development Information and Utilization

CRED discussion paper, no.95, Sep 1981, vi, 34p. + attachments : En, Fr

This discussion paper explores various concepts of the South African "evolutionary hypothesis" whereby non-white economic opportunities are perceived as rising over time as a result of innate market forces. It then develops in detail one concept, namely, the hypothesis that the scarcity of white labor induces a gradual switchover of jobs to non-whites, enabling the latter to move up the job ladder. Employment, wage, and output data from the South African manufacturing sector over 1960-77 are studied. The evidence is largely consistent with the switchover hypothesis, although only 10% of the growth of non-white employment in manufacturing can be attributed to switchovers of jobs from whites to non-whites. For every non-white job gained by switchover, 12 were gained from output expansion (and 3 lost through productivity improvements). Analysis of wage increases by race suggests that the labor market for non-whites is gradually unifying and wage differentials among sectors are lessening. Wage changes for whites, on the other hand, seem to be governed mainly by sector-specific forces. (Author abstract, modified)

296 **PN-AAM-700**
MF \$1.08/PC \$3.90

Working capital and rural non-farm enterprises

Kilby, Peter; Liedholm, Carl

U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

1982, 27p. : En
9311169

The financial needs of rural non-farm enterprises can best be met through the development of integrated, decentralized, and relatively unregulated financial markets. So concludes this report on recent economic research on rural non-farm enterprises.

After briefly considering the importance of non-farm activities in the rural household and the implications of such activities for rural finance, the authors examine the role of working capital in a subgroup of non-farm activities, rural industry. Factors thought to affect the demand for working capital are discussed as are sources of working capital and factors determining its availability. The hypothesized demand determinants are then econometrically tested using data from a small enterprise study in Sierra Leone and found to provide a reasonably

good estimate of the demand for capital. Policy recommendations made on the basis of research findings include increasing loan term flexibility and interest rates, experimenting with informal lending sources, and better integrating rural financial markets.

297 *** PN-AAN-192**
MF \$1.08/PC \$6.37

Subcontracting in rural areas of Thailand

Mead, Donald C.

Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

MSU international development papers: working paper, no.4, 1982, 39p. : En

AID/ta-CA-2

* *MSU International Development Papers, Department of Agricultural Economics, Agricultural Hall, Michigan State University, East Lansing, MI 48824 USA (Free to developing countries)*

Subcontracting is a widespread characteristic of the production process around the world. This study describes a subcontracting system widely practiced in rural Thailand - arrangements by parent firms to have individuals undertake part of the production process at home.

The author begins by reviewing the subcontracting system in four industries (ready-made garments, knitting, fish nets, and silk), and then uses data from a larger study of non-farm employment in rural Thailand to explore the relationship between subcontracting and other rural activities. Advantages and disadvantages of the subcontracting system are discussed. Among the former are increased flexibility of working time; the provision of technical, marketing, and financial assistance by parent firms; reduced overhead costs; and the increased availability of rural employment. Disadvantages include loss of government control, loss of control over the production process by parent firms, and the risk that parent firms may exploit rural workers. Finally, a review of the key characteristics of subcontracting leads to recommendations for ways in which business and government might promote subcontracting.

298 **PN-AAN-193**
MF \$1.08/PC \$7.28

Children's economic contributions in peninsular Malaysia

DeTray, Dennis N.

Rand Corp.; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Policy Development and Program Review

Rand note, no.N-1839-AID, Apr 1983, xiii, 49p. : Bibliography p.47-49, En

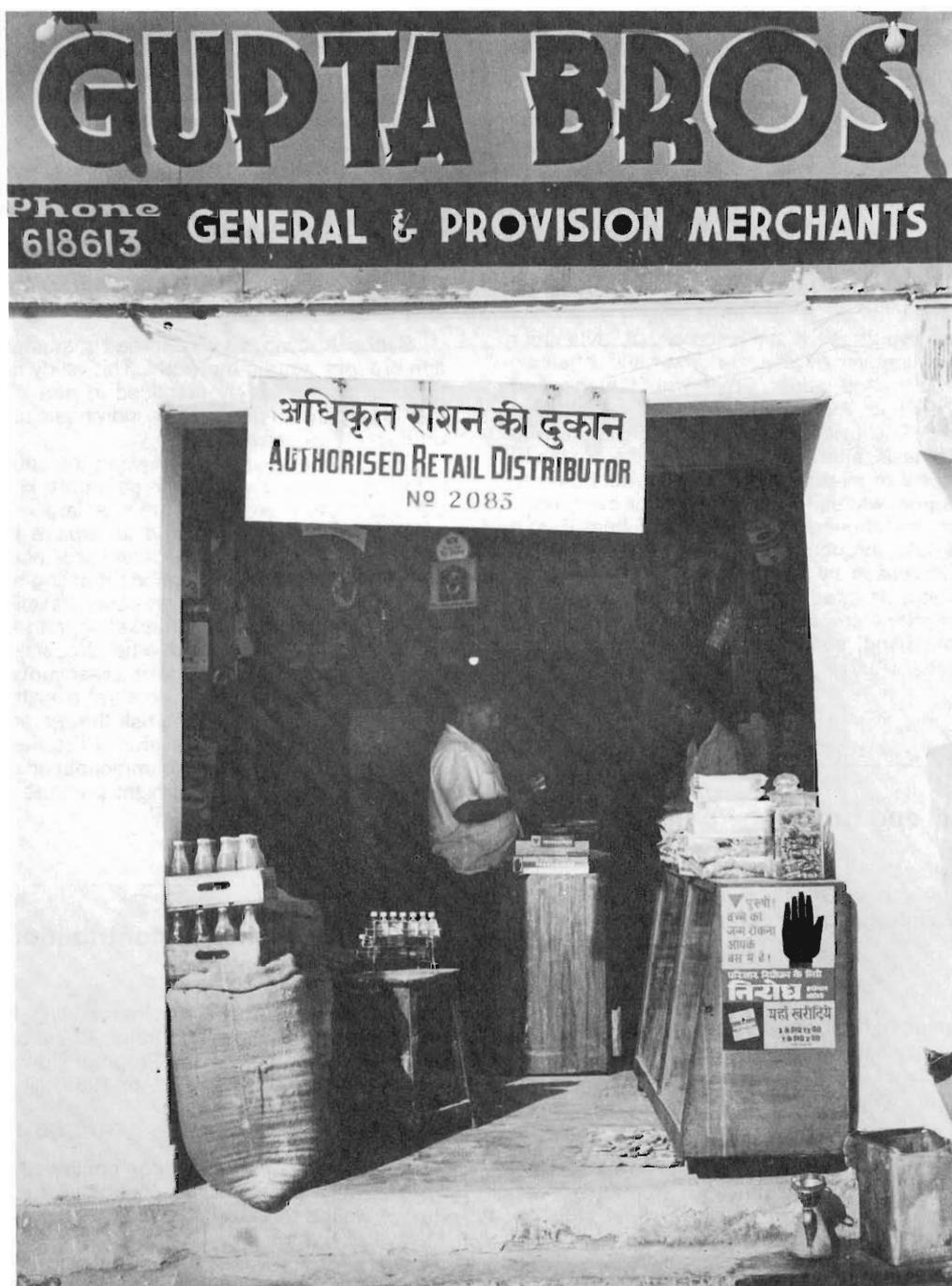
OTR-G-1744; OTR-G-1822; OTR-0068-G-SS-0295

Do children's economic contributions to parents influence fertility rates in developing countries? As a first step toward answering this question, this study analyzes data from the 1976 Malaysian Family Life Survey to determine how economic transfers from children to parents vary by characteristics of households and children.

Introductory sections treat past efforts in this area, the difficulties of measuring the costs of having children, the

country setting and the data base for this study and factors sometimes thought to influence children's contributions, e.g., sex roles, and the demand for family labor. Descriptive statistics for five types of children's time use – any work activity, labor force participation, producing home products, housework, and schoolwork – are presented, and three multivariate analyses of time use, one based on labor force participation, the other two adding, respectively, producing home products and

housework, are conducted and their results compared. Although results do not answer the initial question, they do indicate the economic importance of children in Malaysia and contradict some widely held beliefs, e.g., that poor children participate more in productive activities than do children from well-to-do families and that boys' contributions substantially exceed those of girls. Appended are detailed results of the multivariate analysis.



Small, privately-owned businesses play an essential role in the process of economic development



299

* PN-AAJ-614

MF \$1.08/PC \$12.09

Food grain technology: agricultural research in Nepal

Simmons, Emmy B.; Beausoleil, Joseph W.; et al.
U.S. Agency for International Development. Bureau for
Program and Policy Coordination. Office of Evaluation
A.I.D. project impact evaluation report, no.33, May 1982, xiii,
22p. + 6 appendices : En
3670054

* Document contains oversize pages available only in microfiche

Examination of the impact of a 17-year food grain technology project in Nepal (1957-74), presented in this report, provides both a sense of solid accomplishment and a basis for some disquieting fears.

Project accomplishments include development of a functional and decentralized research system with five stations in the Tarai flatlands, training to B.S., M.S., and Ph.D. levels of almost 600 Nepali agricultural scientists, a sharp increase in farmers' awareness of the need for agricultural development, and the beginnings of a partnership between research and extension. Technology packages including improved wheat, rice, and maize varieties were extended to Tarai farmers and farmer awareness of the new technology was found to be virtually universal.

However, channels of communication between researchers and farmers - whose problems and priorities differ - are less open than they might be. Researchers urge adoption of demonstrably high-yield varieties, while farmers, who have adopted the new technology only selectively, worry about the risks involved and point out other needs, especially for reliable water and fertilizer supplies. Further, the green revolution in Nepal has not yet led to long-term food security and economic independence as expected, but rather has contributed to economic and environmental destabilization. Indeed, the potential for serious ecological deterioration associated with increasingly intensified cropping is enormous; stabilizing the process will require major changes in the coming decades. Finally, the productivity of researchers, extensionists, farmers, and agricultural input agencies is far from optimal.

The project has taught: the need to understand farmers' needs, resources, and constraints in order to establish sound research priorities; the importance of off-station research, long-term research programs, and long-term environmental considerations; the inappropriateness of monopolies in the distribution of agricultural inputs when farmer demand is strong; and the decisive importance of close communication among researchers, extensionists, and farmers.

Tarai-related discussions of farming systems, population pressure and agricultural change, and agricultural research and risk are appended.

300

PN-AAJ-615

MF \$1.08/PC \$11.31

Agricultural research in northeastern Thailand

Calavan, Michael M.; DeBoer, James; et al.
U.S. Agency for International Development. Bureau for Asia.
Thailand; U.S. Agency for International Development.
Bureau for Program and Policy Coordination. Office of
Evaluation

A.I.D. project impact evaluation report, no.34, May 1982, vi,
26p. + 8 appendices : En
493018002

In 1966, A.I.D. initiated a project to establish a major multidisciplinary agricultural research center at Tha Phra in Northeastern Thailand. This report summarizes the project's setting and activities, describes its impacts, and presents lessons learned.

Project experience was mixed. An excellent physical facility was built, 118 scientists received U.S. training, and a substantial research program (although not sufficiently linked to farmers' needs) was developed at the Center. However, since the project ended in 1975, research programs have been reduced and many Center employees have been absorbed into other units of Thailand's Ministry of Agriculture and Cooperatives. Present research is routine, laboratory-or station-focused. Bureaucratic conflict has created an atmosphere in which research done at the Center is often rejected out of hand by central Ministry units. On the other hand, a variety of creative outreach programs, deserving of modest A.I.D. support, have been undertaken by the Center since the project ended. These include television and radio programs, a mobile extension unit, and an agricultural information network.

USAID/T officials were in a position to recognize the Center's bureaucratic impotence well before the project ended, but failed to take action to either strengthen the Center's bureaucratic position, support only promising (e.g., training) components, or withdraw support completely. Project experience shows that institutional development projects must fit the existing bureaucratic structure and be flexible enough to allow for major readjustments; that advisors and funds provided under technical assistance contracts may shield a project from direct bureaucratic opposition only as long as they are present; and that A.I.D. procedures and incentive structures do not promote investigation, analysis, and action to solve implementation problems. The following remedial measures are recommended: a detailed, retrospective review of A.I.D. professional development work every 5 years; project review for mid-course correction every 2 years; and division of large complex projects into modules to provide more flexible options.



AGRICULTURE

301

PN-AAM-680

MF \$1.08/PC \$4.94

Resena de las cooperativas agropecuarias del Ecuador: recomendaciones y sugerencias para varios programas de desarrollo cooperativo (Review of agricultural cooperatives in Ecuador: recommendations and suggestions for various programs of cooperative development)

Flick, Robert C.

Agricultural Cooperative Development International; U.S.

Agency for International Development. Bureau for Latin America and the Caribbean. Ecuador

Dec 1982, 33p. : Es

9380161

AID/SOD/PDC-G-0176

The status of the cooperative movement in Ecuador is reviewed in this report, the product of a 2-week in-country consultancy.

After a presentation and discussion of the consultancy's overall findings and recommendations, an indepth examination is made of each cooperative visited: (1) La Cooperativa de Credito Agropecuaria "Carchi;" (2) La Union de Cooperativas Agropecuarias del Norte (UCAN); (3) Cooperativa de Produccion y Mercadeo de Citricos Echandia, Ltda.; (4) La Federacion Nacional de Cooperativas Cafetaleras del Ecuador (FENACRE) y el Programa Nacional del Cafe (PNC); (5) Union de Cooperativas de Produccion Agricola del Litoral (UCOOPAL), Proyecto La Federacion de Cooperativas Agropecuarias y de Mercadeo (FECOPAM), Daule; and (6) Union de Organizaciones Campesinas de Rio de Oro, Proyecto Instituto Cooperativo Ecuatoriano (ICE)/Fundacion Konrad Adenauer de Alemania (KAS), El Carmen. Recommendations for projects and/or technical assistance to UCAN, FENACAFE, regional service cooperatives, El Banco de Cooperativas (BANCOOP), and the ICE conclude the report.

The cooperatives visited frequently lacked effective organization, both internally and with external entities and none have had successful marketing experiences. Lack of a cooperative mentality in the country is highlighted by BANCOOP's own failure to promote existing cooperative opportunities. New financial and personnel inputs are needed to revitalize the cooperative movement.

302

PN-AAK-191

MF \$1.08/PC \$2.34

Problems and recent advances in the development of rodenticides

Savarie, Peter J.

U.S. Department of the Interior. Fish and Wildlife Service.

Denver Wildlife Research Center

Biotrop special publication, no.12, 1980, p.187-204 : En

931047311

PA/IQ/TAB-473-01-67

As part of an effort to determine the basic physiological, biochemical, and toxicological effects of rodenticides on target and nontarget species, this report describes chemicals that have been in use as rodenticides since 1965. The discovery in Great Britain and the United States of rats that are resistant to warfarin led to the development of new rodenticides effective

against anticoagulant-resistant rodents; calciferol was developed to be incorporated into warfarin baits, but this combination is being replaced by difenacoum, brodifacoum, and bromadiolone, newer coagulants which are effective in single doses. A red squill formulation known as stabilized scilliroside has proved in both laboratory and field tests to be more effective than the older product known as fortified red squill. Attempts to increase the acceptability of norbormide by encapsulating it were unsuccessful; neither norbormide nor stabilized scilliroside have passed government requirements for effectiveness. Relatively new acute rodenticides include NK-15561 (used in Japan), phosacetim (use discontinued), UK-786 (laboratory-tested as toxic only to Norway rats), RH-787 (a vitamin antimetabolite also known as pyrinuron), and gliftor (developed in the Soviet Union). A 36-item bibliography (1960-77) is appended.

303

PN-AAL-110

MF \$1.08/PC \$5.07

Dependable precipitation and potential yields for Senegal: a practical guide for rainfed agriculture

Hargreaves, George H.

U.S. Agency for International Development. Bureau for Science and Technology; Utah State University.

Agriculture and Applied Sciences Department; U.S. Department of Agriculture

May 1982, ii, 34p. : En

USDA Order no. 40-3148-2-0776

A substantial potential exists for improving rainfed agriculture in Senegal. Thus concludes this study, which analyzes the relationships among precipitation levels, growing season lengths, and potential agricultural yield in that country.

The study begins by determining monthly dependable precipitation levels and mean annual rainfall at 57 different locations in Senegal. Next, a mathematical model is used to predict growing season length for various rainfed crops. The selection of crops climatically suited to Senegal is then assessed, and the country is divided into six zones with fairly uniform climates and moisture regimes; water management, land preparation, and cropping systems suited to each zone are described. Finally, means of optimizing production are summarized. Appendices include a report on the methodology employed and detailed 30-year climatic information for 5 locations.

304

PN-AAL-185

MF \$1.08/PC \$8.19

Instability in Indian foodgrain production

Hazell, Peter B.

International Food Policy Research Institute

IFPRI research report, no.30, May 1982, 60p. : En

9364062

DAN-4062-G-00-1009-00

Although total cereal production in India has increased significantly during the past three decades, production has become more unstable, threatening poor farmers with periodic food shortages. This study uses State and crop data on cereal production and areas sown in different cereals to examine how



improved technologies have increased instability in total cereal production.

Chapters cover, in turn: method of analysis; sources of instability for all India; the importance of covariance between crops and between States; sources of instability within States; and approaches to reducing foodgrain instability. Production variances and covariances are decomposed to isolate the sources of change between the periods 1954/55–1964/65 and 1967/68–1977/78. Variability is attributed mostly to changes in weather, increased use of irrigation and fertilizers at a time when supplies of these inputs have been unreliable, and year-to-year changes in area sown to specific crops. It is concluded that production instability is an inevitable consequence of rapid agricultural growth. The most promising solution to threats brought on by unstable production would be policies which attempt to stabilize consumption, such as storage and trade policies.

305

PN-AAL-316

MF \$1.08/PC \$1.56

Food and agricultural development

U.S. Agency for International Development. Bureau for Program and Policy Coordination
May 1982, 8p. : En

Population growth in developing countries, where 90% of the expected 2 billion increase in world population by the year 2000 will likely occur, along with continuing per capita income growth in middle-income countries portend grim prospects for the food production and consumption situation in many low-income, food-deficit countries. This paper reviews A.I.D.'s food and agriculture policy and recommends strategies to help alleviate this predicament.

The first section reviews A.I.D. objectives in promoting food security and broadly-based economic growth by increasing food availability and improving food consumption. Four major strategies to increase A.I.D.'s economic assistance are delineated: improve country food and agriculture policies; develop human resources and institutional capabilities and conduct food and agriculture research; expand the role of the private sector here and abroad; and integrate international food assistance (including P.L. 480).

A multidisciplinary, country-specific analysis will determine the content of A.I.D. assistance – technical, capital, commodity, or food aid. The majority of assistance should be reserved for training and technical advisors.

306

PN-AAL-341

MF \$2.16/PC \$24.18

Readings in farming systems research and development

Shaner, W.W.; Philipp, P.F.; Schmehl, W.R.
Westview Press; U.S. Agency for International Development.
Bureau for Science and Technology. Office of Agriculture
Westview special studies in agriculture/aquaculture science and policy, 1982, xiii, 175p. : En

9311006
AID/DSAN-C-0054

Farming systems research and development (FSR&D) views the farm as a system and focuses on how interdependent components under the farm household's control interact with

physical, biological, and socioeconomic factors outside the farmer's control. This monograph contains nine readings presented before a 1979 workshop by some of the leading practitioners in FSR&D.

The first paper categorizes farming systems according to their stage of development and resource use, while the second conceptualizes FSR&D and raises several methodological issues. Successive papers outline and discuss the FSR&D experience and approaches of the International Maize and Wheat Improvement Center, the International Rice Research Institute, the Agricultural Science and Technology Institute of Guatemala, and the International Crops Research Institute for the Semi-Arid Tropics. Two papers discuss FSR&D as applied to a small farm in Honduras and cropping systems research in Indonesia, respectively. Stressed are the importance of on-farm research, interdisciplinary teamwork, the search for practical solutions to farmers' problems, and better use of available data. A subject index is included.

307

PN-AAL-387

MF \$1.08/PC \$2.86

Potential of mathematical programming for the analysis of yield gaps in semi-arid tropical agriculture

Ghodake, R.D.
U.S. Agency for International Development. Bureau for Asia.
India; International Crops Research Institute for the Semi-Arid Tropics
Economics program progress report, no.24, Sep 1981, 20p. : En

When agricultural technologies are transferred to farmers' fields, the yields attained seldom, if ever, reach the levels attained at experimental stations. This paper proposes and demonstrates the use of a whole-farm modeling approach based on mathematical programming to partition the gap between potential and actual yield at the farm level attributable to socioeconomic factors in rainfed agriculture.

The first section of the paper deals with the existence of yield gaps, expressed in various ways, in different crop production activities in India's Akola district. It also tries to explain them in terms of input gaps. In the second section, the proposed models and concepts are discussed. The third section demonstrates the use of a mathematical programming technique in breaking yield gap into components by using actual input-output data and by considering existing resource and other constraint levels. Findings show that lack of capital is the single most importance cause of yield gap, followed by farmers' lack of technical efficiency. The need to improve extension services and farmer management skills, increase the availability of credit, and conduct research on labor-using and capital-saving technologies is noted.



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308

PN-AAL-662

MF \$1.08/PC \$4.55

Data needs and collection methods for analysis of agricultural production potential

Sutton, John D.

U.S. Department of Agriculture. Economic Research Service. Natural Resource Economics Division; Michigan State University; U.S. Agency for International Development. Bureau for Development Support. Office of Agriculture
NRE staff report, no. AGES820427, May 1982, iii, 30p. : Bibliography p.29-30, En

USDA Research Agreement 12-17-07-8-1955

931023601

PASA AG/TAB 263-14-76

Between 1976 and 1981, A.I.D.'s Comprehensive Resource Inventory and Evaluation System (CRIES) project helped planning units in five developing countries (the Dominican Republic, Costa Rica, Nicaragua, Syria, and Honduras) develop computerized information systems for use by policymakers in estimating agricultural production potentials. This paper reviews the data needs and data collection methods for the project, which due to budget limitations collected only land resource and land use data.

For analytical purposes, the project identified two types of resource units: resource planning units (RPU's) - geographically delineated land units relatively uniform with respect to land forms, soils, climates, and potential vegetation - and production potential areas (PPA's) - smaller areas within RPU's homogeneous enough to be reliably depicted for planning purposes. Soil and climatic data were gathered (generally from previously published materials) and used to formulate agronomic interpretations regarding agricultural potential. For economic planning purposes, data sets on major land use, both in general (cropland, pasture, forest, etc.) and in detail (specific crops and crop management techniques, input and product prices), were also generated. Use of the CRIES approach in the five project countries is exemplified.

General recommendations are that analysts meet with policymakers before and during data collection; and that the level of data detail and reliability be appropriate for the problem at hand.

309

PN-AAL-664

MF \$2.16/PC \$15.73

Pakistan: agriculture data book

Khalid, Ahmad M.

U.S. Agency for International Development. Bureau for Asia. Pakistan

Jun 1982, 116p. : En

Agricultural policymakers require reliable statistics. This publication, a compendium of all available published data on agriculture in Pakistan, has been prepared in response to this need. The major source of information was a Government of Pakistan publication, *Agricultural Statistics of Pakistan*. Supplementary data were obtained from other sources.

Statistical data are presented in 12 sections, 11 of which treat distinct sectors of agriculture: (1) land utilization; (2) crops (all important food grains, cash crops, pulses, oilseeds, fruits, and vegetables); (3) inputs, especially fertilizers; (4) mechanization (tube wells, tractors, equipment, and animal substitution); (5) livestock, including poultry, livestock products, and poultry feed; (6) fish production; (7) forestry (afforested and

regenerated areas); (8) credit; (9) rainfall; (10) prices (wholesale and international prices and wholesale indices); and (11) trade. The twelfth section covers population, agriculture's share of the GDP, manpower requirements, and agricultural universities. In many cases, preliminary data analysis has been carried out to calculate growth rates or make projections.

310

*** PN-AAL-692**

MF \$4.32/PC \$45.37

Research on agricultural development in Sub-Saharan Africa: a critical survey

Eicher, Carl K.; Baker, Doyle C.

Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Africa; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural Development and Development Administration; Woodrow Wilson International Center for Scholars

MSU international development paper, no. 1, 1982, xi, 335p. : References p.263-335, En

6250907

AID/afr-G-1261; AID/ta-CA-3; AFR-0929-G-SS-2011-00

* MSU will provide free copies to individuals and institutions in developing countries

Bleak economic and agricultural growth and a long-standing decline in per capita food crop production portend discouraging prospects for development in sub-Saharan Africa, the poorest part of the world's economy. This report surveys available literature on the rural economy (both on- and off-farm) in 41 sub-Saharan countries.

In Part I, standard references on African agricultural development are identified and an overview of sub-Saharan Africa's agricultural systems is presented. Part II covers research on food/agricultural policy in precolonial and colonial times (1800-1960), while Part III reviews policy debates of the 1960's and 1970's. Parts IV-VI focus on micro-research on small farmers' crop and livestock production. Part VII reviews research on food and agricultural distribution systems and on credit, cooperatives, consumption, and nutrition. In Part VIII, research on equity and employment issues (income distribution/inequality, population, migration, women in development, small industry, and fishing) is reviewed. A concluding summary highlights the need to jettison current development rhetoric and focus during the next 20-30 years on the fundamentals of agricultural development - structural reform; training scientists; strengthening indigenous educational, extension, and research capabilities; and improving development policies, programs, and projects.

Appended are a list of bibliographies and literature reviews, and a 73-page bibliography focusing on the post-1960 period.



311

PN-AAL-812
MF \$1.08/PC \$2.34

Consequences of small rice farm mechanization in Asia

Mikkelsen, Kent W.; Langam, Nemelito N.
International Rice Research Institute; U.S. Agency for International Development. Bureau for Asia. Philippines; Philippines. Ministry of Agriculture
(Joint ADC/IRRI Workshop on the Consequences of Small Rice Farm Mechanization in Asia, Los Banos, Laguna, PH, 14-18 Sep 1981)
1981, 6p. + attachments : En
4980265

Because of the great variety of agricultural conditions found even within a single country, there is a strong need for locally adapted technology in agricultural machinery. This study examines the capacity of individual agricultural machinery manufacturers in the Philippines to make adaptive product improvements.

A sample of 47 Philippine agricultural machinery manufacturers were interviewed. The authors found that the manufacturers had made a wide variety of product changes, showing considerable adaptation to local agricultural conditions. Each firm tended to change a product in different ways, increasing the diversity of machinery offered for sale. Large firms tended to make more product changes, but small firms also made changes with or without formal research and development. Other factors contributing to product innovation included: other technical activity within a firm; customer contact; employee suggestions; and assistance from the International Rice Research Institute.

312

PN-AAL-979
MF \$1.08/PC \$9.10

Agricultural research system of Pakistan: the report of the Minnesota reconnaissance team

Pray, Carl E.; Cardwell, Vernon B.; et al.
University of Minnesota. Economic Development Center
Mar 1982, 68p. : En Bulletin no.82-1
4980249
AID/ASIA-C-1456

The agricultural research system in Pakistan, its capabilities and weaknesses, were studied by a team of four University of Minnesota faculty members during a 15-day visit in 1981. This report presents their findings.

The authors first examine the contributions that agricultural research has already made to the well-being of Pakistan's people. Attention is given to crop/livestock improvement, effects on income distribution, impact by province, institutional effects, and possible future contributions. The establishment and planning of research priorities and coordination of agricultural research are then described, as are the linkages between research, extension, and education and those between federal and provincial research institutions and universities. Research capabilities are examined next, with particular emphasis on facilities and equipment; manpower needs, retention, and training; and university development. Research areas with high potential payoffs, such as plant, soil, animal and social science studies, are individually analyzed. The report concludes with an overview of past and present A.I.D. assistance and suggestions for future involvement.

313

PN-AAM-037
MF \$1.08/PC \$1.30

Agricultural development and the ecology of rodent control

Fall, Michael W.
U.S. Agency for International Development. Bureau for Science and Technology
(UNITAR International Conference, Sacramento, CA, US, 1977)
1982, p.443-451 : En
Alternative strategies for desert development and management: agriculture, v.2
U.N. Institute for Training and Research
931047311
PASA ID/TAB-473-1-67

Agricultural development efforts, especially those involving irrigation and intensified land use, often increase local rodent populations and, consequently, rodent damage to field crops. Irrigation, for example, allows year-round cultivation and thus permits some rodent species, which normally reproduce only during the wet season (when food and cover are available), to breed continually; invasion of irrigated land by rodents from adjacent, non-irrigated land also occurs. A central difficulty in rodent control programs, according to this article, is the failure to recognize the importance of rat species and environmental differences, e.g., attempting to employ methods applicable to the Norway rat (*Rattus norvegicus*) in tropical areas. The ineffectiveness of this approach has been demonstrated in the Philippines, where only sublethal barriers (still in the early stages of research) and the use of chronic rodenticides have shown potential for practical, economical use under rice field conditions. A sustained baiting program with anticoagulant rodenticides is recommended, although its effectiveness will vary according to rodent species and differences in agricultural practices and farmer attitudes.

314

PN-AAM-042
MF \$1.08/PC \$7.78

Controlling quelea damage to small grains in Africa with methiocarb

De Grazio, John W.; Shumake, Stephen A.
U.S. Agency for International Development. Bureau for Science and Technology; U.S. Department of the Interior. Fish and Wildlife Service
(UNITAR International Conference, Sacramento, CA, US, 1977)
1982, p.452-456 : En
Alternative strategies for desert development and management: agriculture, v.2
U.N. Institute for Training and Research
931047311
PASA ID/TAB-473-1-67

Quelea (*Quelea quelea*) damage to ripening grain crops in Africa is considered to be one of the world's most serious vertebrate pest problems. Many African countries affected by quelea have control teams or organizations actively combating the problem. Considerable progress has been made by these different groups in some aspects; however, large-scale campaigns to reduce quelea populations with toxic chemical sprays have provided only limited relief from depredations. Furthermore, chemical sprays are costly and potentially hazardous. To be useful, a control method must be economical, effective,



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safe, and highly selective for the depredating species. The chemical bird repellent methiocarb has largely satisfied these criteria and has been demonstrated to be an effective chemical in protecting many kinds of crops from bird damage in the United States.

Initial field tests with methiocarb conducted in Kenya and Tanzania on ripening wheat and rice indicated effectiveness, but more critical studies are needed. Laboratory tests have shown that caged quelea are highly sensitive to the chemical. (Author abstract)

315

PN-AAM-051

MF \$1.08/PC \$1.43

Efficacy of nets and fibres for protecting crops from grain-eating birds in Africa

Bruggers, Richard L.; Ruelle, Philippe
U.S. Department of the Interior. Fish and Wildlife Service.
Denver Wildlife Research Center; U.S. Agency for International Development. Bureau for Science and Technology

Crop protection, v.1(1), 1982, p.55-65 : En
931047311
PASA ID/TAB-473-1-67

Birds cause extensive losses to cereal crops in Africa and damage to research and seed production fields is often acute. Physical barriers such as nets or acrylic fibers can block the access of birds to these fields and provide almost complete protection. This paper reports on tests conducted to evaluate the efficacy and cost-effectiveness of several kinds of nets as well as acrylic fiber in protecting cereal crops.

The tests show that, although the use of properly mounted and maintained nets is expensive, costing from \$1,000 to over \$3,000 per ha, nets have effectively protected fields at eight trial sites between 1975 and 1980 in five African countries and compare favorably with the cost of employing people to scare birds. The paper notes the increasing popularity of using nets to protect high-value crops at research centers and in production schemes in many countries in Africa, and provides recommendations for maximizing the effectiveness of the nets. (Author abstract, modified)

316

PN-AAM-054

MF \$1.08/PC \$1.17

Response of rats to chronic ingestion of diphacinone

Elias, Donald J.; Johns, Brad E.
U.S. Department of the Interior. Fish and Wildlife Service.
Denver Wildlife Research Center; U.S. Agency for International Development. Bureau for Science and Technology

Bulletin of environmental contamination and toxicology, v.27, 1981, p.559-567 : En
931047311
PASA ID/TAB-000-10-76

Although diphacinone, a potent anticoagulant, has been used as a rodenticide since the 1960's, the published data reveal considerable variation in acute toxicity and there is little or no information on chronic toxicity. The studies reported here examined the effects on albino laboratory rats of long-term feeding with low levels of diphacinone.

In an initial 90-day feeding study, mortality did not occur at the highest dosage level (0.5 parts-per-million or ppm's), although it did occur sporadically at lower dose levels. A second, 21-day, study was designed using higher diphacinone concentrations (1, 2, and 4 ppm's) to determine the point at which mortality could be expected to occur. All animals in the 2- and 4-ppm dose level groups succumbed to diphacinone poisoning. Postmortem examination revealed massive internal hemorrhage, primarily thoracic or abdominal. Physiologic examinations of surviving animals (in both studies) showed some indication of possible treatment effects below 1 ppm.

The authors recommend a long-term chronic toxicity feeding study with dosage levels of diphacinone ranging from below 0.0313 to 4 ppm's.

317

PN-AAM-084

MF \$1.08/PC \$1.04

Analytical technique for fluorescent chemicals used as systemic or external wildlife markers

Johns, Brad E.; Pan, H.P.
U.S. Department of the Interior. Fish and Wildlife Service;
U.S. Agency for International Development. Bureau for Science and Technology

American Society for Testing and Materials: special technical publication, no.752, 1982, p.86-93 : En
931047311
PASA ID/TAB-473-1-67

Fluorescent materials have been used for many years in wildlife marking - for bait identification, direct application to the animal's skin, internal marking to identify excretory products, and marking of bones and teeth. This study examines new approaches to wildlife marking with fluorescent chemicals.

The analytical techniques of fluorometry, chromatography, and tissue examination under ultraviolet light were employed, using a miniaturized, portable, and economical chromatography system. Quinacrine dihydrochloride was found to be detectable at 50 parts per billion in 1 ml of blood. Rhodamine B was demonstrated to be a long-lasting marker of coyote (*Canis latrans*) claws and hair when the chemical was ingested orally and systemically distributed. The authors believe that these new marking techniques can be expanded into useful field identification methods. The future possibilities of systemic hair marking with nonfluorescent chemicals are noted. (Author abstract, modified)

318

PN-AAM-085

MF \$1.08/PC \$1.17

Rodent damage and burrowing characteristics in Bangladesh wheat fields

Poche, Richard M.; Mian, Yousuf; et al.
U.S. Department of the Interior. Fish and Wildlife Service.
Denver Wildlife Research Center; Bangladesh Agricultural Research Institute. Vertebrate Pest Division; U.S. Agency for International Development. Bureau for Science and Technology

Journal of wildlife management, v.46(1), 1982, p.139-147 : En
388000220
PASA ID/BNG-0003-1-78



320

PN-AAM-180

MF \$2.16/PC \$19.37

Dryland agriculture

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

1980, ix, 140p. : Bibliography p.137-140, En Report no.SS-2
French edition: PN-AAM-126

6820211

AID/afr-C-1489

About 70% of Mauritania's rural population are involved in some form of dryland agriculture. The study reported here, which collected and analyzed a broad spectrum of data on dry farming in Mauritania in order to identify existing problems and evaluate development possibilities, concludes that although most dryland production is now used for subsistence, dry farming could contribute on a medium-term basis to notably reduce Mauritania's present cereal deficits.

Following an introductory section which defines the object of the study and presents its methodology, the following subjects are covered in turn: climate, soil, water resources, and human resources in Mauritania's dryland agriculture areas; production systems and production zones; crops, including cereals, legumes, vegetables, and condiments; crop yields; production methods, resources, and problems; the effects of land tenure on production; past and present agricultural development projects; the production and destination of produce; existing training and research efforts; and environmental considerations. A 44-item bibliography (1950-80) is included.

321

PN-AAM-183

MF \$2.16/PC \$22.49

Oasis agriculture

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

1980, iv, 167p. : Bibliography p.163-167, En Report no.SS-4
French edition: PN-AAM-147

6820211

AID/afr-C-1489

Increasing environmental pressures threaten, according to this study, to accelerate degradation of Mauritania's oasis farming subsector and to hinder realization of its potential for rationalizing and controlling exploitation and for creating new ecosystems based on use of underground water resources.

Major chapters of the study provide basic information on the physical and human environment for oasis farming and on the technico-economic problems of subsector production systems. Also discussed are key production-related problems such as land tenure rights, marketing and storage, training and research, and the subsector's relation to other farming activities and its environmental effects. Included is a critical examination of documentation on past and current development activities in the subsector.

It was found that although oasis farming contributes 25-35% of Mauritania's gross agricultural production, returns the highest profit for labor, and is basic to survival of desert dwellers, attempts to improve production through modern

Rat damage to wheat was assessed in 303 fields (196 ha) in 4 districts of Bangladesh. Of 315,000 wheat stems appraised, only 0.5% were cut by rats before the booting growth stage. The country-wide rat-damage estimate in mature wheat was 12.1%, or 77,000 tons of grain destroyed before harvest. Wheat damage is attributable primarily to the lesser bandicoot rat (*Bandicota bengalensis*).

Damage was highly correlated with stem density. Yield loss and percent rodent damage were also correlated. The average yield for 20 fields was 1,795.9 kg/ha. Seventeen percent of the damaged stems had only the panicle removed; 83% were cut near ground level. Twenty lesser bandicoot rat burrow systems were excavated from the center of wheat fields. The mean burrow length was 40.2 m and storage chambers contained as much as 18 kg of cached wheat panicles. Rat damage was correlated with the number of active burrow systems within fields. These findings suggest that field baiting may be more efficient if initiated during the booting stage and if baits are placed within 1 m of burrow openings rather than at random. (Author abstract, modified)

319

PN-AAM-086

MF \$1.08/PC \$1.04

Traditional approaches for protecting cereal crops from birds in Africa

Ruelle, Philippe; Bruggers, Richard L.

U.S. Agency for International Development. Bureau for Science and Technology

(Vertebrate Pest Conference, 10th, Monterey, CA, US, 23-25 Feb 1982)

Jun 1982, p.80-86 : En

931047311

PASA ID/TAB-473-1-67

Despite the recent emphasis by national and regional plant protection organizations in Africa on control of pest birds, small farmers still must usually depend on their own initiative to protect their crops. This paper describes and documents the effectiveness of subsistence farmers' traditional crop protection methods.

Among the methods employed by farmers are bird scaring (using ingenious visual and auditory techniques), barriers (covering the individual heads of cereal grains), nest destruction, poison baiting, and agronomic modifications (such as using less susceptible varieties and wide planting dates). Special attention is given to bird scaring, the effectiveness of which is found to vary with the season, the type and maturation stage of the crop, the pest species and its abundance, the size and ownership (private as opposed to public) of the field, and the diligence and enthusiasm of the bird scarers - this last usually depends on the market value of the threatened crop. The authors note that practical and economic solutions to bird control problems will most likely come from increased knowledge of pest behavior and from modifications and extensions of recently investigated methods, e.g., chemical repellents, nets, partial poisoning of buffer crops, and improved varieties.



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technology have had negative results, as have institutional attempts to preserve oasis areas. Recommendations are made for medium- and long-term programs focusing on improving knowledge of the subsector, developing a master plan for safeguarding threatened oases, and finding adaptable models for Sahelian-type production systems.

322

PN-AAM-251

MF \$1.08/PC \$12.22

Policy options for the grain economy of the European Community: implications for developing countries

Koester, Ulrich

International Food Policy Research Institute; U.S. Agency for International Development. Bureau for Food for Peace and Voluntary Assistance. Office of Program, Policy and Evaluation

IFPRI research report, no.35, Nov 1982, 90p. : En
PDC-0800-G-IN-2216-00

Because of the European Community's (EC) importance as a grain exporter, EC grain policies may in the decade ahead strongly affect the food situation in developing countries. This report examines the implications for developing countries of four grain policy options facing the EC.

Under the first option - for the EC to continue its strong protectionist policies - the EC, which compensated for only 1.8% of the grain deficit of developing countries in 1980, might provide for 12-15% in 1985. The protectionist policy is, however, under increasing internal and external pressure. The second option, complete liberalization of EC grain trade, would decrease world grain production while increasing prices (mostly for wheat). Developing countries would lose up to 0.04% of their gross national product in welfare and the market for cereal substitutes, especially cassava, would probably be eliminated. The author concludes that the third and fourth options (which would modify EC policies concerning the relation of variability in domestic grain prices to variability in production, the relation of EC and world market grain price ratios, and carryover stocks) could contribute to grain price stability without changing the degree of protection for grain producers.

The report is highlighted by tables and illustrations and includes an 85-item (1971-82) bibliography. Appended are analyses of relevant monetary and exchange rate policies and trade preferences in the world grain market.

323

PN-AAM-256

MF \$1.08/PC \$4.29

Increasing agricultural production in Peru and Paraguay: the role of incentives

Eastman, Clyde

New Mexico State University; U.S. Agency for International Development. Board for International Food and Agricultural Development

International publication series: technical report, no.2, Jul 1981, iv, 28p. : En

AID/DSAN-G-0166

In the 1970's the production of cocoa in Peru and of cotton and soybeans in Paraguay expanded greatly while the rest of agriculture in both countries was less dynamic. To gain an insight into this anomaly, the author of this report examines,

against the background of each country's general agricultural situation, the causes of these production increases.

Applying Mosher's paradigm of the five factors essential to increased agricultural production (transportation, inputs, technology, markets, and incentives), the author finds that the increases were mainly due to the incentive offered by high prices. In Peru, a new market outlet of foreign drug buyers, stemming from increased demand for cocaine, created the incentive of very high prices. Likewise in Paraguay, production increases are largely attributed to the development of a high-quality hybrid cotton commanding a high price on the world market and the prices offered for soybeans. The author notes that prices in these cases refers to world prices, not domestic prices, which are often kept low in an effort to keep consumer prices low. The implication is that lack of an effective incentive could be a key factor limiting production increases in other food commodities.

324

PN-AAM-317

MF \$2.16/PC \$18.85

Agricultural development and economic progress in the Caribbean Basin: report of the presidential mission on agricultural development in Central America and the Caribbean

York, E.T.; Baldwin, Richard; et al.

U.S. Presidential Mission on Agricultural Development in Central America and the Caribbean

Aug 1980, ix, 137p. : En

Agricultural conditions prevalent in Caribbean Basin countries are analyzed and evaluated in this report, which was submitted to then President-elect Reagan in 1980.

Socioeconomic conditions in the Basin are reviewed and the region's potential for agricultural and agro-industrial development assessed, with reference to specific commodities (including different varieties of vegetables, fruits, grains, and other products). Major constraints to such development are noted and steps to overcome them proposed. It is concluded that most countries in the region are experiencing serious economic difficulties, often related to unfavorable trade balances, and that the solution largely depends upon the revitalization of the region's considerable agricultural potential. A comprehensive agricultural development strategy for the Basin, based on a major U.S. public and private sector commitment under the leadership of the International Development Corporation Agency (IDCA), is outlined.

325

PN-AAM-089

MF \$1.08/PC \$2.26

Long-haul transport container with water provision for individually caged rats

Gaddis, Stanley E.; Shumake, Stephen A.

U.S. Department of the Interior. Fish and Wildlife Service.

Denver Wildlife Research Center; U.S. Agency for International Development. Bureau for Science and Technology

Laboratory animal science, 1982, p.173-174 : En
931047311

To allow a group of wild lesser bandicoot rats, a highly aggressive species native to Southern Asia, to be shipped by



air from Dacca, Bangladesh to the Denver Wildlife Research Center (a 37-hour flight) with minimal mortality from dehydration or aggression, a container with 11 individual rat compartments, each including an integral water system, was constructed. The design of the container and watering system (described in this article) allowed for water refill in transit with a minimum of animal security problems. Following shipment, the entire watering system could be removed for cleaning, parts replacement, or bench testing before the next rat shipment. All of the 33 rats shipped in the containers were still alive 96 hours after arrival, although 3 died within 2 weeks, presumably due to stress from the shipment or from prolonged pre-shipment caging in Dacca. The design could be adapted for use in transporting other species long distances.

326

* PN-AAM-515

MF \$2.16/PC \$20.41

Methodology for on-farm cropping systems research

Zandstra, H.G.; Price, E.C.; et al.
International Rice Research Institute
1981, viii, 147p. : En
* IRRI, P.O. Box 933, Manila, Philippines

On-farm cropping systems research seeks to identify a technology, acceptable to farmers, that will increase production yields and/or cropping intensity while minimizing the detrimental effects of introduced changes. Described herein, for the benefit of both professional researchers and those active in research management and training, are research methods which were developed and adapted for the study of both dryland and wetland rice-based cropping systems.

The manual begins by discussing general concepts: the definition of cropping systems and of cropping systems research; and the importance of on-farm research as a means of finding improved cropping systems that are acceptable to farmers. Methods for site selection, site description, design of cropping patterns, and on-farm testing of such patterns are then described. In the final chapter, ways in which research results can be extended to a greater area and to farmers through production programs are discussed. This chapter, less detailed than those preceding, is included to emphasize the need for researchers to consider the consequences of their results in production programs and to stress that on-farm research is beneficial only when farmers adopt recommended practices. Details of several research or analytical techniques are provided in appendices focusing on fertilizer rates, weed control, varietal testing, and cropping pattern monitoring.

327

PN-AAM-527

MF \$2.16/PC \$16.25

Prospectives for crop insurance in Indonesia

Maurice, Nelson; Hamilton, J.T.
U.S. Department of Agriculture. Federal Crop Insurance Corp.; U.S. Agency for International Development. Bureau for Asia. Indonesia
Jun 1980, 23p. + 5 annexes : En

A crop insurance program would support the Indonesian Government's policy of stimulating agricultural production by stabilizing farm income and food crop production and by assuring optimum use of government funds allocated to the

agricultural sector. Two types of insurance programs are recommended in this preliminary feasibility study - an area yield insurance program to ensure rice farmers according to the average production of their village or some other larger area of land, and smallholder estate crop insurance, based on the individual yield delivered to the processing plant. The latter insurance provides more complete risk removal for farmers, since indemnification does not depend on failure of the whole group. Recommendations are made for an organizational structure and an implementation plan for the proposed programs, and personnel and resources required are detailed, as are sources of financing and technical assistance. It is recommended that after a formal analysis and design study, a small 5-year pilot program be undertaken leading eventually to a full-scale national program. Five studies of crop insurance programs in various countries are appended.

328

PN-AAM-608

MF \$2.16/PC \$13.65

Principles of climate/crop yield modeling and other agroclimatic assessment tools with operational procedures for agricultural Belize

Smith, Douglas T.
Belize. National Meteorological Service; U.S. Department of Commerce. National Oceanic and Atmospheric Administration. Environmental Data and Information Service. Center for Environmental Assessment Services; U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance
25 Aug 1980, iii, 95p. : En
PASA CC/OFDA-999-A-79

Climate/crop yield models and agroclimatic indices provide early warning information prior to harvest on the potential for crop losses due to adverse weather and can be used to monitor crop progress during the growing season. Such models can potentially improve food supply management in conjunction with economic planning.

A 4-week training program in applied agroclimatological analysis and crop condition assessment procedures for use in Belize was held at the Center for Environmental Assessment Services in Columbia, Missouri. This report of the program describes, documents, and analyzes agroclimatic conditions in Belize; defines agroclimatic crop indices (yield moisture, potential and actual evapotranspiration and their ratio, soil and crop moisture, the Z-index and the Palmer drought index) and their applications; and develops statistical weather/crop yield models, illustrating their pros and cons in crop condition assessments of Indiana corn and Belize sugarcane yields. The tools developed for potential application in assessments are discussed.

More complete agroclimatic and agronomic data bases and more thorough data collection and computer processing are identified as prerequisites to fully meaningful climate/crop modeling.



AGRICULTURE

329

PN-AAM-689

MF \$3.24/PC \$33.28

Agricultural sector assistance strategy for Upper Volta

Poulin, Roger J.; Gilbert, Elon; et al.
Development Alternatives, Inc.

Mar 1982, viii, 204p. + 7 appendices : Bibliography p.201-204, En

PDC-1406-1-01-1135-00

Upper Volta, although one of the poorest developing countries, has a diversity of ecosystems and peoples which offer significant potential for agricultural development. This report formulates and recommends an A.I.D. assistance strategy for Upper Volta's agriculture sector for the period 1983-88.

Part I offers background material on Upper Volta's natural resources base, agricultural sector, rural population, and agricultural institutions. Part II analyzes constraints to increased agricultural (both irrigated and rainfed) and livestock production under current production systems and environmental conditions, along with constraints due to deficiencies in sector institutions and transport infrastructure, the inadequate use of local organizations, the high recurrent costs of the Government's agricultural sector program, and the Government's reliance on parastatals rather than the private sector. Part III presents a detailed A.I.D. short-term assistance strategy aimed at providing a technical package to increase small farmer production in the populous northern two-thirds of the country and at relieving shortages of trained manpower and of funds needed to finance recurrent costs. Brief analyses of several technical issues such as soil fertility, animal traction, and remote sensing potential are appended.

330

PN-AAM-823

MF \$1.08/PC \$10.14

Research on crop-animal systems

Fitzhugh, H.A.; Hart, R.D.; et al.

Tropical Agricultural Research and Training Center; University of the West Indies, St. Augustine. Caribbean Agricultural Research and Development Institute; Winrock International; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs

(Research on Crop-Animal Systems, Turrialba, CR, 4-7 Apr 1982)

Jun 1982, vi, 71p. : En

596-0000-C-00-1051-00

Scientists from three agricultural research institutions - Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), the Caribbean Agricultural Research and Development Institute (CARDI), and Winrock International - met at an April 1982 workshop, proceedings of which are herein presented, to examine the increasingly important issue of crop-animal research, especially within the context of farming systems research strategy.

Case studies on the experiences of each institution revealed a similarity of approach to both farming systems research and crop-animal research. Separate work groups on such issues as the characterization of farming systems, the design and testing of technological alternatives, and organizational problems affecting crop-animal systems research yielded recommendations regarding: the diversification of techniques for early identification of existing elements of and

constraints to the farming system; the development of objective criteria to evaluate on-farm crop-animal subsystem interactions; on-farm testing of crop-animal technology; and personnel and organizational requirements in interdisciplinary team research. It was agreed that a methodologically improved farming systems approach is the key to research on crop-animal systems.

331

PN-AAM-872

MF \$1.08/PC \$9.62

Assessment of the food and agriculture sector of Mauritania

Humpal, Donald S.; Shearer, Eric B.; Harper, Rick
Development Alternatives, Inc.; Research Triangle Institute;
U.S. Agency for International Development. Bureau for Africa. Mauritania

Food and agriculture sector assessment, 25 Jan 1983, 54p.

+ attachments : En

Work order no.8

Work order no.9

Related documents: PN-AAM-013 and PN-AAM-873

9361406

PDC-1406-I-1135-00; AID/SOD/PDC-C-0392

A hostile and deteriorating natural environment, a low educational index, a deficient bureaucracy, certain development-negative traditions, the virtual absence of private enterprise, and increasing reliance on foreign aid severely constrain Mauritania's development, according to this assessment of the country's food and agriculture sector.

Discussed in turn are the characteristics of Mauritania's general and rural economy (including demographic and macro-economic characteristics, food and income gap, and food consumption and income sources); rural settlement patterns and the agricultural and social effects of the Sahelian drought; the economy's dependence on foreign assistance and recent development efforts in irrigation, farming research and extension, environmental protection, livestock improvement, integrated rural development, and inland fisheries/fish farming; the key constraints to agricultural self-reliance and the possibilities for alleviating them; economic and social issues (land tenure, labor relations, and the roles of farmers/herders and women); manpower limitations and administrative constraints; and the effects of grain price policies on output.

The real question for the future, it is noted in conclusion, is whether the rhetoric of the latest government development plan, which calls for a long-term strategy aimed at greater economic independence, will be matched with political commitment. Appendices include an 11-page bibliography (1974-82).



332

PN-AAM-890
MF \$1.08/PC \$5.07

Some properties of cereal grains, food legumes and oilseeds (hygroscopic, thermal, physical) affecting storage and drying

Vemuganti, Gangadhar Rao; Pfof, Harry B.; et al.
Kansas State University. Food and Feed Grain Institute; U.S. Agency for International Development. Bureau for Development Support. Office of Agriculture
Grain storage, processing and marketing: research report, no. 18, Jan 1980, ii, 37p. : En
9310786
AID/DSAN-CA-0256

To help grain producers and commercial handlers solve heat and mass transfer problems involved in grain drying, aeration, storage, and processing, relationships between grain properties and moisture content were studied. Findings are herein presented.

Twenty-five tables show equilibrium relative humidities at temperatures of 10-40 degrees Centigrade, specific heat, and bulk density in relation to moisture content over the range encountered from harvest to long-term storage for major food grains, food legumes, and oilseeds. The tables were computer generated using equations developed from experimental data obtained in one laboratory under constant conditions. Values in the tables cannot be considered absolute as equilibrium, relative humidity, test weight, and specific heat are all affected by a grain's history.

Also provided are tables expressing: methods for determining the moisture content of whole seeds and the chemical compositions of grains, legumes, and oilseeds; equilibrium relative humidity constants for the Chung-Pfof equation; regression analyses of the relationship between specific heat and moisture content and between test weight and moisture content; and the computer program used in this study.

333

PN-AAM-892
MF \$2.16/PC \$23.01

Acquiring and using microcomputers in agricultural development: a manager's guide

Ingle, Marcus D.; Berge, Noel; Teisan, Marcia
U.S. Department of Agriculture. Office of International Cooperation and Development. Development Project Management Center; University of Maryland, College Park. International Development Management Center; U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development
Apr 1983, iii, 147p. + 6 appendices : En

If correctly chosen and intelligently used, the microcomputer has potential to improve development management across a wide variety of tasks and functions. This guide is intended to provide host country, donor agency, and contractor personnel working on agricultural and rural development projects with relevant information about microcomputer acquisition, installation, and use.

Rather than emphasizing microcomputer technology per se, the guide focuses on the analytical processes involved in assessing management needs and introducing a microcomputer system suitable to local conditions. Attention is given in turn to the advantages and disadvantages of having a

microcomputer in a development project setting; microcomputer reliability; potential applications; user-friendly software and hardware; choosing a microcomputer; and installation, operation, and maintenance procedures. The final chapter describes how microcomputers are being used in particular agricultural projects and agricultural and rural sector institutions and concludes with a brief discussion of future microcomputer and management trends. Appendices provide additional information on current microcomputer use, the solutions to power supply problems, hardware and software manufacturers, and microcomputer periodicals; a glossary and a 72-item bibliography (1973-83) are included.

334

PN-AAM-952
MF \$3.24/PC \$28.34

Strategies for organization for small-farm agriculture in Jamaica

Blustain, Harvey S.; LeFranc, Elsie
University of the West Indies, Kingston. Institute of Social and Economic Research; Cornell University. Center for International Studies. Rural Development Committee; U.S. Agency for International Development. Bureau for Development Support. Office of Rural Development and Development Administration
(Conference on Organizational Strategies for Agricultural Development, Mona, WI, 27-28 Apr 1981)
1981, v, 217p. : En
5320046

Strategies to advance the development of Jamaica's small-farm sector are discussed in this volume, the fruit of a conference held at the University of the West Indies in April 1981.

An introductory article presents an overview of Jamaica's small-farm sector, agricultural policy, and previous organizational efforts in the sector. Two succeeding articles on the role played by production factors examine, respectively, customary land tenure and the use and organization of farm labor. Organizational alternatives are presented in articles dealing with the organization of Jamaica's agricultural cooperatives; the role of the Agricultural Marketing Corporation in domestic food marketing; commodity associations; and the role of clientelism and local organizations. A concluding evaluation indicates that local institutions are the key to implementing agricultural development policies.

335

*** PN-AAN-104**
MF \$1.08/PC \$3.77

FSR background papers: the farming systems approach to research; farming systems research and the land-grant system: transferring assumptions overseas

Norman, David W.; Flora, Cornelia B.
Kansas State University. Office of International Agriculture Programs; U.S. Agency for International Development. Bureau for Science and Technology
Farming systems research paper series, no. 3, Oct 1982, (26p.) : En
9311282

AID/DSAN-XII-G-0160
* *Strengthening Grant Coordinator, International Agricultural Programs, Waters Hall, Kansas State University, Manhattan, KS 66506*



AGRICULTURE

Farming systems research (FSR), that is, research prioritized according to a comprehensive view of the farm, aims to increase overall farm productivity within the constraints and potentials of existing farming systems. Two FSR background papers are herein presented. The first defines the farming systems approach to research, its attributes, methodological problems, functions, components, and boundaries, concluding that FSR is not a panacea, but can complement, help integrate, and improve the pay-off of other activities by providing a bottom-up approach.

The second paper discusses the problem of falsely assuming the existence in developing countries of the factors contributing to the success of U.S. agriculture – the possession of political power by farmers, unity of goals between researchers and farmers, farmer control of the means of production, the equality afforded women in the farm family, the ability of the larger economy to absorb noncompetitive farmers into other sectors, and close public and private sector cooperation in technology development. The paper concludes by outlining ways in which FSR, especially in relation to farm management research, can help counteract the biases resulting from such false assumptions.

336

PN-AAN-260

MF \$2.16/PC \$19.50

Rice and sugar in Guyana: Guyana agricultural sector planning project

Baskett, Ronald S.

Checchi and Co.; U.S. Agency for International Development.

Bureau for Latin America and the Caribbean. Guyana

Mar 1983, ix, 122p. + 3 appendices : En

5040077

The rice and sugar industries are critical in generating foreign exchange for Guyana. This report, prepared during a visit to Guyana in 11/82, assesses the performance of and outlook for these industries and provides recommendations for inclusion in the Ministry of Agriculture's sector plan.

After introducing the objectives and methodology of the assessment, the report discusses separately the historical background of each industry, rice and sugar, in Guyana and evaluates their present organization and agronomic and economic characteristics. Policy recommendations for the rice sector cover: irrigation, drainage, and water management; rice varieties, yield, and quality; research, extension, and seed production; farm size and mechanization; the availability of inputs; rice processing; and insect (paddy bug) control. Recommendations for the sugar industry concern: the capital requirements of the Guyana Sugar Corporation; production declines due to failure to rehabilitate fields; relationships between sugar estates and private cane farmers; domestic price subsidies; the method of paying cane farmers; sugar research; and alternative crops for small farmers.

A sample farmer interview questionnaire is included in the appendices.

337

* PN-AAM-530

MF \$1.08/PC \$5.85

Rice buffer stocks for Indonesia: a first approximation

Hedley, Douglas D.

International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

(Workshop on Rice Policy in Southeast Asian Countries, Los Banos, PH, 22-25 May 1979)

Rice policies in Southeast Asia project: working paper, no.2, 25 May 1979, 41p. : En

* IRRI, Box 933, Manila, Philippines

Analysis of the institutional mechanisms governing rice stocks, demand, production, and distribution is of vital importance when projecting needed levels of rice reserve stocks in Indonesia. Based on a historical review of Indonesia's rice stock and import programs, this paper develops a model which uses rice production and import data to project optimal rice reserve levels in that country.

The paper begins with a discussion of trends in rice production, consumption, prices, and trade. The management of rice, both domestically produced and imported, is discussed in relation to national objectives and consumer demand. Particular attention is given to the role of the National Grain Stock Authority in administering rice reserves. Following this, a small linear expenditure system is presented to portray the demand for cereals in Indonesia. Demand is disaggregated by region and into its urban and rural parts to enable sources of demand growth to be explored. The instability of production in Indonesia is addressed at length, and out of this, a model of reserve stock is generated. The model suggests that rice reserves of three million tons would cover shortfalls in rice production with about 90% security and would help to stabilize international rice prices.

338

PN-AAK-180

MF \$1.08/PC \$1.17

Polyphenolic changes in ripening bird-resistant sorghums

Bullard, Roger W.; York, John O.; Kilburn, Stephen R.

U.S. Department of the Interior. Fish and Wildlife Service.

Denver Wildlife Research Center

Journal of agricultural and food chemistry, 1981, p.873-981 :

En

PA/ID/TAB-473-01-67

Three chemical assays (vanillin-sulfuric acid, Folin-Denis, and cyanidin coloration), three biochemical assays (protein precipitation, alpha-amylase inhibitor, and hemanalysis), and a paired preference assay on *Quelea quelea* were used to evaluate eight bird-resistant sorghum varieties in the milk, light dough, firm dough, and mature stages of grain development. Each assay showed an increase in the respective polyphenolic activity that peaked in the dough stages (usually firm dough) and then dropped sharply in the mature stage. Polyphenol activity in varieties classified as group II tended to peak earlier in grain development and then drop by a greater extent in the ripened grain. Although there is evidence that tannin biosynthesis goes to a higher degree of polymerization in group II than group III sorghums, the synthetic mechanism alone does not fully explain the differences between the two groups. Gel permeation, thin-layer, and paper chromatography analyses



indicated that the tannins were procyanidins in both groups. Therefore, further elucidation depended upon differences in grain structure or the influence of other grain components. Three of these factors are discussed. (Author abstract)

339

PN-AAL-668

MF \$2.16/PC \$16.77

Pigeonpeas (*Cajanus cajan* Millsp.): a valuable crop of the tropics

Morton, Julia F.; Smith, Roger E.; et al.
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Puerto Rico; University of Puerto Rico, Mayaguez. College of Agricultural Sciences. Department of Agronomy and Soils

Nov 1982, 106p. + 8 appendices : Bibliography p.82-106, En

9310128

AID/DSAN-G-0101

Current widespread interest in legumes as sources of protein and enrichers of the soil is leading to rapid increases in the production of pigeonpeas (*Cajanus cajan millisp.*) in the tropics, where pigeonpeas offer a vast potential over a wide range of climates and soils. This state-of-the-art report critically reviews available literature on pigeonpeas, one of the world's most important legumes, with emphasis on the crop's nitrogen economy. Information is presented, inter alia, on pigeonpeas' economic importance and dietary value, the factors affecting pigeonpea production, the intensity of both the crop's use of nitrogen and its symbiotic nitrogen fixation rate, the transfer of nitrogen from pigeonpea to other crops, and pigeonpea fertilizer response, inoculation (both with and without *Rhizobium*), and harvesting and processing. The limitations of pigeonpeas and ways to overcome them are listed, and current research findings are summarized. Included are a 318-item bibliography (1871-1981) of world sources and eight research-related appendices.

340

* PN-AAM-091

MF \$5.40/PC \$53.17

Drought resistance in crops with emphasis on rice

International Rice Research Institute
(IRRI Symposium on Drought Resistance, Los Banos, PH, 4-8 May 1981)

1982, 414p. : En

9310826

* IRRI, P.O. Box 933, Manila, Philippines

Water, more than any other factor, controls the development of field crops at crucial growth stages. This report contains the proceedings of a May 1981 International Rice Research Institute Symposium on crop drought resistance in which attempts were made to explain drought stress in grains across a range of environmental, agroclimatic, and genetic conditions. Special attention is given to rainfed rice.

After several introductory papers reviewing various drought-related issues, 20 individual reports are presented on: (1) components of drought resistance; (2) breeding and selection approaches for rice in drought-prone areas; and (3) breeding and selection approaches for other crops in drought-prone areas.

Recommendations of the working groups regarding current constraints on efforts to increase drought resistance in rice are provided. It is concluded that needed drought resistance mechanisms - escape, avoidance, and recovery - can be scientifically developed through long-term cooperative research.

341

* PN-AAM-098

MF \$3.24/PC \$26.78

Field problems in cassava

Lozano, J.C.; Bellotti, Anthony; et al.
International Center for Tropical Agriculture
CIAT series, no.07EC-1, Oct 1981, 205p. : 2nd ed., En
* CIAT, Apartado Aereo 6713, Cali, Colombia

During their long growth cycle (8-24 months), cassava plants are threatened by many pests and diseases, as well as by nutritional and agronomic deficiencies. Because control of such problems during the growing season can be too expensive or even impossible, preventing them should be the farmer's first priority.

This illustrated manual describes 25 important diseases, over 19 important pests, 15 nutritional deficiencies or toxicities, and symptoms of damage caused by 6 particular herbicides. General and specific preventive measures against these sources of cassava damage are provided. Appended are suggested stake planting treatments, keys for identifying some diseases and pests, and a list of related publications.

342

* PN-AAM-099

MF \$3.24/PC \$31.85

Mejoramiento de arroz (Rice improvement)

Jennings, P.R.; Coffman, W.R.; Kauffman, H.E.
International Center for Tropical Agriculture
CIAT series, no.09SR-3, Jun 1981, 237p. : Es
* CIAT, Apartado Aereo 6713, Cali, Colombia

As part of an international effort in rice improvement, specialists from all over the world have contributed to this volume, which provides scientists a practical manual for understanding all phases of the development of improved rice varieties.

An introductory chapter on the underlying philosophy for genetic improvement research provides a background for succeeding chapters on: systems of genetic improvement; operational procedures; establishment of the objectives of genetic improvement; genetic improvement of agronomic and morphological characteristics; grain quality; genetic resistance to plagues; tolerance to unfavorable soil chemistry; adaptability to drought; and temperature tolerance.



343

* PN-AAM-105
MF \$3.24/PC \$37.83

Primer taller Latinoamericano sobre intercambio de germoplasma de papa y yuca (First Latin American workshop on potato and yucca germplasm interchange)

Roca, William M.; Hershey, Clair D.; Malamud, Oscar S. International Center for Tropical Agriculture (Latin American Workshop on Potato and Yucca Germplasm Interchange, 1st, Cali, CO, 25-29 Jan 1982) *CIAT series, no.03SC-6(82)*, Aug 1982, xvi, 295p. : Bibliography p.277-295, Es 9310865

* CIAT, Apartado Aereo 6713, Cali, Colombia

The First Latin American Workshop on Potato and Yucca Germplasm Exchange was held in Cali, Colombia in January 1982. Papers presented at the workshop are herein provided in summary form.

Workshop sessions dealt with the following basic topics: (1) quarantine regulations; (2) the availability of germplasm at the International Center for Tropical Agriculture (CIAT) and the International Potato Center (CIP); (3) pathologies transmitted through germplasm interchange; (4) germplasm maintenance, interchange, and multiplication; and (5) needs for improved germplasm interchange research and infrastructure. The needs for a better system for distributing nonpathological genetic yucca and potato resource materials for research, agricultural production, and consumption, and for disseminating research results among research institutes were emphasized.

Details on significant pathogens and official regulations regarding plant interchanges and protection are included in appendices along with a 274-item bibliography.

344

PN-AAM-096
MF \$1.08/PC \$1.17

Comparison of the pour, spread, and drop plate methods for enumeration of *Rhizobium* spp. in inoculants made from presterilized peat

Hoben, H.J.; Somasegaran, P. University of Hawaii. College of Tropical Agriculture and Human Resources. Department of Agronomy and Soil Science; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture *Applied and environmental microbiology*, v.44(5), Nov 1982, p.1246-1247 : En 9310613

AID/ta-C-1207

With inoculants prepared from presterilized peat, viable counts of rhizobia may be determined by the pour, spread, and drop plate methods. The method chosen should allow for accuracy while economizing on plating media and petri dishes. This brief article reports on an experimental comparison of these plating methods.

Details on peat preparation, introduction of the culture, sampling, and testing of the inoculant by each plating method are described. The results of viable counts show no general trend, indicating that any of the methods may be adopted for routine laboratory use. Nonetheless, the drop plate procedure was preferred as more counts could be made on one plate and the method was the least laborious. If, however, inoculants

have been exposed to high temperatures, the plant infection method may be preferred to arrive at a reliable estimate of infective rhizobia.

345

PN-AAN-072
MF \$1.08/PC \$5.52

Effects of virus infection on nitrogen fixation in cowpea *Vigna unguiculata* (L.) Walp

O'Hair, S.K.; Miller, J.C. Jr. U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture *Journal of the American society for horticultural science*, v.107(3), May 1982, p.516-519 : En 9310610

The effects of the cowpea strains of southern bean mosaic (SBMV-CS), cucumber mosaic (CMV-CS), and tobacco mosaic (TMV-CS) viruses on cowpea *Vigna unguiculata* (L.) Walp plant growth and nitrogen fixation parameters were evaluated in greenhouse and field experiments. TMV-CS infection resulted in the most severe symptoms and was associated with significant reductions in nitrogenase activity, total nodule weight, nodule number, and plant dry weight in susceptible cultivars. Infection with CMV-CS was associated with significant reductions in nitrogenase activity, nodule number, and plant dry weight in field-grown "Mississippi Silver." SBMV-CS infection was least severe and was associated with a significant reduction in nitrogenase activity and nodule weight in only one susceptible cultivar under field conditions. (Author abstract)

346

PN-AAL-296
MF \$1.08/PC \$9.75

Sustaining rapid growth in India's fertilizer consumption: a perspective based on composition of use

Desai, Gunvant M. International Food Policy Research Institute *IFPRI research report, no.31*, Aug 1982, 71p. : Bibliography p.63-71, En 9364062 DAN-4062-G-00-1009-00

India's Sixth Five-Year Plan aims to increase fertilizer consumption to 9.7 million tons in 1984-85. This study of changes in the composition of total fertilizer use in India between the early 1950's and the mid-1970's attempts to identify policies that can sustain India's desired rapid growth in fertilizer use.

Three aspects of fertilizer use are examined: shares of crops in total fertilizer consumption; diffusion of fertilizer use by crop; and average rates of use on fertilized areas by crop. Wherever possible, separate crop profiles are developed for irrigated and unirrigated areas and for traditional and improved crop varieties. Findings confirm previous studies showing the dominant influence of certain crops, irrigation, and fertilizer-responsive varieties on the pace and pattern of growth in fertilizer consumption.

However, the author concludes that fertilizer use might have increased even faster had it not been for: inadequate promotion of fertilizer use with certain crops and in unirrigated areas; an inefficient distribution system; repeated shortfalls in domestic fertilizer production; and wide year-to-year fluctuations in



fertilizer imports. A 9-page bibliography and 31 tables are included.

347 * **PN-AAL-276**
MF \$1.08/PC \$2.86

Research on algae, blue-green algae, and phototrophic nitrogen fixation at the International Rice Research Institute (1963-81), summarization, problems, and prospects

Roger, P.A.; Watanabe, I.
International Rice Research Institute
IRRI research paper series, no.78, Jun 1982, 21p. :

References p.18-19, En
* *IRRI, P.O. Box 933, Manila, Philippines*

This paper provides general information on one of the major research areas of the International Rice Research Institute's (IRRI's) Soil Microbiology Department. Conclusions made after an extensive survey of the literature on the role of blue-green algae in rice cultivation are summarized. Microbiological research at IRRI on algae, blue-green algae, and phototrophic nitrogen fixation is reviewed. The paper also provides information on problems encountered and prospects for future research. (Author abstract)

348 **PN-AAL-834**
MF \$1.08/PC \$10.27

Biological nitrogen fixation in flooded rice fields

Lowendorf, Henry S.
Cornell University. New York State College of Agriculture and Life Sciences. Department of Agronomy; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture

Cornell international agriculture mimeograph, no.96, Nov 1982, 76p. : References, p.42-55, En
931012711
AID/CSD-2834

Worldwide increases in the cost of nitrogen fertilizer have led to renewed interest in biological nitrogen fixation as an alternative fertilizer source. This paper attempts to determine the amount of nitrogen that can be produced through biological fixation in flooded rice fields and examines the ability of biological nitrogen fixation to maintain or increase rice yields.

First, the paper reviews three methods of measuring biological nitrogen fixation and nitrogen cycling. Next, a number of studies on nitrogen gains and losses in the rice field are summarized; exogenous and endogenous nitrogen sources, nitrogen sinks, and the nitrogen balance are examined. Experimental evidence is then cited which indicates that farmers can manipulate nitrogen fixers to significantly raise rice yields. A final section discusses limits on the effectiveness of nitrogen fixers in providing nitrogen to rice. The author concludes that while biological nitrogen fixation can provide 100 kg or more of nitrogen per hectare per crop, there is a critical need to identify management practices that will reduce nitrogen losses from rice fields. Included are 136 references (1939-80) and 15 tables of data.

349 **PN-AAL-874**
MF \$1.08/PC \$9.91

Effect of salinity on rhizobium growth and survival

Singleton, P.W.; El Swaify, S.A.; Bohlool, B.B.
University of Hawaii. College of Tropical Agriculture and Human Resources. Hawaii Institute of Tropical Agriculture and Human Resources

Applied and environmental microbiology, v.44(4), Oct 1982, p.884-890 : En
9310129; 9306130
AID/DSAN-G-0100; AID/ta-C-1207

Little work has been done concerning the effect of salinity on legume-*Rhizobium* symbiosis. This paper compares 11 rhizobia isolated from saline and non-saline environments for their ability to survive in salt solutions and in saline soil with different moisture tensions. *Rhizobium* survival in gamma-irradiated soil was also examined. Experimental materials and methods are described and the results discussed.

Although salinity slowed the growth of all strains tested, there was considerable variation among species for salt tolerance. Rhizobial survival was found to be related to reduced water potential rather than to ecological origins or growth rates in normal media. Both tolerant and sensitive strains were much more tolerant of soil salinity and dry soil conditions than were their leguminous hosts. These findings imply that the emphasis of research concerning the effects of salinity on symbiotic nitrogen fixation should be directed to aspects of symbiosis other than survival of *Rhizobium*.

350 **PD-AAM-401**
MF \$1.08/PC \$3.64

Fertilizer bulk blending in Costa Rica

Soday, Albert; Weir, Howard; Carpenter, Kirby B.
Agricultural Cooperative Development International; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Costa Rica

Jan 1983, 25p. : En
Spanish edition: PD-AAM-565
5150000
PDC-0100-I-09-2067-00

A study conducted in 1982 of the economic and technical feasibility of establishing a fertilizer bulk blend plant for Costa Rica's cooperative sector is herein reported.

Discussion is given in turn to the production levels, facilities, and marketing philosophy of the Government-owned chemical-process fertilizer plant, Fertica; the world and local fertilizer marketing situations; cost requirements for bulk blending of fertilizer in Costa Rica; and the advantages and disadvantages of Fertica's marketing infrastructure.

It is concluded that a new bulk plant would be of only marginal benefit to Costa Rica in the immediate future. The current production and marketing advantages of chemical over bulk fertilizers are many. Moreover, Fertica produces an excellent blend, currently supplies 95% of domestic consumption, and has a 160,000 ton surplus capacity. However, Fertica's lack of a consumer-dealer distribution system has resulted in delays and redundancies in product supply and demand.

It is suggested that Fertica's marketing system be restructured and that Government involvement be curtailed or eliminated in order to improve Fertica's image and increase its benefit to Costa Rica's agricultural community.



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351

PN-AAM-017

MF \$1.08/PC \$5.59

Soil improvement, rainfall conservation, and erosion control in developing countries

Sprague, Howard B.

U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
Agriculture technology for developing countries: technical series bulletin, no.28, n.d., iv, 38p. : En

Agricultural production depends, among other things, on an efficient system of soil improvement, rainfall conservation, and erosion control. This bulletin discusses basic principles of sound land management that are applicable to the present situation in developing countries.

Section I begins by discussing chemical aspects of soil improvement and then describes the characteristics of commercial (phosphate, nitrogen, potash, magnesium, and mixed) and natural fertilizers; proper use of the fertilizers is outlined and soil liming to reduce excessive acidity is also discussed. Section II describes rainfall conservation by allowing rain to filter into the soil profile for use by plant roots; soil variables (e.g., texture and structure) affecting water infiltration are considered. Finally, Section III explains the mechanics of soil erosion, giving special attention to the control of water erosion by terracing or contour stripping and role of forage crops in building soil and controlling erosion. Control of wind erosion on both arable and grazing lands is also discussed. It is concluded that with the transfer of appropriate land management techniques to developing countries, great progress can be made in increasing land quality and agricultural production.

352

PN-AAM-643

MF \$1.08/PC \$4.68

Simple assessment techniques for soil and water

Wood, Timothy S.; Tillman, Gus; et al.

Coordination in Development, Inc.; U.S. Agency for International Development. Bureau for Private and Development Cooperation. Office of Private and Voluntary Cooperation

1980, iii, 31p. : En

Low-technology environmental analysis, while primitive and lacking in precision, can provide developing country planners with a surprising amount of valuable information. This booklet, prepared for a workshop on environmental factors in small-scale development projects, describes simple soil and water testing techniques for use when detailed environmental impact studies are not feasible.

Instructions are provided for measuring soil pH and texture, water percolation and infiltration rates, and the presence in water of dissolved minerals, sodium, and coliform bacteria. A key for interpreting the field data to determine the suitability of the soil for irrigation is included, and sample field practice and situation data sheets are appended.

353

PN-AAL-010

MF \$1.08/PC \$8.19

Bangladesh small-scale irrigation

Friedkin, Tom; Lester, Robert T.; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
A.I.D. project impact evaluation report, no.42, Apr 1983, x, 27p. + 4 appendices : En
3880019

The Small Scale Irrigation Project in Bangladesh is an example of a project which could not fail, but, due to a variety of institutional shortcomings, almost did. So concludes this evaluation of the project, which was initiated in 1976 to provide hand tubewells (HTW's) to small farmers in Bangladesh.

The project was designed to take advantage of a technology already widely accepted in Bangladesh and well-adapted to the country's climate and its high water table. The HTW, or handpump, is simple to operate and maintain, and makes use of cheap local labor. Most importantly, it is inexpensive, and with credit available, affordable by small farmers. Despite these positive factors, the project was plagued by problems from its beginning, mainly because its initial design failed to adequately address a number of crucial issues: the need to import iron (lack of raw materials delayed implementation for years) for indigenous manufacture of HTW's; the exact design of the pump; production by local foundries; and, especially, the credit and distribution system.

To ensure that targeted farmers - those owning 3 acres or less - were reached, a system of certification and documentation was created. The system proved ineffective and its paperwork a hindrance. Worse, institutional inadequacies with the credit system (along with farmer dislike of the system, which required their land as collateral) made farmers owning 3 to 7 acres the primary beneficiaries. Such farmers are at the upper end of the landholding scale in Bangladesh.

Most of these problems have now been worked out - although spare parts are hard to obtain and the credit system still inadequate - and some 180,000 HTW's are in use, primarily for irrigating a third, dry season crop which would not have been planted but for the pumps, and which is, in some cases, a cash crop. A market has recently developed for used HTW's, making them available to the poorest farmers, those not well served by the credit system. The HTW's have also been used to increase the supply of potable water, reducing the incidence of dysentery and stomach ailments.

354

* PN-AAM-531

MF \$1.08/PC \$5.59

Irrigation and rice production in the Philippines: status and projections

Ongkingco, Pat S.; Galvez, Jose A.; Rosegrant, Mark W.
International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

Rice policies in Southeast Asia project: working paper, no.3, Feb 1982, iv, 37p. : En

* IIRI, P.O. Box 933, Manila, Philippines

The past and projected future impacts of irrigation on rice area, yield, and production in the Philippines are the subject of this report, a revision of a presentation made at a May 1977 workshop of the Rice Policies in Southeast Asia Project.



An analysis of area, production, and yield data between 1957-58 and 1978-79 at increasing levels of disaggregation shows that rice production grew steadily during the 1970's due primarily to adoption of modern varieties, increased use of fertilizer, and expansion of irrigated land. Annual yield increases due to irrigation ranged from 1.8 to 2.8 MT's per ha, depending on the quality of the irrigation. Increasing water supply to farms through improved water control and rehabilitation of deteriorated systems is recommended to increase yields.

Projections based on recent trends, current irrigation investment plans, and constant real prices show that production will almost match domestic consumption, with a small exportable surplus through most of the 1980's and a small net surplus later on. Projections based on a 6% increase in food demand indicate that an additional 340,000 ha of irrigated area would be needed by 1989 or 1990 at a cost of \$400 million. A 10% fertilizer subsidy to reduce the disincentive of declining real farm prices would cost an estimated \$250 million over the next decade. Conclusions are supported by 22 tables of data.

355

* PN-AAL-389

MF \$1.08/PC \$5.46

Farmer involvement; water management synthesis project

Lowdermilk, Max K.; Lattimore, Dan
U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture; Consortium for International Development; Colorado State University. Engineering Research Center; Utah State University. Department of Agricultural and Irrigation Engineering

Dec 1981, 39p. : En Planning guide no. 2
9311007

AID/DSAN-C-0058

* Also available in Spanish and French

Successful experiences with participatory irrigation projects in Pakistan, India, Egypt, and Ethiopia indicate that farmer involvement in defining, initiating, and implementing irrigation projects is a important means of insuring project success. This profusely illustrated guide was prepared to help development practitioners involve farmers in irrigation projects worldwide.

The guide outlines the needs for farmer involvement; suggests the resulting benefits to the farmer, the community, and the nation; and presents strategies for farmer involvement based on given principles and guidelines. Specific suggestions are made to help farmers assist in all aspects of identifying baseline resources and needs; applying project resources, training, and technical assistance; and disseminating successful project results.

356

PN-AAM-392

MF \$3.24/PC \$31.98

Agricultural expansion planning: incorporating water reuse

Allam, Mohamed N.; Marks, David H.
Cairo University; Massachusetts Institute of Technology. Technology Adaptation Program; U.S. Agency for International Development. Bureau for Near East. Egypt
Technology adaptation program report, no.82-2, May 1982, xiii, 232p. : References p.122-124, En Report no.269; Report no.R82-10

2630013

AID/NE-C-1291

The presence of salt in irrigation water causes an increase in irrigation water requirements and decreases in plant growth and thus crop yield. This report develops a planning system for a large-scale agricultural expansion project where some or all irrigation water resources are saline.

First, a simple procedure is outlined to determine the amount of water necessary to leach salt out of the root zone of an irrigated field and thus maintain an acceptable level of production with the available saline water supply. Next, a mathematical model is presented, to guide decisions in a project where irrigation sources have different salinities. These decisions - crop selection, quantities and locations of all resource inputs, the mixing ratio between different waters (if mixing is possible), irrigation network design, required enlargement of the existing irrigation system, and crop pattern distribution - are based on the maximum net benefit criterion and are carried out in a mathematical optimization framework. The model is then applied to an Egyptian case study, agricultural expansion in the Nile Delta and the Sinai. Alternative irrigation schemes are discussed, an economic approach for analyzing the alternatives is presented, and equity concerns in scheduling and cost allocation are considered.

Appendices provide tabulated data from the case study on seasonal discharges and salinities of the irrigation water sources, the model's output, and the model's input. (Author abstract, modified)

357

PN-AAM-394

MF \$2.16/PC \$19.24

Linear channel and its effect on the geomorphologic IUH

Kirshen, Diana M.; Bras, Rafael L.
Cairo University; Massachusetts Institute of Technology. Technology Adaptation Program; U.S. Agency for International Development. Bureau for Near East. Egypt
Technology adaptation program report, no.82-4, Jun 1982, 146p. : En Report no.277; Report no.OSP 89965; Report no.R82-29

2630013

AID/NE-C-1291

To more accurately determine the factors influencing run off from a drainage basin, the Instantaneous Unit Hydrograph (IUH) is derived as a function of the basin's geomorphological and physiographic characteristics. Inherent in the basin IUH is the response of the individual channels composing the basin. The response of the individual channels is derived by solving the continuity and momentum equations for the boundary conditions defined by the IUH. The effects of both upstream and lateral inflow to the channels are taken into account in the



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derivation of the basin's IUH. The time to peak and peak response are used as a basis for comparison between the results produced by this model and those produced by a model where the channel's response is assumed to be an exponential distribution. The comparisons indicate that if the approach taken in this paper is indeed accurate (if, for example, the assumptions used do not invalidate the model), then the type of channel response used for the basin's IUH is significant, and future efforts must be directed toward parameter estimation. (Author abstract, modified).

358

PN-AAM-395

MF \$3.24/PC \$33.41

Planning and design of agricultural drainage under uncertainty: a dynamic multi-level approach

Strzepek, Kenneth M.; Wilson, John L.; Marks, David H. Cairo University; Massachusetts Institute of Technology.

Technology Adaptation Program; U.S. Agency for International Development. Bureau for Near East. Egypt *Technology adaptation program report, no.82-5*, Jul 1982, 258p. : References p.253-258, En Report no.281; Report no.R82-39

2630013

AID/NE-C-1291

Proper drainage on irrigated fields is essential to avoid production losses due to waterlogging and salinity. Using test data from a typical drainage field in the Nile Delta, this study provides a first attempt to apply multi-level systems analysis to the entire agricultural drainage planning/design process.

Following an introductory chapter, the history of agricultural drainage and contemporary drainage planning are reviewed. Attention is then given to the physical processes governing groundwater flow to drains and the uncertainty and spatial variability of the physical drainage parameters in the widely used Hooghoudt drain design equation. Methodologies for analyzing spatial variability and uncertainty are presented and their application described. Next, two approaches to developing an optimal design model for field drains - a chance-constraint mathematical model and a stochastic model - are compared.

The main theme of the study is presented then in a chapter which provides a simulation model for the design of drainage collector systems, showing that alignment of the collector system has a great effect on the efficiency of the design of field drains. In response to this, a combined optimization-simulation model for the design of total drainage systems, collector network and field laterals, is developed. The combined model also allows for systematic cost-benefit analysis. Conclusions and recommendations for future research are presented and a 79-item bibliography (1940-82) is included.

359

PN-AAM-397

MF \$3.24/PC \$37.83

Interaction of the saturated and unsaturated soil moisture zones: 1. analytical solution of the linearized Richards equation; 2. the role of climate in shaping the phreatic surface

Miller, Scott A.; Eagleson, Peter S.

Cairo University; Massachusetts Institute of Technology.

Technology Adaptation Program; U.S. Agency for International Development. Bureau for Near East. Egypt *Technology adaptation program report, no.82-7*, Aug 1982, 289p. : En Report no.284; Report no.OSP 89965; Report no. R82-43

2630013

AID/NE-C-1291

For agricultural planning, it is useful to know what factors affect the shape and depth of the water table in swampy areas. This study presents a linear model of interactions between the water table and the unsaturated soil moisture zone (which links the saturated water table zone to the land surface). The effects of climate on the water table are also modeled.

Part I of the study: (1) comments on the applicability of certain hydrologic equations of the soil-water zone developed for semi-infinite and finite soil columns; (2) deduces and solves a linearized Richards equation for soil-water movement in high water tables (including some effects of vegetation); and (3) examines the equation's solutions for the infiltration of moisture into a soil system, finding them similar to nonlinear solutions; dimensionless expressions are derived to indicate when a finite domain analysis is needed.

In Part II, quantitative relationships among soil-water content, water table depth, and net accretion to the groundwater for different soil types and climates are developed and used in a nonlinear model of the water table shape and of long-run climatic influences on it. Case studies are presented, using data from the El-Gizera and Bahr-el-Ghazal regions of Sudan. It is shown that the water table plays a significant role in many water balance problems. Appended are physically-based expressions for infiltration and ponding time and a 165-item bibliography (1921-81).

360

PN-AAM-452

MF \$1.08/PC \$5.07

Impact of irrigation and labor availability on multiple cropping: a case study of India

Narain, Dharm; Roy, Shyamal

International Food Policy Research Institute

IFPRI research report, no.20, Nov 1980, 35p. : En DAN-1275-G-SS-2124

Multiple cropping must expand at a much faster rate if the Government of India's (GOI) food production targets are to be met. This case study examines the considerable differences in multiple cropping from State to State and within selected States in India in order to discover the effect on multiple cropping of the key variables of irrigation and the availability of labor.

The availability of labor per unit of sown area and the extent and quality of irrigation were found to account for 80% of inter-State variations in multiple cropping; in 12 of the 17 States studied, the same factors accounted for 80% of the variations in cropping intensity among farm holdings grouped according



to size. Smaller farms used labor and irrigation more intensively, while among irrigation methods, tubewells had the most positive effect on multiple cropping, double that of wells and canals.

Results suggest that the expansion of irrigation contemplated in the GOI's Sixth Five-Year Plan could, if rightly implemented, increase multiple cropping by about 1% per year, resulting in a 3.5% increase in agricultural output at the present productivity rate. On a more general level, results indicate that land reforms can exert a significant favorable effect on multiple cropping.

361

* PN-AAM-529

MF \$1.08/PC \$11.83

Economic analysis of irrigation development in Malaysia

Taylor, Donald C.; Noh, Kusairi M.; Hussein, Mohammad A. International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

Rice policies in Southeast Asia project: working paper, no. 1, 1979, iv, 85p. : En

* IRRI, P.O. Box 933, Manila, Philippines

The status and performance of irrigation in Malaysia are reviewed in this study. The first section provides background information on the Malaysian paddy/irrigation sector. The second examines historical trends in Malaysian paddy production and identifies the relative importance of different types of paddy, and of paddy area and yield, as sources of production growth. The third and principal section deals explicitly with irrigation. It focuses on the history of irrigation in Malaysia from pre-1900 to the present, examines investment in irrigation over time, and presents cross-sectional comparisons among different types and sizes of irrigation schemes implemented by the Government of Malaysia's Drainage and Irrigation Department. The paper concludes by suggesting priority areas for future research. Twelve figures and 25 tables are included and a 4-page bibliography (1948-79) is appended. (Author abstract, modified)

362

PN-AAM-532

MF \$1.08/PC \$8.06

Status and performance of irrigation in Indonesia and the prospects to 1990 and 2000

Nyberg, Albert J.; Prabowo, Dibyo International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

Rice policies in Southeast Asia project: working paper, no. 4, Feb 1982, iv, 56p. : En

The extent of irrigation development in Indonesia and its future prospects are addressed in this study, one of a series on Southeast Asian rice policies.

Irrigated areas are inventoried by province, and rice production (and cropping intensity) are analyzed with the help of statistical tables. The efficiency of existing water management programs is then evaluated and efforts to rehabilitate irrigation systems and establish pilot tertiary plots aimed at demonstrating terminal water control are noted. Next, the operation and maintenance of irrigation systems is viewed organizationally,

with reference to provincial and village-level lines of authority. Tertiary canal development and its effects on crop yields are examined, as are Sederhana irrigation schemes (small, run-of-the-mill, diversion weir projects). The economic feasibility of alternative irrigation projects, such as water impoundment, run-of-the-river diversion, and tidal reclamation, are evaluated. Finally, rice production and the extent of areas irrigated are projected to the years 1990 and 2000. It is concluded that continued expansion of irrigated areas is necessary, primarily in Java, and that more emphasis should be placed on small-scale expansion programs. A four-page bibliography (1963-81) of Indonesian and English sources is appended.

363

PN-AAM-711

MF \$1.08/PC \$4.81

Discharge and mechanical efficiency of Egyptian water-lifting wheels

Slack, Roger; Wahby, Hassan; Clyma, Wayne Colorado State University. Engineering Research Center; Consortium for International Development; Egypt. Ministry of Irrigation. Water Distribution Research Institute. Water Research Center; U.S. Agency for International Development. Bureau for Near East. Egypt

Egypt water use and management project technical report, no. 36, Jan 1983, vi, 29p. : En, Ar

2630017

AID/NE-C-1351

In Egypt and neighboring areas, where waterwheels are used to lift water from irrigation supply canals to field level, two important parameters in evaluating an irrigation system are the discharge per revolution and the mechanical efficiency of the waterwheel.

Data on 35 spiral-shaped waterwheels from the Mansuriya and Kafr El-Sheikh regions of Egypt were used to develop a field procedure for calibrating the discharge per revolution relative to the percent of submergence of the wheel. Thus, the rate and quantity of water applied to a field could be determined using data on the number of revolutions and the change in submergence of the wheel over time. A typical discharge per revolution of a 3-m diameter wheel, lifting water 75 cm, was 600 liters per revolution. In addition, a procedure was developed to determine a wheel's mechanical efficiency from field data. Data on 11 waterwheels from the Kafr El-Sheikh area were analyzed; the data indicated that a well-designed and maintained installation might be expected to have a mechanical efficiency of 45%. (Author abstract, modified)

364

PN-AAL-344

MF \$1.08/PC \$5.72

Stratification of livestock production and marketing in the Zinder Department of Niger

Thomas-Peterhans, Randall University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Africa. Regional Economic Development Services Office. West Africa

Sep 1982, vii, 39p. : En

6980009

REDSO/WA-77-105-T



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Southeastern Niger's three distinct climatic and geographical zones have the potential to allow regional specialization in livestock production. While an arid northern region is suitable only for rainy season grazing, a wetter southern area can support year-round livestock production and an intermediate zone is useful for the growing-out of cattle. This paper examines the existing degree of specialization of production in the southern and intermediate zones.

Primary data collection was conducted in the Zinder Department of Niger from 1979-1981. Farm management survey techniques were used to collect information on labor, land, capital, budget, and management variables. Agricultural production functions, linear programming models of small mixed farms, and social benefit-cost analysis of a government-financed cattle fattening project were the major analytical tools employed.

The author's main finding is that small, mixed farms are an economically viable system of livestock and crop production which should serve as the basis for further development in the Zinder Department. The existing production and marketing systems operate efficiently in stratifying livestock production, although the growing-out and breeding operations are currently performed by the same groups. Cattle fattening and breeding/growing-out operations are well integrated at present, but questions remain about how large these operations can become without causing shifts in the structure of cattle and feedstuff prices.

Among results are that: (1) the government-financed cattle fattening project is privately and socially profitable; (2) small farmers use their resources in an efficient fashion with little additional output possible from a reallocation of these resources; and (3) cattle breeding/growing-out activities could be expanded by extending government credits to farmers for the purchase of additional cattle. Results are used in developing a set of policy recommendations for further encouraging the stratification of livestock production and marketing in the Zinder Department of Niger. (Author abstract, modified)

365

PN-AAM-014

MF \$1.08/PC \$8.45

Production, storage and feeding of herbaceous forages to support ruminant livestock in developing countries of the tropics and subtropics

Sprague, Howard B.

U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
Agriculture technology for developing countries: technical series bulletin, no.27, 1980, iv, 58p. : En

Developing countries urgently need to increase livestock production in order to expand meat and milk supplies and exploit animal power for agricultural development. This report provides information on the production, storage, and use of herbaceous forages for the support of ruminant livestock (cattle, buffalo, goats, and sheep) in developing tropical and subtropical countries.

After presenting background data on deficiencies in meat and dairy supplies, agricultural land use, and rural populations engaged in livestock production, the author estimates the potential forage available on agricultural lands in developing countries. Attention is then given to livestock feed requirements and the need to feed supplemental protein forages to milk-producing and young livestock. Subsequent sections ex-

amine the roles that crop byproducts, annual soil-improving crops, seeded perennial forage legumes and grasses, and rangelands can play in providing herbaceous forage. Particular emphasis is given to rangeland management and to cultivation practices that will enhance herbaceous forage production on arable crop lands. Finally, forage harvesting is discussed and guidelines are presented for feeding stored forages to livestock.

Appended are data on agricultural family work units and ruminant livestock (by species) in representative countries and on crop residues suitable for feeding; a description of a dairy production system in the humid region of Central America is also provided.

366

* PN-AAM-034

MF \$10.80/PC \$115.31

Proceedings of the XIV international grassland congress

Smith, J. Allan; Hays, Virgil W.

American Forage and Grassland Council; University of Kentucky

(International Grassland Congress, 14th, Lexington, KY, US, 15-24 Jun 1981)

1983, xviii, 878p. : En

* From publisher, \$40.00

Grasslands cover more than half the total land surface of the earth, yet they remain a largely undeveloped resource for increased agricultural production. This report provides 272 research papers presented at the 14th International Grassland Congress.

Following brief opening remarks and business presentations, ten plenary session papers are presented, covering such topics as forage quality, livestock-forage management systems, and nitrogen relationships in grassland ecosystems. Next, two invited papers cover grassland development in Asia and livestock resources in the world's food supply. Voluntary papers are then presented under 14 broad subject headings: plant introduction, evaluation, and breeding; seed production; soil fertility; the nitrogen cycle; multiple use of grassland; physiological processes; grassland ecology; evaluation techniques; management of grazed and conserved forages; mechanization and treatment of forages; utilization of forages in animal production; tropical grasslands; transfer of grassland research findings; and socioeconomic aspects. An author index is appended.

367

PN-AAM-262

MF \$2.16/PC \$17.03

Animal traction in eastern Upper Volta: a technical, economic and institutional analysis

Barrett, Vincent; Lassiter, Gregory; et al.

Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Africa. Upper Volta

MSU international development paper, no.4, 1982, xiii, 118p.

: En

AID/AFR-C-1314

The technical, economic, and institutional impacts of the animal traction component of an AID-supported integrated rural development project undertaken by the *Organisme Re-*



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gional de Developpement de l'Est (EORD) in Eastern Upper Volta are herein evaluated.

After an initial overview of small farming systems in the region that use traditional hoe cultivation and donkey and oxen traction systems, a historical and institutional evaluation of animal traction programs is conducted, covering prior programs as well as the 1974-80 EORD program. The technical impact of animal traction is then reviewed, with reference to the purchase, sale, training, and maintenance of draft animals, their use in tilling and transport, their estimated production effects, and their impact on household labor allocation. Income and cash flow analyses are used to evaluate the economics of hoe cultivation and donkey and oxen traction, and the medium-term financial impact of animal traction is assessed on the basis of 10-year income projections. A final chapter summarizes the report's key findings, specifies the main constraints to the EORD program, and recommends changes to improve future programs both in the region and elsewhere in West Africa.

It is concluded that the vital requirements for program success are acceptance of a 10- to 20-year time span and institutionalization of a farming systems research program tailored to local circumstances.

368

PN-AAM-572

MF \$1.08/PC \$12.74

Prospects for the development of cattle production on mixed farms in the pastoral zone of Niger: a summary

Eddy, Edward D.

University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Development Information and Utilization

CRED discussion paper, no.83, Jun 1980, 91p. : En AID/AFR-C-1169

Some development planners believe that to prevent desertification in parts of Niger, cattle production should be encouraged over more environmentally stressful grain production. This paper, addressing this issue, is based on results of a survey conducted in 1976/77 among 45 households in the Asawak region of Niger.

The sample covered three populations: Hausa farmers and traders; Tuareg traders and wage laborers; and semi-nomadic Tuareg. Focusing on the latter group, a linear programming model of grain and livestock production is formulated. The analysis suggests that with the constraints imposed by consumption requirements and labor availability, semi-nomadic Tuareg are currently producing at optimal or near optimal levels, as determined by value-maximizing behavior. Sensitivity analyses indicate that marginal changes in technologies and prices will have only a minor impact on the desirability of cattle production and are unlikely to reduce the area planted to grain. Structural reforms in grain markets and property law are required to induce a shift into cattle production by any of the populations covered by the survey. (Author abstract, modified.)

369

PN-AAM-574

MF \$1.08/PC \$11.83

Economics of cattle and meat marketing in the Ivory Coast: a summary

Staatz, John

University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Development Information and Utilization

CRED discussion paper, no.86, Jun 1980, v, 84p. : En, Fr

Related document: PN-AAJ-218

AID/AFR-C-1169

In recent years, the market for cattle and meat in the Ivory Coast has changed markedly as a result of the drought in the Sahel and shifts in the world beef market. Based on 18 months of field research, this paper analyzes these changes and identifies constraints to expanding the cattle and meat trades.

Discussed in turn are the evolution and current organization of the Ivorian cattle and meat trades, the need for improved infrastructure, and the problems and costs of transporting cattle and meat to and within the Ivory Coast. Also examined are the determinants of the most profitable location for slaughter and the implications of cattle and meat price patterns for the financial viability of proposed cattle fattening projects.

The author concludes that the traditional marketing system is quite efficient, given the infrastructure and institutional framework within which it operates, and that large-scale restructuring to develop a government monopoly, as attempted in Ghana, would be a costly and inefficient use of government resources. The alternative, judged more likely to succeed, is to concentrate on relieving transportation and infrastructural constraints in the marketing system, in the hope that competition will then drive down gross marketing margins. Government and donor planners should work with traditional cattle traders and butchers to develop mutually acceptable improvements. (Author abstract, modified)

370

PN-AAM-581

MF \$1.08/PC \$3.64

Model of meat versus live-animal exports from Upper Volta

Makinen, Marty; Herman, Larry; Staatz, John

University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Development Information and Utilization

CRED discussion paper, no.90, Feb 1981, v, 24p. : En AID/AFR-C-1169

Exports of meat and livestock of Upper Volta - which generate almost half that country's foreign exchange - have declined in recent years. Since one way for Upper Volta to gain more from its exports would be to increase the proportion of meat, relative to livestock, exported, this paper develops a theoretical model of how Voltaic exports are allocated between live-animal and meat exports.

The model, which is used both to explore interrelationships between meat and live-animal exports and to predict the effects of likely future events (the financing of new meat traders; changes in Abidjan meat prices, or in the relative prices of meats and offals, or in their relative transportation costs; an increased ability to process and export edible offals; and changes in the demand for offals in the North), shows that



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conditions that might be expected to favor one mode of export over the other do not necessarily do so, but are self-braking, allowing both modes to coexist profitably. The authors conclude that the best way for the Government of Upper Volta to promote meat exports would be to increase the capacity to process and export offals and to decrease meat transportation costs. The model's results are applicable not only in Upper Volta, but also in other inland meat-producing countries in West Africa.

371

PN-AAM-660

MF \$1.08/PC \$3.64

Etude de prefactibilite d'une industrie de la transformation de la viande dans la Communaute Economique de l'Afrique de l'Ouest (Study of the practicability of a meat processing industry in the Economic Community of West Africa)

Steiner, Michael P.

U.S. Agency for International Development, Bureau for Africa, Office of Regional Affairs; U.S. Agency for International Development, Bureau for Africa, Office of Project Development

Oct 1982, 24p. : Fr

AID/SOD/PDC-C-0251

The nations forming the West African Economic Community (CEDAO) are increasingly deficient in meat products from steers, pigs, chickens, sheep, and goats. The study reported here was designed to determine the practicability of establishing a meat processing industry to make more effective use of the meat available from countries outside the CEDAO, while also reducing meat imports.

Reviewed in turn are: the indigenous supply of top quality meats, meat demand, available slaughter facilities and meat processing techniques, and the constraints to developing a meat processing industry. It is concluded that the ongoing deficiency in the supply of top quality meats renders the establishment of a meat processing industry infeasible. Several recommendations are offered to make meat more widely available: (1) a study of the cost of services and infrastructure for meat and animal transport by truck, train, and airplane; (2) a detailed study of meat and animal price structure (price fixing, markets) and abattoir operations, including taxes; (3) a detailed feasibility study to determine the viability of a meat processing industry based on imported meat; (4) a regional research program on meat production and marketing maintained under CEDAO; and (5) a detailed study of poultry and egg production and marketing (supply, price, commercial infrastructure) leading to a centralized regional program of poultry production and improvement.

372

PN-AAM-876

MF \$1.08/PC \$11.70

Animal traction: guidelines for utilization

Goe, Michael R.; McDowell, Robert E.

Cornell University, New York State College of Agriculture and Life Sciences

Dec 1980, iii, 84p. : Bibliography p.57-84, En

There are conflicting views on the use of animal traction in agriculture, with some experts believing that production can

only be increased through mechanization. This study propounds the viewpoint that animal traction and mechanization should be integrated in agricultural development programs.

The study examines the principles of animal traction, including measuring power, the pulling of plows and wheeled implements, and line of pull. Methods of calculating the draft capacity of animals under different circumstances are also investigated, and description is given to the capabilities, in stressful, warm climates, of horses, donkeys, buffalo, oxen, cows, camels, and elephants. The draft power of yaks, yak-cattle hybrids, reindeer, llama, alpaca, dogs, elk, moose, sheep, and goats is also discussed. The draft and packing performances of different draft animals are compared, and nutrient requirements explored. In conclusion, the authors note that more efficient and productive systems of employing animal traction are essential in developing countries. Recommended in particular are improved harness, a study of the physical principles affecting draft to allow for more efficient transfer from animals to implements, and improved nutrition regimes.

Appendices include lists of African and South and East Asian cattle used for traction and a 28-page bibliography (1881-1980).

373

PN-AAM-184

MF \$2.16/PC \$15.47

Inland fisheries

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania, Ministry of Economy and Finance, Directorate of Studies and Programming; U.S. Agency for International Development, Bureau for Africa, Mauritania

1981, 117p. : Bibliography p.112-117, En Report no.SS-5

French edition: PN-AAM-148

6820211

AID/af-C-1489

Mauritania's extremely arid climate and high soil permeability limit inland fishing to the country's southern area. This report analyzes the most important Mauritanian fisheries, those located along the Senegal River.

Analyses of the ecosystem's production potential, actual fish production, and fish demand shows that: potential catch depends on rainfall, which varies significantly from year to year; fishermen are competent and well-equipped, with actual catches equaling potential catches; and the high demand for fish leads to overfishing and, during years of low rainfall, market shortages. It is noted further that hydraulic development projects planned for the Senegal River Basin will upset the delicate ecological balance, increasing fish production upstream, but decreasing it downstream.

It is concluded that in order to reestablish an equilibrium of production (including employment and income) and demand in all regions, policies are needed both to protect the natural supply of fish through increased supervision and rationalization of fishing techniques and to intensify artificial, that is, pond, production. Appendices treat inland fisheries' production costs, the possibilities of combining pisciculture with rice growing, and the integrated development project at Paliba.



374

PN-AAM-185
MF \$2.16/PC \$15.47

Traditional maritime fisheries

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

1981, iv, 112p. : Bibliography p.111-112, En Report no.SS-6
French edition: PN-AAM-149
6820211
AID/afr-C-1489

The Sahelian drought drastically reduced the number of fish in Mauritania's rivers and thus created a growing, potential market for the country's underdeveloped maritime fishing subsector. This study describes the present state of the subsector and outlines general policy guidelines to increase maritime fishing and supply inland markets.

Maritime fishing zones and their resources (species of fish and their spawning patterns) are described, along with the characteristics of the fishermen and their organization. Production in the subsector is analyzed with regard to the types of fishing boats employed; the acquisition and productivity of different types of fishing equipment; existing fishing cooperatives; fish processing, storage, and marketing; and subsector production costs. The areas of infrastructure, supervision, training, management, and financial resources are analyzed. A final chapter on development possibilities for the subsector recommends that current projects by Japan and the Food and Agriculture Organization be coordinated with projects planned by Saudi Arabia and the European Development Fund. These projects provide fishing boats, refrigeration, transportation, and research on new fishing techniques.

375

PN-AAM-865
MF \$1.08/PC \$9.23

Economics of catfish farming in central Thailand

Panayotou, Theodore; Wattanuchariya, Sarun; et al. Kasetsart University. Research and Development Institute; International Center for Living Aquatic Resources Management

ICLARM technical reports, no.4, Jul 1982, viii, 60p. : En

A survey of 41 catfish farms in the Central Plain of Thailand was undertaken during 1979 to determine why production has been falling since 1974, despite high and rising market prices for catfish. Results showed that many catfish farmers have switched to the culture of other species or to crop cultivation, mainly because of high fish mortality and escalating feed (trashfish) prices. Yet some of the farms that continued made considerable profit, due to superior managerial ability of the owners, access to low-cost credit, and diversification of farming to spread risk; large-scale, experienced farmers often earned enormous profits while small-scale, inexperienced farmers incurred considerable losses.

Application of a Cobb-Douglas production function showed that 80% of the variation in output could be explained by the following variables (inputs): stocking rate; feeding rates of trashfish and broken rice; fuel for pumping water; medication of fish; size of farm; and experience of the operator. Profits could be increased by reducing the average catfish stocking rates and quantity of trashfish used as feed and by increasing the use

of broken rice and fuel for the purpose of changing pond water. Findings indicate the need to provide farmers with a spectrum of alternative input combinations (so that the mix can be altered as relative prices change), as well as appropriate short-term credit schemes, practical research, and effective extension on the problems of disease, feed-mix, and water management. (Author abstract, modified)

376

* **PN-AAN-028**
MF \$2.16/PC \$21.84

Evaluation of fishery and aquaculture programs of the Agency for International Development

National Academy of Sciences. National Research Council. Commission on Physical Sciences, Mathematics, and Resources; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
1982, vi, 161p. : En
9311155

* *Ocean Policy Committee, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, DC 20418*

U.S. fisheries assistance programs have potential benefits, both immediate and long-term, far outweighing their costs. Thus concludes this report, which reviews A.I.D.'s fisheries and aquaculture assistance program in order to identify promising mechanisms for future projects.

Four project mechanisms used by A.I.D. to support fisheries and aquaculture are reviewed. Detailed analysis is made of the Korean Fisheries Revitalization Program (1956-64), which was directly funded and supervised by A.I.D. in-country, and of 211(d) fisheries and aquaculture programs at the University of Rhode Island and Auburn University (1969-79). Less detailed analysis is presented of projects in which A.I.D. played a minor role in assisting fisheries development projects implemented by an international or regional entity, e.g., the Guinean Trawler Survey (1962-66), the East African Freshwater Fisheries Organization Project (1967-72), or by a foreign government, e.g., in the Philippines and India (1952-62). Successful programs, it is noted, have featured, on the side of host countries, good resource bases, a traditional importance of fish in the local diet and economy, and strong governmental commitment. Key U.S. ingredients have been major financial backing and long-term commitments, stress on programs encompassing all aspects of a fishery, provision of expert and experienced advisors, cooperation with local institutions, and flexible administration.

It is recommended that the United States provide fisheries assistance to developing countries on both humanitarian and politically strategic grounds and because of the United States's perhaps unique technical and institutional capability. It is also recommended that A.I.D., which should remain the primary sponsor and coordinator of U.S. assistance programs: remove fisheries programs from the agricultural office; develop a fisheries headquarters and field staff and a coherent fisheries strategy; use universities for expertise not readily available in-house; and focus assistance on fisheries management, capture fisheries, and aquacultural activities.



AGRICULTURE

377

PN-AAN-261
MF \$2.16/PC \$16.51

Guide for the small-scale fishery administrator: information from the harvest sector

Stevenson, David; Pollnac, Richard B.; Logan, Philip
University of Rhode Island. International Center for Marine
Resource Development; U.S. Agency for International
Development. Bureau for Science and Technology. Office
of Agriculture

ICMRD report, no.81/82-005, 1982, vii, 124p. : Bibliography
p.119-124, En
9310113

AID/DSAN-G-0173

Fishery management personnel are more likely to be trained as biologists than as economists or sociologists, even though economic and sociocultural data are required for rational fisheries management. This guide is aimed at helping decision-makers identify and collect these types of data from the resource and harvesting sectors of developing country small-scale fisheries. The first three chapters discuss the importance of economic and sociocultural information and outline a minimum set of biological, economic, and sociocultural information requirements. The next three chapters, written expressly with data collection officers in mind, treat in turn data needs, data collection methods, and cost-efficient data collection strategies. Appendices include a list of background information, three data collection forms, and a 111-item bibliography (1954-82).



In Africa, maritime fisheries are an important source of food.



378

PN-AAL-003

MF \$1.08/PC \$12.22

Food aid and development: the impact and effectiveness of bilateral PL 480 Title I-type assistance

Clay, Edward J.; Singer, Hans W.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
A.I.D. program evaluation discussion paper, no. 15, Dec 1982, x, 65p. + attachments : En

Food aid programs operate today within the contexts of priority for the relatively poorest countries, a multiplicity of food donors, tighter food markets, restrictive host country financial regimes, and an increasing focus on food aid's developmental potential. This report surveys existing literature on the nearly 30-year-old P.L. 480 program to assess the direct and developmental impacts of program food aid (Titles I and III) on recipient countries.

An analysis of the direct impact of Title I programs discusses why food aid may be an inferior form of resource transfer, investigates the food import problems of low-income countries and the relation between food aid and food security, and evaluates the use of food aid as balance of payments support. The developmental impact of food aid is discussed next, with special attention given to its incentive and disincentive effects; the role of changing tastes; the impact of food aid on government policies, nutrition, income distribution, and production technology; and the results of targeting poorer groups. A discussion of programming and operational issues covers the increasing importance of donor effectiveness, the relation of food aid to other development assistance programs, and conditionality requirements for host country self-help measures. A brief summary of the highly diverse impacts of food aid on development concludes the report. Appendices include a review of food aid in India and a six-page list of references (1936-81).

379

PN-AAL-343

MF \$5.40/PC \$57.20

Consumption effects of agricultural policies: Cameroon and Senegal

University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Nutrition

Aug 1982, vii, 465p. : En
9311274
DSAN-C-0270

The impact of agricultural development projects and policies upon the nutritional well-being of rural families has been a topic of increasing concern. This two-part report presents the results of research to develop a workable methodology for tracing the food consumption effects of rural development interventions. The approach incorporates farmers' food consumption considerations into the overall farm-level decision-making process.

Part I presents country studies for Senegal and Cameroon. The former study focuses on trade-offs between peanut and millet production and on the role of imported rice in rural areas. The Cameroon study examines how access to marketing opportunities can affect farmers' food consumption patterns. Alternative field research techniques for rapid gathering of data

to measure food intake, market factors, and crop labor requirements were tested in the two studies. Failure to obtain reliable recall data on crop-labor requirements was a major disappointment.

Part II develops a general framework for integrating food consumption decisions into a standard farm planning model. The model, as applied to actual situations, gives a clear idea of the agronomic and economic information required to analyze the nutritional effects of possible farm sector interventions. Other important subjects covered include onsite field measurements and computational procedures. (Author abstract, modified).

380

PN-AAM-615

MF \$2.16/PC \$15.21

Consumption effects of agricultural policies in Tanzania

Keeler, Andrew G.; Scobie, Grant M.; et al.
Research Triangle Institute; Sigma One Corp.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Nutrition

Jan 1982, 109p. : En
9311274
AID/DSAN-C-0271

Because Tanzania's development strategy has focused on the creation of a capital-based industrial sector, this country report on the food consumption effects of agricultural policies begins by tracing the evolution of important macroeconomic factors and their effect on agricultural resource allocations. Having described the policy settings in which Tanzanian grain markets operate, the authors proceed, in the report's core chapter, to analyze the structure and performance of the grain markets themselves. A final chapter traces the effect of grain marketing policies on food consumption by various consumer groups.

The major effect of the government's emphasis on industry, the authors conclude, has been a return by cash crop farmers to subsistence farming, the domestic resource costs of which are relatively high. Further, the limited ability of the National Milling Corporation to supply grain makes many urban and virtually all rural Tanzanians dependent on higher-priced and not always affordable parallel markets.

381

PN-AAL-629

MF \$2.16/PC \$16.25

Situacion de la lactancia materna en areas urbanas de Bolivia (Situation of the nursing mother in urban areas of Bolivia)

Vera, Ruth; Varela, Guillermo; et al.
Bolivia. Ministry of Planning and Coordination. National Institute of Health and Nutrition; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Bolivia

1981, 46p. + 2 appendices : Bibliography p.43-45, Es
5110468

A sample of 770 families with children under 3 years of age were surveyed in three Bolivian cities with increasing levels of development - Trinidad, Sucre, and La Paz - to determine cultural, socioeconomic, biological, and other factors affecting the practice of breastfeeding in Bolivian urban areas. Results of



that study, supported by numerous tables and graphs and by extensive statistical data from the survey, are herein presented.

Introductory sections discuss the value of mother's milk and the study's objectives, historical and conceptual frameworks, and methodology. Analysis of the survey's results shows that breastfeeding, although still within acceptable limits, is on the decline in Bolivia, especially among upper middle class women. The duration of breastfeeding is related to the socioeconomic status, education, age, employment, and ethnic origin of the mother (longest duration of breastfeeding is associated with the Aymara Indian population of La Paz).

It is recommended that Bolivia design and execute educational programs for both health personnel and lay people which promote breastfeeding and discourage the use of breast milk substitutes.

382

PN-AAL-977

MF \$1.08/PC \$2.99

Improving infant nutrition, health and survival: policy and program implications from the Malaysian family life survey

Butz, William P.; Habicht, Jean P.; DaVanzo, Julie
Rand Corp.

Rand note, no.R-2924-AID, Jun 1981, ix, 15p. : En
9300088

AID/OTR-G-1822

Research findings on infant health and survival from the 1976-77 Malaysian Family Life Survey are herein summarized and their implications for program and policy initiatives derived.

Findings show that mortality is most likely in babies born to very young (under 19) and older (over 40) mothers, in those born soon after a previous birth, in those with low birthweight (the average birthweight of Indian babies in the sample has been declining steadily since the mid-1960's), and in those born into households without modern toilet sanitation; babies in households with piped water are less likely to die in infancy. Breastfeeding - which is associated with the presence of other women in the household and the availability of family planning clinics - reduces infant mortality less than previous estimates indicate, but still has a substantial impact, especially where water and sanitation are poor. No relationship between breastfeeding and the local availability and price of infant formula was found; the decline of breastfeeding appears rather to be due to nonagricultural work opportunities for women and other socioeconomic changes.

Recommendations are made regarding programs and policies in health, nutrition, family planning, and water and sanitation, and regarding overall socioeconomic policy.

383

PN-AAM-031

MF \$2.16/PC \$12.87

Socio-economic determinants of food consumption and production in rural Sierra Leone: application of an agricultural household model with several commodities

Strauss, John

Michigan State University. Department of Agricultural Economics

MSU international development paper, no.5, 1983, vi, 91p. :

En

9311315

AID/DSAN-C-0008; DAN-1190-A-00-2069-00; AFR-0929-G-SS-2011-00

To provide needed information on the effect of developing country policies on household food consumption and nutrition, this paper reports the consumption response of five food items, nonfoods, and labor supply to prices, full income, and some demographic variables in Sierra Leone under both fixed and variable prices.

A model of a rural household-firm (which produces the food it consumes) is specified and estimated, using data from a survey of a cross-section of rural households. On the demand side, the Quadratic Expenditure System, which allows for a quadratic relationship between full income and commodity expenditure, is used. Demographic variables are incorporated into the model, allowing a richer specification than per capita variables. The production side is estimated econometrically so as to allow for zero production of individual outputs. Demand and production results are then integrated. For most crops, the own price effects on consumption remain negative under varying profits. Cross price elasticities are both positive and sizeable; elasticities of caloric availability with respect to total expenditure sizeable, irrespective of expenditure group; and price elasticities of caloric availability generally positive, except for rice, the staple food. Policy implications of these results are discussed.

384

PN-AAM-207

MF \$1.08/PC \$7.28

Arab Republic of Egypt: nutrition status survey II

Egypt. Ministry of Health. Nutrition Institute; U.S. Department of Health and Human Services. Public Health Service.

Centers for Disease Control; U.S. Agency for International Development. Bureau for Science and Technology. Office of Nutrition

1980, 27p. + attachments : En

After a 1978 nutrition survey conducted in six rural areas of Egypt showed only a low prevalence of acute undernutrition in preschool children, a follow-up survey was conducted in 1980 in two of the six areas. The results of the second survey, which unlike the first was conducted during a time of high seasonal diarrheal illness, are herein reported.

Comparisons are made between the two surveys regarding: the prevalence and distribution of acute and chronic undernutrition among children with and without recent acute diarrheal disease; the prevalence and distribution of anemia and of clinical signs of micronutrient deficiencies; and duration and patterns of breastfeeding and weaning. The use of oral rehydration therapy is also examined. Results show that al-



though preschool children's long-term nutritional status improved – perhaps as a result of Egyptian food and nutrition policies – their short-term nutritional status declined, a finding which may be explained by seasonal variations in diarrheal disease. Appendices include 21 tables, 6 figures, and a copy of the nutritional status survey form.

385

PN-AAM-229

MF \$2.16/PC \$13.78

Food and nutritional situation in Mauritania

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

Rural assessment and manpower surveys, no.FS-1-1, 1981, iii, 97p. : En

French edition: PN-AAM-228

6820211

AID/afr-C-1489

The rudimentary information available on Mauritania's food and nutrition situation is analyzed in this two-part report. In Part I, the geographical and demographic features of the country's main ecological zones are briefly noted, past nutritional studies reviewed, and data on the regional and per capita availability of cereals (millet/sorghum, rice) presented. Mauritians' cereal-based dietary habits are outlined and the effect of income on the urban diet analyzed. Various in-country nutrition programs are described. Part II presents results of a 1980 food consumption survey conducted under the RAMS (Rural Assessment and Manpower Surveys) Project. The survey showed that caloric intake – which depends excessively on imports – is sufficient in only 55–60% of households and is especially deficient among the urban poor, e.g., in Akjouit and among young children in Nouakchott's fifth arrondissement, as well as among nomads in the second, third, and fourth regions. The survey also revealed that irrigated rice cultivation as currently practiced is excessively costly, leading to high rural-to-urban migration. Recommendations focus on training nutrition education teachers, developing an autonomous agriculture, and improving sanitation. Numerous supporting tables and charts are included.

386

*** PN-AAM-250**

MF \$1.08/PC \$6.63

Famine in Africa

Carter, James P.

U.S. Agency for International Development. Bureau for Africa. Zaire

(Conference of a Working Group on Famine in Africa, Kinshasa, ZR, Jan 1980)

1982, xvi, 35p. : En

French edition: PN-AAM-656

** From publisher, ppk. \$10.00*

The chronic cyclical food shortages in most African countries can rapidly lead to famine. Summaries of discussions given at a Workshop on Famine Prevention in Africa held in Zaire in 1/80 are presented in this report.

Workshop topics included: the stability or vulnerability of food systems; expansion of desert areas due to soil depletion and population growth; the food systems of Bas Zaire, Lesotho, and Botswana; famine in Ethiopia; and the Belgian govern-

ment's nutrition monitoring program in the Kivu mountains. More general discussions concern great famines and their relevance; the physiology of fasting, famine, starvation, and stress; social responses during severe food shortages; production, processing, and preservation of food staples; food losses during storage; and food distribution and dependency. Other papers recommend extension of the Food and Agriculture Organization's Early Warning System and national computerized information systems to permit rapid decisionmaking for famine prevention and control. A final paper summarizes recommendations of the U.S. President's Commission on World Hunger. Several resolutions were adopted by workshop participants out of concern over the persistence of the natural and human causes of food shortages and famine. Suggestions for further consideration are included.

387

PN-AAM-533

MF \$1.08/PC \$5.72

Staple food consumption in the Philippines

Bennagen, Eugenia C.

International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

Rice policies in Southeast Asia project: working paper, no.5, Feb 1982, iii, 39p. : En

In the Philippines, rice accounts for 57% of caloric intake and 43% of protein intake. This paper uses data from selected Philippine studies to analyze the structure of demand for rice (and rice substitutes) in that country.

Following an introduction and a discussion of data sources, patterns and trends in the consumption of rice and of three other staples (corn, root crops, and wheat) are examined. Variations in consumption among regions and income groups and between rural and urban areas are discussed, as are the degree of substitution among staples and the consumption of other food groups (e.g., meat, dairy products, fruits). Next, existing estimates of price and income elasticities for rice and the other staples are examined and compared; an attempt is made to reconcile discrepancies in these estimates. The author concludes that the demand for rice is inelastic with respect to both prices and income, although corn and root crops are occasionally substituted for rice. Finally, rates of growth in demand for staples are projected and suggestions are made for future research in staple consumption.

388

*** PN-AAM-534**

MF \$1.08/PC \$7.54

Food consumption patterns and related demand parameters in Indonesia: a review of available evidence

Dixon, John A.

International Food Policy Research Institute; International Fertilizer Development Center; International Rice Research Institute

Rice policies in Southeast Asia project: working paper, no.6, Jun 1982, iv, 51p. : En

** IFPRI, 1776 Mass. Ave., NW, Washington, D.C. 20036*

Because Indonesia has more variability in food consumption than do most countries, consumption estimates based on national aggregated data may ignore important regional and



FOOD & NUTRITION

socioeconomic differences. This study sketches levels of and variation in the consumption of rice and other staples in the country, along with the economic parameters of current demand, and projects future food consumption patterns.

Present consumption patterns of rice, corn, grain, cassava, and sweet potatoes (including intakes of calories, protein, and their sources) are analyzed. National consumption patterns are presented, and consumption is then compared and contrasted among different regions, between urban and rural areas, among income groups, and by season. Demand parameters are estimated on the basis of early demand, the Susenas V Survey, and grouped data, and estimates are made of the future demand for rice and other staples and of the impact of government policies on food consumption.

It is concluded that consumption patterns in the year 2000 will be similar to present patterns, but with shifts in the relative importance of various foods depending on income growth and distribution and urbanization. Per capita rice and wheat consumption will increase; corn and cassava consumption will probably decrease. Supplementary statistical tables on staple consumption are appended.

389

* PN-AAM-536

MF \$2.16/PC \$14.17

Nutrition-related policies and programs: past performances and research needs

Kennedy, Eileen T.; Pinstrup-Anderson, Per; et al.
International Food Policy Research Institute
Feb 1983, vii, 104p. : Bibliography p.95-103, En
* IFPRI, 1776 Mass. Ave., NW, Washington, D.C. 20036

Research is urgently needed to help decisionmakers design and implement efficient nutrition-related programs and policies. This study identifies critical gaps and needs in current nutrition research and outlines priority areas for future work.

First, the nature and causes of malnutrition are examined and a conceptual framework is developed to link these causes with various nutritional strategies. This framework, based on the key factors determining nutritional status (food availability, the ability and desire to obtain food, use of food, and health and sanitary conditions) underlies an ensuing review of the state of knowledge and research needs in nutrition-related policies and programs in agricultural/rural development, food price, food-linked income transfer, food fortification, formulated foods, nutrition education, and integrated health and nutrition. Research suggestions made by developed and developing country personnel are summarized and four priority areas for future research - household food acquisition/allocation behavior, food market behavior, program and policy implementation, and the macro or economywide implications of nutrition interventions - are identified. It is proposed that these issues be analyzed in relation to programs and policies in agricultural/rural development, food price, food-linked income transfer, and integrated health and nutrition. Footnotes are appended to each chapter and a 9-page bibliography (1967-82) is provided.

390

PN-AAM-556

MF \$1.08/PC \$4.29

Report of assistance to developing countries in the area of improving infant feeding practices and diet during pregnancy

U.S. Agency for International Development. Bureau for Science and Technology. Office of Nutrition
Dec 1982, 30p. : En

In 1979, A.I.D. began an expanded program to help developing countries address the problem of maternal and infant malnutrition by strengthening breastfeeding, weaning, and maternal nutrition components of existing programs in health, family planning, and nutrition. This report, prepared for A.I.D. personnel and personnel of other bilateral and multilateral aid agencies, describes the expanded A.I.D. program.

Following a brief review of the program's background, the report provides examples of specific activities in a wide range of areas (primary health care and family planning; public education; health personnel training; sensitization workshops for health professionals; food supplements; infant feeding studies; and assistance to regional institutions). Appendices, which form the bulk of the document, provide specific information, by country, on 1982 activities, list workshops and consultative/coordinating activities during 1982, and identify lessons learned.

391

PN-AAM-633

MF \$1.08/PC \$10.53

Political variables and food and food price policy in West Africa

Lewis, Barbara C.
Rutgers University. Livingston College. Department of Political Science; U.S. Agency for International Development. Bureau for Africa; U.S. Department of Agriculture
Jun 1980, viii, (153p.) : En

Political variables, no less than economic ones, affect the implementation and ultimate success of food/food price policies. Thus concludes this paper, which examines the treatment of political variables in economists' writings pertinent to the production and distribution of food staples in West Africa.

In section one, several economic analyses of food/food price policies - the papers deal specifically with the international food crisis, development strategies, food marketing and marketing boards, food policy studies in West Africa, and free market solutions to West African food policy problems - are reviewed. It is found that economic analyses generally overlook political forces highly likely to impinge upon, distort, or even block policy and project implementation. Section two identifies types of political feasibility analyses that can help ensure more realizable project and policy designs, and suggests that analyses of interest groups and administrative capacity are most valuable. Overschematic conceptualization of government policy goals, prioritization of goals, radical redistributive strategies, and extreme liberalization of the marketing structure are found to be unsound approaches.



392

PN-AAM-926

MF \$1.08/PC \$5.98

Consultant report for Rwanda: an ethnographic investigation into the validity of the notion of contractual obligation to participants in the Government of Rwanda/CRS nutrition center program

Cook, Jon M.; Csete, Joanne
Education Development Center, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Nutrition
Apr 1983, 35p. + attachments : En
9311010
AID/DSAN-C-0209

To identify cultural constraints limiting the effectiveness of Catholic Relief Services's (CRS) food and nutrition program in Rwanda, this study examined the program's utilization of contracts between CRS nutritional centers and program participants with respect to traditional Rwandan concepts of contractual obligation.

A sample comprised of 63 mothers and 11 fathers participating in CRS programs at five nutrition centers were interviewed. Respondents did not perceive their agreements with nutritional centers to improve children's nutrition as reciprocal contracts - which conferred obligations on the centers as well as on themselves - in part because the hallmarks of traditional Rwandan contracts, a public declaration of obligations and a celebratory feast, were missing. Parents were also unaware that child weight goals are a crucial part of fulfilling their commitment to the center and few seemed to realize that the provision of food aid by CRS was part of the contract.

Included in the report are background on CRS's food and nutrition activities in Africa and its program in Rwanda, observations on the presentation of the contract to new participants, and several recommendations directed toward making the center-family agreement a true contract.

393

PN-AAN-099

MF \$1.08/PC \$2.47

Handling and packaging fresh tropical fruits for export

Lee, Julian June-Ling
University of Idaho. Postharvest Institute for Perishables; Thailand. Ministry of Agriculture; U.S. Agency for International Development. Bureau for Asia. Thailand; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
GTS report: PIP/Thailand/Apr 83, no.3, Apr 1983, 16p. : En
9311323
AID/DSAN-CA-0265

At the request of USAID/Bangkok, a packaging specialist was hired to provide consulting services to the Royal Thai Government in regard to the handling and packaging of fresh fruit exports. This document provides a report of that March 1983 consultancy.

Prerequisites to designing packaging are identified as knowledge of physical and physiological hazards involved in product distribution, of product fragility, and of the properties of available packaging materials and systems. Descriptions and observations are made regarding activities and available technology at nine sites visited during the consultancy, including orchards, packaging sheds, container handling facilities at the Bangkok seaport and airport, the Thailand Institute for Scientific and Technological Research (TISTR), and the Ministry of Agriculture.

Recommendations are made to establish a permanent packaging technology research organization; initiate long- and short-term research on postharvest losses and their causes and remedies; initiate long- and short-term training in packaging; and modernize the TISTR packaging technology laboratory.

394

PN-AAN-100

MF \$1.08/PC \$1.43

Postharvest losses of perishable horticultural foods in the Yemen Arab Republic

Buescher, Ronald W.
University of Idaho. Postharvest Institute for Perishables; Consortium for International Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
GTS report: PIP/Yemen/May 83, no.4, May 1983, 8p. : En
9311323
AID/DSAN-CA-0265

An onsite review of postharvest handling, transportation, storage, and marketing of vegetables and fruits in the Yemen Arab Republic, conducted in 4/83 to determine the causes of product damages and losses, is reported in this paper.

It was found that while the demand for fresh fruits and vegetables is increasing, available postharvest technologies are inadequate for the rapid processing required to prevent product deterioration. Lack of a market infrastructure, poor transportation, and improper handling of both domestic and imported crops for internal consumption and of five major potential exports (grapes, okra, onions, potatoes, and tomatoes) result in losses which leave vulnerable farmers at the mercy of fluctuating prices.

It is recommended that pertinent training programs for students, extension workers, and private sector personnel be established, varietal and technological research be initiated, marketing information be disseminated to farmers and marketing agencies, product-specific handling and storage systems be developed, and the development of preserved food products be explored.



HEALTH

395

PN-AAL-298

MF \$2.16/PC \$13.13

Health planning in Africa: state of the art analysis

Fairchild, Denise G.
Drew (Charles R.) Medical Center
(1980), 97p. : Bibliography p. 87-97, En
9361406
PDC-1406-I-00-1124-00

Substantial progress has been made toward institutionalizing health planning within African Ministries of Health, but much remains to be done in designing and adapting methodologies suitable to African cultural, fiscal, and other resource realities.

This literature review surveys the state of the art of health planning in Africa, summarizing theoretical and practical developments in the field and identifying gaps between and within planning theory and practice. An initial section defines Africa's health problems and the role of health planning in alleviating them. Succeeding sections discuss various development policies and health priorities that have been prescribed to meet Africa's health development needs (the health infrastructure, ecological, and human resource approaches), and describe corresponding techniques used in the planning process. A critical review of the organizational development of health planning in African Ministries of Health yields to a final section outlining a health planning framework in light of previously identified health needs and planning deficiencies. Decentralized planning and the use of community committees are stressed. Appended is an 11-page bibliography (1963-81).

396

PN-AAL-632

MF \$1.08/PC \$11.83

Strategy to strengthen the national health system in Mauritania, West Africa

Delgado-Garcia, Ramiro
American Public Health Association
13 Sep 1982, xv, 48p. + 8 appendices : Bibliography p.48,
En, Fr
9365900
AID/DSPE-C-0053

To help the Mauritanian Ministry of Health fulfill the goal of the 1981-85 National Development Plan to expand health services to the rural majority, a consultant was invited to participate in a workshop to develop a simplified health information system (HIS). This report focuses on the consultant's recommendations in six critical areas: (1) defining HIS objectives; (2) selecting the kinds of data to be gathered continuously; (3) designing appropriate weekly, monthly, and quarterly forms for data collection; (4) designing procedures to store, record, process, and analyze data according to specific needs; (5) identifying the major constraints affecting the HIS; (6) and choosing a progressive, step-by-step strategy for implementing the HIS.

The final contribution of the consultant, who also trained appropriate Mauritanian personnel in the use of the simplified HIS, was to completely revise the policy, methods, and procedures of the Rural Medical Assistance Project and to evaluate the project's research component. Included in the appendices are a simplified monthly report form and sample data collection forms.

397

PN-AAL-831

MF \$2.16/PC \$22.88

Report on health development in the Arab Republic of Egypt: a sector in transition

American Public Health Association. International Health Programs; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
10 Jun 1982, xiv, 64p. + 2 annexes : En
9365900
AID/DSPE-C-0053

Although the Government of Egypt's (GOE) Ministry of Health (MOH) has adequate health facilities and personnel, its primary health care (PHC) system does not work well and public health is deteriorating. This report addresses the issues that prevent effective health care and recommends program changes.

GOE health priorities are discussed and social and political events during 1952-1982 are reviewed to identify constraints to an effective PHC system. A strategy targeted at both the public and private sectors is then presented to help the GOE develop long- and short-term solutions to PHC problems. In light of the GOE's decision not to increase MOH funding, specific recommendations for USAID/E assistance are offered. These include: (1) supporting a major water and sanitation program which is to be made financially self-sustaining through user fees; (2) emphasizing projects that provide specific, direct, high-impact, preventive medical services (e.g., oral rehydration, family planning, mass immunizations, school health); and (3) providing technical assistance and loans to develop public and private social financing schemes. Appendices include individual reports by team members.

398

PN-AAM-272

MF \$2.16/PC \$21.97

Belize health sector assessment (a working document): report of a visit to Belize 26

August - 10 September 1982
Pan American Health Organization; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Belize
10 Sep 1982, (168p.) : En

In 1982 a four-person team financed by A.I.D. and the Pan American Health Organization (PAHO) conducted an assessment of Belize's health sector. The assessment, herein presented, is intended for use by Belizean health officials in identifying priority health areas to be addressed in the first Belize Policy Paper.

Presented are: a draft of the Belize Health Plan; the assessment team's description of health sector performance; position papers prepared by Belize health workers on such high-priority projects as a new Belize City Hospital, an improved network of district hospitals and clinics, development of primary health care infrastructure, an efficient program for controlling mosquito-borne diseases, and a rural water and sanitation program; and the team's comments on these projects. Relevant supporting documents are available through PAHO and A.I.D.



399

PN-AAM-582
MF \$1.08/PC \$3.64

Benefit-cost analysis of measles vaccinations in Yaounde, Cameroon

Makinen, Marty
University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Development Information and Utilization
CRED discussion paper, no.96, Nov 1981, vi, 19p. + attachments : En, Fr

Benefit-cost analysis, commonly used to assess the effectiveness of industrial projects, is being increasingly used to evaluate health programs. This paper analyzes the conceptual problems involved in using benefit-cost analysis and develops a methodology to handle them, using as an example the 1971-76 measles vaccination campaign in Yaounde, Cameroon.

Four categories of costs are assigned to measles incidence and four to vaccination costs. The benefits of avoiding measles and the costs of giving vaccinations are linked by an epidemiological model which shows how many cases of measles are prevented by each vaccination. Results show that the vaccination program was socially profitable and that increased vaccinations would have resulted in even greater benefits. It is noted in conclusion that some of the problems involved in applying benefit-cost analysis can be overcome by including health programs in overall planning or by gathering better information. The analysis suggests that wider application of benefit-cost estimates may help increase often inadequate health budgets and hence lead to better health.

400

PN-AAM-893
MF \$1.08/PC \$7.41

Using radio for primary health care

Sweeney, William O.; Parlato, Margaret B.; et al.
American Public Health Association. International Health Programs; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
Primary health care issues series, v.1(1), Sep 1982, 56p. : En 9365900
AID/DSPE-C-0053

Capable of reaching large audiences and not requiring literacy, radio is the most effective means of communication in developing countries. This study, based on an extensive literature review and relevant field experience, examines the use of radio in primary health care (PHC) programs.

Key findings on the impact of radio in development projects - that radio can educate and provide information, promote the use of health products and services, elicit feedback and aid in popular participation, and sometimes result in needed change - are presented in the first chapter, along with a discussion of the application of radio to PHC programs. Chapter two provides a guide to planning, implementing, and evaluating radio components of PHC projects. Discussion focuses on specifying target audiences and determining local technical and management capabilities, the use of various radio strategies (open broadcasts, campaigns, listening groups, two-way radio, and tape recorders), developing appropriate broadcast messages and a format for them, and the use of realistic evaluative criteria. Appended are lists of PHC projects reviewed; and A.I.D. resources for field support of radio projects; project summaries by country are also provided.

401

PN-AAN-195
MF \$1.08/PC \$12.61

Lebanon health sector financing: issues, problems and recommendations

Jeffers, James R.; Zukin, Paul
U.S. Agency for International Development. Bureau for Science and Technology. Office of Population; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
12 Mar 1983, xiv, 81p. : En
AID/DSPE-C-0053

Against background descriptions of Lebanon's economy, people, and resource-rich but chaotic health service delivery system, this report analyzes public and private sector mechanisms for financing medical services in the country.

The authors conclude that weaknesses in the existing financial structure suggest the need for a unified health sector policy centered on regulating the private sector, which currently provides 80-90% of the country's health services. Consolidation of public sector reimbursements for all health services into a National Health Security System is recommended to achieve greater uniformity of benefits, foster equity of assessments required to fund operations, and permit the Government to sanction, positively or negatively, public and private health sector performance. Recommendations are also made, inter alia, to rehabilitate the public curative sector, improve performance at public health facilities, strengthen the financial base of the public hospital sector, strengthen primary health care, improve health manpower distribution, and foster alternative private sector initiatives.

Annexes treat the information needs for health service operations and the feasibility of a prepaid health care program. Eighteen tables are included.

402

PN-AAM-261
MF \$1.08/PC \$3.90

Vector control of snail-transmitted diseases

Woodruff, David S.
University of California, San Diego. Department of Biology; U.S. Agency for International Development. Bureau for Science and Technology. Office of the Science Advisor
24 Jan 1983, 30p. : En

Snail-transmitted diseases are among the great neglected diseases of mankind, affecting over 10% of the human population. They include a dozen diseases of varying morbidity, of which schistosomiasis is perhaps the best known. Improved methods of vector control are urgently needed as existing techniques are extremely expensive and are ineffective over the long term. This brief summary of current vector control research focuses on Thailand and the Philippines where these parasitic diseases are a major problem.

The report discusses in turn: snail-transmitted diseases and their importance in Southeast Asia; the inadequacy of existing vector control techniques and the need for additional research; Thailand's strong national research program supported by the World Health Organization and the Rockefeller Foundation; inadequate funding for vector control in foreign-assisted development projects in the Philippines; and prospects for collaborative research on vector control together with suggestions for possible A.I.D. involvement. It is noted that planned genetic studies of vectors will significantly further control efforts.



403

PN-AAM-018
MF \$1.08/PC \$11.18

Biological and behavioral influences on the mortality of Malaysian infants

Butz, William P.; Habicht, Jean P.; DeVanzo, Julie
Rand Corp.; U.S. Agency for International Development.
Bureau for Program and Policy Coordination. Office of
Policy Development and Program Review
Rand note, no.N-1638-AID, Apr 1982, xi, 76p. : En
9300068
AID/OTR-G-1744

Retrospective data can yield valuable conclusions on the determinants of infant mortality. Such data, derived from questionnaires administered during the 1976-77 Malaysian Family Life Survey (MFLS), are analyzed in this report to determine the key biological, family, and social characteristics influencing infant survival and the changing importance of these influences during the infant's first year of life.

A linear probability model estimated by ordinary least squares is used to analyze data on maternal age and education, socioeconomic class, birth spacing, prior reproductive loss, and available health services; and on infant's sex, birthweight, birth order, breastfeeding, and type of weaning. Included in the analyses are proxies for exposure to respiratory and gastrointestinal diseases, and measures of the mother's availability for child care, household composition, child's year of birth, ethnicity, and rurality. For purposes of comparison, logit estimates are also shown. Discussion of the relation between infant feeding and infant mortality yields the conclusion that the importance of breastfeeding is less than usually thought, and declines in communities with piped water and toilets. A discussion of the study's research, program, and policy implications concludes the report. Appended is a 52-item bibliography (1965-82).

404

PN-AAN-328
MF \$1.08/PC \$1.04

Effects of oral contraception on liver function tests and serum proteins in women with active schistosomiasis

Shaaban, M.M.; Hammad, W.A.; et al.
International Fertility Research Program; U.S. Agency for
International Development. Bureau for Science and
Technology. Office of Population
Contraception, v.26(1), Jul 1982, p.75-82 : En
9320537

Although the species of *Schistosoma* most common in Southern Egypt is a primary cause of chronic liver disease, women suffering from schistosomiasis, but without evident liver involvement, are not denied oral contraceptives. The study reported here investigated the effects of the contraceptive pill on the liver functions of women with active visceral schistosomiasis.

Thirty-eight women with urinary or intestinal schistosomiasis but without evidence of hepatic involvement, and 30 healthy control women were treated with an oral contraceptive containing 0.05mg ethinyl estradiol and 0.5mg levonorgestrel for 6 months. Liver function tests (serum bilirubin, SGOT, SGPT, serum alkaline phosphatase) and serum proteins (total, albumin, globulins, ceruloplasmin, haptoglobin, and alpha-1 antitrypsin) were gauged before beginning treatment and after 3

and 6 months of use. For both groups, SGOT, SGPT, and serum alkaline phosphatase increased significantly during the first 3 months of treatment and then tended to decrease during the subsequent 3 months. No change occurred in serum bilirubin. There were significant decreases in serum albumin and haptoglobin and increases in alpha-1 globulin, ceruloplasmin, and alpha-1 antitrypsin. With the exception of serum level of alpha-1 globulin, there were no significant differences between schistosomiasis patients and controls in terms of changes in any laboratory test as a result of the treatment, suggesting that patients with active schistosomiasis do not incur a higher risk of hepatic dysfunction while using oral contraception. (Author abstract, modified)

405

PN-AAL-111
MF \$1.08/PC \$3.12

Para village water supply: pre-feasibility report

Turner, William M.
Camp Dresser and McKee, Inc.; U.S. Agency for International
Development. Bureau for Science and Technology. Office
of Health
WASH field report, no.40, Apr 1982, 16p. + appendices : En
Order of technical direction no. 66
9311176
AID/DSPE-C-0080

Many of the enteric diseases in the Central Amazon basin are caused by unsanitary water. This prefeasibility study outlines a proposed effort by Fundacao Esperanca, a medical and public health project in the region, to dig wells and improve sanitation in the vicinity of Santarem, State of Para, Brazil.

After noting Esperanca's origins (it was created by a Franciscan friar) and accomplishments to date and outlining water and sanitary conditions in the project area, the report discusses the Franciscan Order's program to develop and install locally adapted low-cost tubewells and pumping equipment. This program, according to researchers, can provide sanitary water supplies to Esperanca village health centers.

A joint Franciscan/Esperanca program centered around the training of local people in drilling and sanitary waste disposal and the promotion of tubewells and waste disposal facilities is urged, as is commercialization of well construction to perpetuate project efforts.

406

PN-AAL-368
MF \$2.16/PC \$12.87

Proposed action plan for a national training program in the water sector for the Hashemite Kingdom of Jordan

Austin, John H.; Woolf, Kenneth; Pinto-Costa, Walter
U.S. Agency for International Development. Bureau for
Science and Technology. Office of Health; Camp Dresser
and McKee, Inc.; U.S. Agency for International
Development. Bureau for Near East. Jordan
WASH field report, no.34, Sep 1982, viii, 88p. + appendices
: References p.57-59, En
9311176
AID/DSPE-C-0080

A national action plan is presented for training Government of Jordan (GOJ) water sector personnel. After a review of water



supply organizations, planned facilities, personnel needs, and available educational/training institutions, the project's objectives are set forth, along with a description of the proposed training philosophy and project personnel. A work plan and monitoring/evaluation system conclude the report.

It is recommended that: (1) the Water Supply Corporation (WSC) plan and implement a water sector training program for the Amman Water and Sewerage Authority, the Jordan Valley Authority, the Natural Resources Authority, and WSC itself; (2) the Vocational Training Corporation play a major role in designing and implementing training systems and skill training programs for the above agencies; and (3) the project be a joint effort of expatriate trainers, full-time GOJ staff, and personnel seconded from GOJ water sector organizations and Jordanian training/educational institutions. A 5-year, three-phase implementation plan is described, including an initial 18-month plan for courses to meet immediate needs and systematically develop skills. Appendices include model curricula vitae, position descriptions, the contents of sample training courses, and personnel needs and budget requirements.

407

PN-AAL-647

MF \$2.16/PC \$15.86

Environmental sanitation master plan for training and education in Tanzania

Gearheart, Robert A.; Briscoe, John; Eng, Eugenia
U.S. Agency for International Development. Bureau for Africa.
Tanzania; Camp Dresser and McKee, Inc.
WASH field report, no.58, Sep 1982, xii, 90p. + 5
appendices : En Order of technical direction no.75
9311176
AID/DSPE-C-0080

This report provides a master plan and implementation strategy for environmental sanitation training based on the existing status of the water supply and sanitation sector in Tanzania.

After summarizing the technical and institutional aspects of the present state of water supply and sanitation in Tanzania, the authors present detailed analyses of the Tanzanian Ministries of Water (MAJI); Lands, Housing, and Urban Development (ARHDI); and Health (AFYA). Discussed are the respective ministries' roles, responsibilities, activities, organization, and staffing. Next, manpower utilization and staff performance within MAJI, ARHDI, and AFYA are analyzed at the organizational, occupational, and individual levels. The training resources of MAJI, ARHDI, AFYA, the Ministry of Education, and other training institutions are then inventoried. Specific training recommendations are made for each of the three principal Ministries.

Conclusions focus on the need to: develop realistic targets; integrate water supply and sanitation; address constraints unrelated to personnel; coordinate training programs; develop training of trainers, community training, and continuing education programs; and emphasize training in design and construction over that in operations and maintenance. Included are 23 tables of data and 7 figures.

408

PN-AAM-323

MF \$1.08/PC \$2.47

Domestic water and sanitation

U.S. Agency for International Development. Bureau for Program and Policy Coordination
A.I.D. policy paper, May 1982, 16p. : En

Unsafe drinking water and inadequate sanitation facilities pose a major health hazard in developing countries. This A.I.D. policy paper provides guidelines for employing scarce U.S. development funds to improve local health conditions through selective investments in domestic water supply and sanitation programs.

The paper examines the rationale for A.I.D. water and sanitation program support, current water/sanitation conditions in developing countries, the role of international donors, especially A.I.D., in water supply/sanitation, and linkages among water supply, sanitation, and health. Major programmatic questions addressed include technical issues (site and technology selection, water conservation and re-use); sociocultural issues (community participation and consumer education); and administrative issues (system financing, local operation and maintenance, and local institutional support). The role of the private sector in water supply/sanitation activities is discussed in relation to economic development, exploitation of natural resources, primary health care, agriculture, and urban development. Future strategy questions are addressed in conclusion.

409

PN-AAM-399

MF \$2.16/PC \$12.87

Rural sanitation in the Arab Republic of Egypt

MetaMetrics, Inc.; U.S. Agency for International Development. Bureau for Near East. Egypt
30 Apr 1981, v.p. : En
Work order no.5
AID/SOD/PDC-C-0178

The Egyptian village is currently an unsanitary environment with acute health consequences for the inhabitants. Thus concludes this report, which presents the findings of a three-person team (comprised of two cultural anthropologists and a sanitary engineer) which visited Menoufia and Assiut Governorates in order to assess sanitation conditions and make recommendations for improvements that could be incorporated into A.I.D. projects in Egypt.

Following a description of the role of the Egyptian village within the rural infrastructure, specific sanitation problems are discussed. The major problems documented in this study include: (1) contaminated water supplies; (2) inadequate drainage for public water systems and household sullage; (3) lack of appropriate sanitary facilities for human waste management; (4) unsanitary collection and use of animal manure; and (5) lack of services for the management of garbage, trash, and other solid wastes. At the root of many of these problems is a lack of proper maintenance and operation of technological interventions. The report stresses that proposed sanitation interventions, whether urban or rural, must be appropriate to Egypt's high population density, which presents a major limitation on potential options. Presented are four policy-level recommendations and several detailed recommendations for improving sanitation through A.I.D.'s Basic Village Services and Strengthening Rural Health Delivery projects.

Included among the appendices is an assessment of the biogas project potential for the Basic Village Services project.



410

PN-AAM-891

MF \$2.16/PC \$18.07

Water and human health

McJunkin, F.E.

U.S. Agency for International Development. Bureau for Science and Technology. Office of Development Information and Utilization

Mar 1983, xi, 134p. : En
9311093

AID/DSAN-C-0063

The availability and use of adequate, safe drinking water is essential to human health. This study of the relationship between water supply and health begins with a general overview of water-related diseases, the historical development of our understanding of the water-disease relationship, and water's importance for maternal/child health, nutrition, sanitation, and primary health care.

The four subsequent sections provide detailed information on specific diseases, whether water-borne (e.g., diarrhea, cholera, typhoid fever), water hygiene (diseases which can be combated by improved personal and domestic hygiene), water contact (especially schistosomiasis), or water habitat vector-borne (malaria, filariasis) diseases. Sections six through eight address health considerations in the production of drinking water, including methods for evaluating the transmission of microbiological diseases in drinking water and the public health effectiveness of water treatment and of excreta and wastewater treatment and disposal. Section nine reviews published epidemiological and other models of the health impact of water supplies, primarily in developing countries. Extensive bibliographies are provided for each section and for specific diseases; appended is a series of analyses of selected field studies.

411

PN-AAM-954

MF \$1.08/PC \$2.47

Training of rural community development workers in health education: with special reference to water supply protection and use/maintenance of sanitation facilities

Steuart, Guy; Rull, Carla

Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Africa. Cameroon; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health

WASH technical report, no.3, Mar 1981, 11p. + attachments
: En

9311176

AID/DSPE-C-0080

Formal training programs for community health workers often fail to adequately equip trainees for work in the field. This report outlines an improved approach, developed with special reference to water supply and sanitation projects, which stresses an active problem-solving approach to the training process and the provision of posttraining support in the field.

The report first discusses the competencies needed by health workers. Workers must be able to identify and maintain good relationships with community leaders and groups and to promote group discussion and action, leading to designation of a village water committee responsible for the water program and for related health education. Also required are knowledge of water-related, sanitation-related, and vector-borne diseases

and of the basics of personal hygiene; the ability to maintain continuous support for the water committee and to act as a linkage point for village and external resources; and knowledge of evaluation procedures and the ability to train the village committee to use the procedures. The remainder of the report provides, in light of the above, recommendations for the training program and trainee selection, key back-up systems, and evaluation procedures.

412

PN-AAM-955

MF \$1.08/PC \$2.08

Facilitation of community organization: an approach to water and sanitation programs in developing countries

Isely, Raymond B.

Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Development Support. Office of Health

(Annual International Health Conference, 10th, Washington, DC, US, 17 Jun 1981)

WASH technical report, no.7, 17 Jun 1981, 14p. : En
9311176

AID/DSPE-C-0080

Community organization is essential if water and sanitation projects in developing countries are to function properly and provide their intended health and social benefits. Conditions necessary to promote community organization in such projects are enumerated in this report.

The first condition is the existence of community workers trained to: gather the physical, biologic, economic, demographic, and sociocultural data needed to diagnose the community's capacity to participate in the project; support individual and group participation; and evaluate (and help the community evaluate) the project as it develops. Given the intersectoral nature of water and sanitation projects, successful community organization also depends on cooperation among and the provision of specific inputs from various types of community workers, e.g., public works technicians, health workers, teachers, and home and agricultural extension workers. Finally, the community must be provided with adequate and appropriate technology and information on how to employ it. In this regard, careful analysis of previous local experiences with organized problem-solving is urged, and the need for well-illustrated, nontechnical manuals written in the local language pointed out.

African case histories, it is noted in conclusion to the study, show that effective community organization can reinforce local management capacities, enhance participation, and increase the probability of a project's success.

413

PN-AAM-956

MF \$1.08/PC \$4.81

Comparative costs of the A.I.D. type pump fabricated in the Dominican Republic and the U.S. manufactured Moyno pump

Whipple, Justin H.

Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health

WASH field report, no.80, Apr 1983, ii, 32p. : En
9311176

AID/DSPE-C-0080



Training in spring capping for field agents in Zaire

Goff, David
Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Africa. Zaire; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
WASH field report, no.73, May 1983, iv, 56p. : En
9311176
AID/DSPE-C-0080

Against a background description of rural water and sanitation conditions and related development projects in Zaire, this report describes and evaluates several spring capping and well digging training activities in the country.

Discussion is given to an October 1982 spring capping workshop for Peace Corps Volunteers and two pilot training programs of SANRU-86 (an AID-supported rural health project), and suggestions are made regarding national-level collaboration in rural water and sanitation. Technical notes elucidate water resource needs and construction design alternatives; material costs for individual construction projects are then related to these factors.

It is concluded that water and sanitation training and construction activities in Zaire should be expanded and coordinated. Recommendations focus on project organization; technical and organizational training; the development of technical, instructional, and data collecting materials; and evaluation of training and construction. Supporting materials are appended.

The A.I.D. type handpump, ETINCA, manufactured in the Dominican Republic, and the U.S.-manufactured Moyno pump are herein compared with respect to all direct monetary costs related to procurement, manufacture, installation, operation, maintenance, and replacement of the two pumps.

The estimated cost of the Moyno pump completely installed at the well site (DR\$966) is twice that of the ETINCA (DR\$476); however, the estimated annual maintenance cost per Moyno pump (DR\$61) is only 53% of the corresponding cost for the ETINCA (DR\$115). At a low interest rate (5%) and a relatively long life span (12.5 years), the estimated total annual costs are almost identical for the two pumps, but at a high interest rate (20%) and short life span (7.5 years) the Moyno pump's higher capital costs make its estimated annual cost (DR\$306) 28% greater than that of the ETINCA (DR\$239). Estimated costs in the Dominican Republic are exaggerated by current problems, which include deficiencies in the manufacturing operation and a maintenance program which is characterized by waste and a lack of community participation. As a result, cost estimates for the ETINCA pump are probably higher than they would be under problem-free conditions.



Water for hygienic purposes is often in scarce supply.



415

PN-AAL-155
MF \$1.08/PC \$2.86

Tendencias recientes na metodologia de levantamentos demograficos em pai ses em desenvolvimento (Recent methodological trends in demographic investigation in developing countries)

Adlakha, Arjun L.; Sullivan, Jeremiah M.; Abernathy, James R.

University of North Carolina, Chapel Hill. School of Public Health. Department of Biostatistics

Laboratories for population statistics: scientific report series, no.33A, Jun 1981, v.p. : Pt

9320623

AID/DSPE-C-0025

In recent decades, considerable progress has been made in refining direct and indirect methodologies for estimating vital statistics. This report summarizes these advances and critically examines their applicability to the collection of demographic data in developing countries.

Each of three methodologies for direct collection of data – interviews with one person, or with more than one person, or collection of information from more than one source (e.g., from both civil registers and house visits) – is weighed for its respective advantages and disadvantages. The advantages and drawbacks of four methodologies for the more rapidly accomplished indirect collection of data and the use of statistical modeling to calculate infant mortality from statistics on infant survival are also discussed.

It is noted that in spite of greater inaccuracies inherent in the single interview technique, this, due to its low cost and ease of application, is the methodology most used in developing countries to derive vital statistics. For many methodologies, greater accuracy can be gained through improved questionnaires and better trained interviewers.

A 29-item bibliography (1949–80) is included.

416

*** PN-AAL-617**
MF \$1.08/PC \$4.03

Dynamics of birth spacing and marital fertility in Kenya

Mosley, W.H.; Werner, Linda H.; Becker, Stan
World Fertility Survey; International Statistical Institute; U.N.

Fund for Population Activities; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population; UK Overseas Development Administration

Scientific reports, no.30, Aug 1982, 27p. + appendix :
References p.26–27, En

* *International Statistical Institute, 428 Prinses Beatrixlaan, P.O. Box 950, 2270 AZ Voorburg, Netherlands*

In recent decades Kenya has witnessed a degree of economic development and a general improvement in the socio-economic welfare of its populace. However, while mortality has steadily declined, fertility has unexpectedly continued to rise. This report uses new methods to analyze childbearing patterns of currently married Kenyan women aged 15–44 in order to examine this apparent paradox.

The authors employ a fertility model, developed by Davis and Blake and modified by Bongaarts, which incorporates eight variables in the areas of exposure, deliberate marital fertility

control, and natural marital fertility. Data are from the 1978 Kenya Fertility Survey.

Results are presented regarding the relative impacts of: marital fertility, fecundity, and birth intervals; breastfeeding, lactational amenorrhoea, and abstinence; contraception and menstruation; type of marital union (e.g., polygamy); female education; husband's occupation; women's wage employment; residence and urbanization; and ethnicity.

The authors conclude that Kenya's rising fertility in the face of "modernization" is due to declines in breastfeeding, postpartum abstinence, and polygamy and upward trends in general health, women's education and wage employment, and urbanization. The report includes 14 tables and 5 figures. The fertility model employed in the study and a 39-item bibliography (1956–82) are appended.

417

PN-AAL-619
MF \$1.08/PC \$6.50

Evaluation of the Jamaica fertility survey 1975–76

Singh, Susheela

World Fertility Survey; International Statistical Institute; U.N.

Fund for Population Activities; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population; UK Overseas Development Administration

Scientific reports, no.34, Jul 1982, 51p. : En

In Jamaica, fertility has declined substantially since the mid-1960's. So concludes this report which evaluates the 1975–76 Jamaica Fertility Survey in the areas of age reporting, nuptiality, fertility, and infant and child mortality.

Date reporting was generally good; respondents' birthdates and the dates of children's births and deaths were reported with a high degree of completeness. Reporting on first unions was not as complete and was somewhat inaccurate in unions after the first. Analysis of nuptiality data shows a real decline of 1.5 years in average age at first union from the oldest (45–49 yrs.) to the youngest (15–19 yrs.) cohort. Significant new data on participation in visiting unions were obtained.

Age-specific fertility data for the period from 1964 are provided for the first time. Overall fertility rose from 1945 to 1960 and then declined after 1965. In regard to infant and child mortality, little evidence was found of infant death omissions; an overall trend of declining infant and child mortality during the past 30 years was apparent. Data were found to be generally reliable and reporting errors only slightly affected fertility estimates. Data on fertility, union status, and infant and child mortality were more complete than similar census and vital registration data. A list of 34 references (1953–81) is attached.



POPULATION

418

PN-AAL-731

MF \$1.08/PC \$2.99

Population growth and development in Egypt: farmers' and rural development officials' perspectives

Knop, Edward C.; Sallam, Mohamed S.; Knop, S.A.
U.S. Agency for International Development. Bureau for Near East. Egypt; Egypt. Ministry of Irrigation. Water Distribution Research Institute. Water Research Center; Colorado State University. Engineering Research Center; Consortium for International Development

Egypt water use and management project technical report, no.18, 27 Jul 1982, v, 17p. : En
2630017
AID/NE-C-1351

Egyptian farmers and rural development officials were surveyed regarding their concerns and beliefs as to the relative importance of population growth as a limiting factor to improvement in local living conditions. This paper examines the characteristics of those farmers and officials who gave higher and lower priority to these limitations, and what strategy options they favored.

Patterns among the findings are complex, but it was revealed that the farmers who are most concerned about population growth are not those expected to take this position and usually do not affect the birth rate themselves. They may indirectly influence others, but they have only a preliminary and intuitive understanding of the consequences of population growth and do not have a good sense of how to control growth except by expecting ameliorative actions by the national society. While most rural development officials favor high population growth limits, there is a tendency for those who feel strongly about the issue to prefer grassroots-level self-help and government support. (Author abstract, modified)

419

PN-AAL-751

MF \$1.08/PC \$12.35

Birth histories

Goldman, Noreen; Hobcraft, John N.
U.S. Agency for International Development. Bureau for Science and Technology. Office of Population; U.N. Fund for Population Activities; UK Overseas Development Administration; World Fertility Survey; International Statistical Institute

Comparative studies: cross national summaries, no.17, Jun 1982, 99p. : References p.30, En
9310547
AID/CSD-3606

Recent fertility studies have shown the importance of analyzing basic fertility rates in addition to presenting summary measures of fertility, and the advantages of cohort-period fertility rates over more traditional measures. For each of nineteen countries, this report presents arrays of cohort-period fertility rates calculated by age, by duration since first marriage, and by duration since first birth.

First, the report briefly notes adjustments made to World Fertility Survey data to facilitate inter-country comparisons. The methodology for calculating cohort-period fertility rates is then explained and a sample calculation is presented. A short discussion of cohort-period rates for Colombia serves to acquaint the reader with the use of these data. A final section describes the set of five cohort-period fertility tables which are

provided (in an appendix) for each country. While the report does not attempt to analyze the fertility histories appended, several examples of comparisons which can be made using the tables are provided. Supplementary data are also appended and 12 references (1964-80) are listed.

420

* PN-AAL-973

MF \$1.08/PC \$7.54

Family size preferences

Lightbourne, Robert E.; MacDonald, Alphonse L.
International Statistical Institute; World Fertility Survey
Comparative studies: cross national summaries, no.14, Nov 1982, 59p. : Bibliography p.28-29, En
9320547
AID/CSD-3606

* International Statistical Institute, 428 Prinses Beatrixlaan, P.O. Box 950, 2270 AZ Voorburg, Netherlands

Fertility preference data for 19 countries participating in the World Fertility Survey (WFS) are presented in this report. After discussing some of the difficulties inherent in the concept of preferred family size (including rationalization effects), the report summarizes the WFS fertility preference questions and lists five variables for which tabulations were calculated - total number of children desired, wanted family size, whether last birth desired, whether more children desired, and if so, how many. These variables are then defined and sources of non-comparability among countries, along with problems in translation, survey response, and other methodological issues, are discussed. Next, outstanding WFS findings on fertility preference are highlighted; crossnational regularities are noted and alternative interpretations examined. A final section notes that the data imply that although fertility would decline substantially in many countries if women acted consistent to their stated fertility preferences, very low population growth rates could be achieved only if the preferences themselves were markedly lower. The text includes 19 data tables; appended are detailed tables of fertility preference data and fertility preference items from the core questionnaire and an alternative module.

421

* PN-AAL-976

MF \$1.08/PC \$2.99

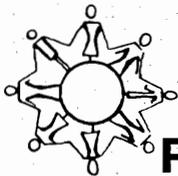
Evaluation of birth histories: a case study of Kenya

Henin, Roushdi A.; Korten, Ailsa; Werner, Linda H.
International Statistical Institute; World Fertility Survey
Scientific reports, no.36, Oct 1982, 31p. : References p.30, En
9320547
AID/CSD-3606

* International Statistical Institute, 428 Prinses Beatrixlaan, P.O. Box 950, 2270 AZ Voorburg, Netherlands

Fertility rates in Kenya remain high, but the country may be entering a transition period to lower rates. Thus concludes this report, which analyzes birth history data collected in the 1977-8 Kenya Fertility Survey (KFS) in conjunction with fertility estimates from the 1962 and 1969 censuses and the 1977 National Demographic Survey.

First, data from all four sources are compared, showing an apparent increase in fertility over the period 1962-78. Next, birth history data from the KFS are evaluated with respect to



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possible reporting errors and the effects of education. The authors find that KFS data indicating a rise in fertility from the distant past to the period 1963-7 may be due to misallocation of dates of birth by older women; KFS data showing a decline in fertility for the period 1963-7 through 1977 may indicate that Kenya is entering a period of lower fertility, correlated with the increase in education of women since independence.

Finally, fertility estimates calculated by cohort and time and by province using the Brass P/F model and the Gompertz relational model are presented to clarify results noted in the first two sections. These analyses, while revealing significant regional trends, suggest that for the country as a whole total fertility has not increased more than about 0.2 children per 1,000 women during the period under examination.

422

PN-AAL-978

MF \$1.08/PC \$3.51

Birthspacing, fertility, and family planning: policy and program implications from the Malaysian family life survey

DaVanzo, Julie; Butz, William P.

Rand Corp.

Rand publication series, no.R-2925-AID, Nov 1981, ix, 19p. :

En

9300088

AID/OTR-G-1822

During the past 20 years, an active family planning program has helped Malaysia reduce its overall fertility rate, although unevenly across the various ethnic and other segments of society. This report discusses the findings of the 1976-77 Malaysian Family Life Survey on factors contributing to this decline and the implications of these findings for future family planning and related programs.

After outlining the survey's conceptual framework and data gathering methods, trends in birthspacing, breastfeeding, and contraceptive use evident from the survey are examined. It is shown that overall fertility has declined due to an increase in birth intervals at higher parities. This trend in birth intervals has been caused by increases in the length of menstruating intervals due to the greater use of contraceptives, a factor which has offset decreases in the length of postpartum amenorrhea caused by reduced breastfeeding. The remainder of the report focuses on the practical implications of these trends for health and family planning programs and policies, for socioeconomic policies, and for future fertility research.

423

PN-AAL-997

MF \$3.24/PC \$31.07

Egypt-USAID population sector assessment, 1982

Mauldin, W.P.; Croley, H.T.; et al.

American Public Health Association. International Health

Programs; U.S. Agency for International Development.

Bureau for Science and Technology. Office of Population

Apr 1982, 2v. : En

9365900

AID/DSPE-C-0053

At its present growth rate of 2.8-3.0%, Egypt's population will double to 90 million in 20-25 years. This study assesses

family planning (FP) policies and projects in Egypt and suggests ways to make them more effective.

First, a demographic overview of Egypt is presented, with emphasis on current fertility rates, the implications of and reasons for continued high fertility, and the outlook for fertility decline. The history and goals of Egyptian population policy and the status of current policy-related research are then assessed and government FP agencies and projects are described. Further sections provide program/policy and specific project recommendations to energize Egypt's lagging FP delivery system (e.g., by increasing FP training, use of the private sector, and information, education, and communication activities), along with recommendations to improve population-related policies (e.g., in regard to primary education and food and energy subsidies), and to upgrade population research. Recommendations for USAID/E action conclude the study. Appended are the text of the assessment team's reports and a list of reference materials.

424

PN-AAM-226

MF \$3.24/PC \$20.02

Studies in social change: population movements and migrations in Mauritania

Checchi and Co.; Berger (Louis) International, Inc.; Action Programs International; Mauritania. Ministry of Economy and Finance. Directorate of Studies and Programming; U.S. Agency for International Development. Bureau for Africa. Mauritania

Rural assessment and manpower surveys, no.AS-8-3, Jul

1980, iv, 246p. : Bibliography p.244-246, En

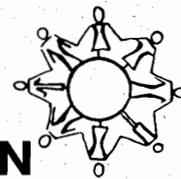
French edition: PN-AAM-135

6820211

AID/afr-C-1489

From time immemorial, Mauritania's ethnic groups have been involved in important population migrations. But, as this study shows, during the last few decades this mobility has intensified and has taken on a new character.

In former times population movements were an integral part of the pastoral, and to a certain extent, the agricultural lifestyle. During the later colonial period, populations also began to migrate for economic reasons, and the drift toward urban areas began. This drift, exacerbated by the Sahelian drought, the creation of a wage sector in Mauritania, and the devaluation of rural work and rural products, continues to the present time. After reviewing the history of migration in Mauritania, and the economic and social conditions motivating today's population movements (which are primarily labor migrations), the authors of the study examine the negative impacts of these labor migrations on Moorish and Black African (Toucouleur and Soninke) societies, showing that their lifestyles have been radically transformed, e.g., herdsmen have been made sedentary and migrant groups urbanized. A final section discusses migrations to other African countries and to Europe.



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425

PN-AAM-257

MF \$1.08/PC \$3.25

Spontaneous colonization in Peru and Paraguay: BIFAD study tour report

Eastman, Clyde

New Mexico State University; U.S. Agency for International Development. Board for International Food and Agricultural Development

International publication series: staff report, no. 1, Jul 1981, iii, 21p. : En

AID/DSAN-G-0166

Spontaneous colonization may occur in remote developing country areas under harsh conditions without government assistance while official colonization schemes often fail to attract and retain settlers. This study tour report, based on a review of available literature and government statistics and on interviews with local officials, faculty members, and farmers, examines spontaneous colonization at four South American sites - Tingo Maria and San Juan del Oro in Peru, and Itapua and Alto Parana in Paraguay.

In contrasting colonization in these four settings, the author notes the importance of roads and transportation in stimulating colonization, as well as the amount and quality of available land, especially for large-scale, commercial farming of highly profitable, export-oriented crops (e.g., coffee, cotton, soybeans). Population pressures, however, may lead to colonization far from existing roads (up to a 4-day walk) and in very marginal lands. Although the availability of public services is not unimportant, colonists will settle beyond their reach.

426

PN-AAM-270

MF \$1.08/PC \$1.04

Fertility in cultural perspective: Egypt, Jordan, Morocco, Tunisia and Yemen

Sukkary/Stolba, Soheir; Mossavar-Rahmani, Yasmin L.

U.S. Agency for International Development. Bureau for Near East

30 Sep 1982, 7p. : En

NEB-0035-C-00-2024-00

This brief report examines the relationship between cultural determinants of fertility and communication systems in Egypt, Yemen, Tunisia, Morocco, and Jordan. The focus is on qualitative, cultural aspects of family planning in this region. Information was obtained through interviews with social scientists, library and computer research, and a short questionnaire on fertility management. A list of 28 findings and 10 recommendations are provided regarding political and institutional contexts, the role of Islam, cultural mores, and women's lack of knowledge regarding reproduction. (Author abstract, modified)

427

* PN-AAM-442

MF \$1.08/PC \$3.90

Fertility of Tamil estate workers in Sri Lanka

Langford, C.M.

World Fertility Survey; International Statistical Institute; U.S.

Agency for International Development. Bureau for Science and Technology. Office of Population

Scientific reports, no. 31, Aug 1982, 30p. : En
9320547

* *International Statistical Institute, 428 Prinses Beatrixlaan, P.O. Box 950, 2270 AZ Voorburg, Netherlands*

The 1975 Sri Lankan Fertility Survey revealed that Tamil women working on agricultural estates were less educated, married younger, and practiced contraception less than women in other sectors but, at the same time, apparently had fewer children. This paper reports on a study undertaken to resolve this anomaly.

After providing background information on demographic factors, the estate sector, and ethnicity in Sri Lanka, the paper reviews the survey's coverage of the estate population. Data from censuses and vital statistics are then analyzed to determine mortality, fertility, and nuptiality patterns for estate women since 1946. Factors that might lead to lower fertility, including duration of marriage, age at marriage, incidence of stillbirths and miscarriages, and duration of breastfeeding, are examined. Possible explanations for the estate worker's lower fertility are then considered, and the practice of induced abortion is identified as its most likely cause. A postscript notes probable errors in the data on the total fertility of estate women and discusses possible underlying explanations for estate women's lower fertility. Appended are a survey sample distribution and a comparison of survey and other fertility rates.

428

PN-AAM-672

MF \$2.16/PC \$15.08

Model of household structure, marriage, and fertility in rural areas of developing countries with special emphasis on the effects of old age pensions

Nugent, Jeffrey B.; Walther, Robin J.

U.S. Agency for International Development. Bureau for Science and Technology

May 1981, 112p. : En

The effects of the "old age security" motive on fertility behavior in rural areas of developing countries are examined in this study, which also develops an economic model capable of analyzing the potential influences, both direct and indirect, of the introduction of a formal old age pension system.

The study begins by reviewing relevant literature on household structure, marriage, old age security, and fertility, giving special attention to conditions in rural India, from where the data used in the study are taken. Next, a modular economic model is presented which makes explicit the manner in which the old age security motive affects household structure, marriage, and fertility. The model is then tested, using panel and cross-section data from the Indian Additional Rural Income Survey, 1968-71. Policy implications and suggestions for future research are presented. Appended is a 210-item bibliography (1935-81).



POPULATION

429

* PN-AAM-807

MF \$1.08/PC \$10.92

Illustrative analysis: breastfeeding in Pakistan

Page, H.J.; Lesthaeghe, R.J.; Shah, I.H.
International Statistical Institute; World Fertility Survey; U.S.
Agency for International Development. Bureau for Science
and Technology. Office of Population
Scientific reports, no.37, Dec 1982, 84p. : En
9320547

* International Statistical Institute, 428 Prinses Beatrixlaan,
P.O. Box 950, 2270 AZ Voorburg, Netherlands

In this study, data from Pakistan are used to illustrate the analysis of breastfeeding data obtained from the World Fertility Survey (WFS) core questionnaire.

The study begins with a brief sketch of the demographic roles of breastfeeding. The authors then discuss the nature of breastfeeding data from WFS surveys in general and the Pakistan Fertility Survey in particular in order to assess the extent to which these data can answer substantive questions concerning breastfeeding and its demographic impact. The actual analysis opens with a discussion of the methods of using these data to estimate breastfeeding patterns; an illustration of their application is provided. Multivariate analysis of breastfeeding differentials follows. Finally, the impact of breastfeeding on fertility is examined, particularly in relation to amenorrhoea, birth intervals, and cumulated marital fertility. It is shown that breastfeeding in Pakistan is near-universal and quite prolonged, and may add 11 months to the period of nonsusceptibility to conception after each birth. Appended are data on breastfeeding rates in Pakistan and a two-page bibliography (1965-82).

430

PN-AAN-334

MF \$1.08/PC \$9.49

Cameroon

Futures Group, the; U.S. Agency for International
Development. Bureau for Africa. Cameroon
Jan 1983, ii, 68p. : En

The impact of increasing population growth rates on Cameroon's ability to achieve substantial social and economic progress are detailed in this report. The country's future population growth is statistically projected on the basis of three fertility assumptions, each calculated up to the year 2025. Each projection is then further projected for its impact on: the economy (work force size and number of child dependents, job creation requirements, gross domestic product and gross domestic product per capita); the health sector (infant mortality rates in relation to age of mother, interval between births, and order of births, as well as the size of the high risk population and the need for elementary health centers and physicians); urbanization (the size of the urban population and job and housing requirements); primary education (enrollment and number of teachers required); and agriculture (production requirements for cereals, roots, tubers, and plantains and wheat import requirements). The study concludes by noting the long-term increases in population size caused by even short delays in reducing fertility and points out the need for family planning programs to promote fertility decline. Numerous tables and graphs illustrate the text.

431

PN-AAK-992

MF \$1.08/PC \$11.70

Audience research for improving family planning communication programs

Bertrand, Jane T.
University of Chicago. Community and Family Study Center
Media monograph, no.7, 1980, vi, 85p. : En
9320619
AID/pha-C-1108

The information-education-communication (IEC) approach to family planning (FP) systematically researches and designs specific mass media messages for targeted subgroups of the population. This manual, part of a 3-part series, describes how to carry out audience research, analyze the results, and incorporate them into an IEC program for FP.

Following a discussion of the validity and importance of the IEC concept, an indepth explanation is provided in Chapter II of the practical purpose of audience research as an aid in developing an IEC strategy for increasing voluntary contraceptive use. Audience research assesses the current household FP situation and factors that influence acceptance of FP, and identifies the most effective channels of communication. Chapter II concludes with a review of the uses of data collected with a sample questionnaire (provided in Chapter III). Methodological considerations in audience sampling and encoding of the data are then pointed out. Ultimately, the value of research lies in careful analysis and application of the data in designing an IEC strategy, as discussed in the final two chapters.

432

PN-AAL-294

MF \$2.16/PC \$20.41

Contraception; a guide to birth planning methods

Barcelona, Delia R.; Bautista, Paulina F.; Bogue, Donald J.
University of Chicago. Community and Family Study Center;
U.S. Agency for International Development. Bureau for
Science and Technology. Office of Population
1981, viii, 147p. : En
9320638
AID/pha-C-1177

In both developing and developed countries, women's failure to use contraception is often due to lack of adequate information about the various methods, how to use them, and the likelihood of side effects. This manual provides, in simple detail and nontechnical language (with many illustrations), descriptions of major contraceptive methods, their advantages and disadvantages, reliability, correct use, possible side effects, and the means by which they may be obtained.

The manual's first eight chapters each describe a method of contraception: the pill (including injectables); IUD's; condoms; diaphragms; spermicides; periodic abstinence; female sterilization; and male sterilization. The remaining two chapters discuss human sexuality and the physiology of reproduction.



433

PN-AAL-775
MF \$1.08/PC \$7.67

Planning familial: son effet sur la sante de la femme et de l'enfant (Family planning: its effect on the health of the woman and child)

Maine, Deborah; Revson, Joanne E.
Columbia University. Center for Population and Family Health; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
1981, 56p. : Fr
9320632
AID/DSPE-CA-0043

Despite recent progress in improving maternal and child health, 15 million children under age 5 die every year in developing countries. A million others are orphaned by the deaths of their mothers during pregnancy or childbirth. This report presents statistical data, supplemented by narrative text, demonstrating how family planning can help women avoid or reduce risks to their own and their children's health, e.g., risks caused by too frequent pregnancies or by pregnancy in women too young or too old.

Charts are presented displaying data from several countries on a variety of factors pertinent to maternal and child health and on correlations among these factors. Included are data on, inter alia: birth spacing; average number of children; relationships between infant mortality and birth order, and between birth defects and age of mother; maternal mortality from induced abortion; women with three living children who wish to have no more children; percentages of women using no contraceptives, ineffective methods, and effective methods; percentages of women with and without knowledge of or access to contraceptives; and mortality resulting from various contraceptive methods. An 88-item bibliography (1938-1981) is attached.

434

PN-AAL-791
MF \$1.08/PC \$9.1

Female sterilization: a comparison of minilaparotomy and culdoscopy

Khan, Atiqur R.; Akhtar, Halida H.; et al.
International Fertility Research Program; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
Singapore journal of obstetrics and gynecology, v.13(1), Mar 1982, p.31-37 : References p.36-37, En
932000537
AID/pha-C-1172

Culdoscopy is an effective method of female sterilization, and can, in fact, be faster than other supposedly easier methods. Thus concludes this paper on a comparative study of 169 women randomly assigned to receive either culdoscopy or minilaparotomy at a clinic in Dacca, Bangladesh.

Data for the two methods are presented on technical failures, surgical complications, postoperative complications, and surgical and hospitalization time. Rates of surgical difficulties and complications were only slightly higher for the culdoscopy procedure than for the minilaparotomy; follow-up complications and complaints were also similar; except for a higher rate of incision infection/discharge for minilaparotomy patients at 7-21 days follow-up. The greatest difference was in mean surgical time; the culdoscopy sterilization usually re-

quired only half the time of the minilaparotomy. The latter finding can be of considerable importance in locations where the demand for sterilization exceeds the physician's/clinic's capabilities.

435

PN-AAM-110
MF \$1.08/PC \$7.80

Contraceptive manufacturing in India

Lach, John L.; Bronnenkant, Paul L.; Bronnenkant, Lance J.
American Public Health Association. International Health Programs; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
11 Jan 1983, vii, 45p. : En
9365900
AID/DSPE-C-0053

Two separate studies were conducted to assess the current and future status of public and private contraceptive manufacturing facilities in India. Findings from these studies are reported herein.

In the first study, the production of oral contraceptives was assessed at the government facility in Guragon and at several private drug companies. It was found that the present production level at the government facility of 11 million cycles per year of oral contraceptives could be increased to 20 million through plant renovations and equipment purchases, but that attainment of USAID/I's 1988 target of 150 million cycles per year would require the construction of new facilities. The target could also be met, however, by the combined production levels of several private facilities.

An evaluation of the machinery, equipment, and personnel of the corporately owned Copper Tee IUD factory in Kanpur revealed the factory to be totally unqualified for its task. Required are more suitable premises, competent leadership and supervision, and trained personnel. Any further attempt at indigenous production of the IUD should be made in the private sector; meanwhile, existing needs should continue to be met through imports.

436

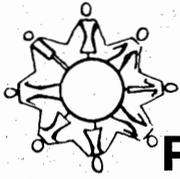
PN-AAM-594
MF \$1.08/PC \$1.82

Comparison of different laparoscopic sterilization occlusion techniques in 24,439 procedures

Bhiwandiwala, Pouru P.; Mumford, Stephen D.; Feldblum, Paul J.
International Fertility Research Program; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
American journal of obstetrics and gynecology, v.144(3), 1 Oct 1982, p.319-331 : En
9320537

The investigation reported here assessed the safety and efficacy of five laparoscopic tubal occlusion techniques for female sterilization (electrocoagulation, the tubal ring via conventional and open laparoscopy, the prototype spring-loaded clip, and the Rocket clip) in 24,439 cases - a data set collected by collaborating staffs at 64 institutions in 27 countries.

The five techniques were compared with respect to six commonly evaluated parameters. Rates of surgical difficulties ranged from 2.4% to 12.5% (5.1% overall); rates of surgical



complications, from 0.7% to 2.7% (1.7% overall); and rates of technical failures, from 0.6% to 1.0% (0.8% overall). Twelve-month life-table pregnancy rates were less than one per 100 woman-years. Prospective data on six menstrual parameters revealed that the menstrual cycles of the majority of women were unchanged after sterilization. For those who reported a change, approximately half experienced a change in one direction and half in the other direction; for example, half reported an increase in the amount of menstrual flow, and half reported a decrease. The reported incidence of subsequent pelvic operations was less than 1% at each long-term follow-up. These data indicate that laparoscopic sterilization is safe and effective and that none of the studied techniques has a distinct advantage. (Author abstract, modified)

437

PN-AAN-027

MF \$3.24/PC \$30.42

Family planning in rural Egypt, 1980: a report on the results of the Egypt contraceptive prevalence survey

Khalifa, Atef M.; Sayed, Hussein A.; et al.

Westinghouse Health Systems, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population

Dec 1982, xxii, 221p. : Bibliography p.219-221, En 9320624

Egypt's concern with high population density and rapid population growth led in 1980 to the Egypt Contraceptive Prevalence Survey, findings of which are presented in this report.

Chapter 1 outlines Egyptian population policy and programs and describes the survey's setting, organization, sample and questionnaire design, and field and data processing activities. Chapter 2 provides a demographic and socioeconomic profile of the survey respondents. Chapters 3, 4, and 5 examine nuptiality, fertility patterns, and desired family size. Chapters 6 and 7 focus on contraception knowledge, approval, and use. Chapter 8 considers reasons for non-use and intentions for future use by women not currently practicing family planning. Chapter 9 explores the issue of the perceived availability of contraceptive services in rural Egypt, while Chapter 10 discusses patterns of continuation of contraceptive use. Chapter 11 evaluates the impact of the Government of Egypt's Population and Development Project, comparing contraceptive behavior in areas covered by the project with behavior in areas not covered.

438

PN-AAN-196

MF \$3.24/PC \$35.62

Family planning program effectiveness: report of a workshop

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation (Family Planning Program Effectiveness Study Workshop, 3 Apr 1979)

A.I.D. program evaluation report, no.1, Dec 1979, ii, 26p. + 4 appendices : En

A study of family planning (FP) program effectiveness culminated in a workshop in April 1979, the proceedings of which are reported here. Workshop participants sought to

identify from research and experience the combination of direct FP services and development activities most appropriate for reducing population growth in specific country situations.

Part I summarizes the four background papers used as a framework for discussion, one of which was a typology for estimating the possible success of FP strategies in a specific country; Part II summarizes discussion of individual country experiences and policy-related issues; and Part III summarizes areas of consensus and concluding statements.

Country conditions identified as crucial to FP effectiveness are political commitment, administrative ability, and the socio-economic and cultural acceptability of FP. Countries were categorized as "certain," "probable," "possible," and "unlikely" to achieve an annual birth rate of 20 per 1,000 by the year 2000, based on the above-noted typology. It was proposed to follow the Asian Bureau in adapting FP programs to each country's needs by varying their sequencing, their mix of services, and their relationship to other development activities, including efforts to enhance the status of women and to upgrade the quality and availability of demographic data.

Consensus was reached on recommendations to: (1) adopt a country-specific approach to FP planning and policy based on realistic, long-term goals; (2) identify conditions within individual countries, regions, or subgroups that favor specific strategies; (3) provide more varied and more flexible FP services; (4) seek support from local governments and institutions for a decentralized FP program; (5) promote awareness, especially among African politicians, planners, and decisionmakers, of the links between population and development; and (6) revise FP policy statements to reflect the large numbers of adult unmarried women and the high rates of adolescent pregnancy. Two of the four background papers are appended.

439

PN-AAN-330

MF \$1.08/PC \$1.82

Considerations in selecting a postvasectomy semen examination regimen

Mumford, Stephen D.; Davis, James E.; Freund, M.

International Fertility Research Program; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population

International urology and nephrology, v.14(3), 1982, p.293-306 : En 9320537

The criteria for declaring a vasectomized man sterile have been the subject of debate for many years, yet most suggested regimens differ. The problem lies in the remaining unanswered physiologic questions of such a fundamental nature as to frustrate attempts to formulate a regimen based strictly on medical considerations. The rates of disappearance of sperm following vasectomy vary considerably among men. The physiologic basis for these variations are herein discussed for the first time. At present, regimens reflect, for the most part, social considerations, according to the values and perceptions of the individual physician. The problems raised by postvasectomy residual sperm and current formulation of regimens are described. (Author abstract)



440

* PN-AAJ-616
MF \$2.16/PC \$15.73

Vicos experiment: a study of the impacts of the Cornell-Peru project in a highland community

Lynch, Barbara D.

U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Office of Development Programs; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation

A.I.D. evaluation special study series, no.7, Apr 1982, vii, 108p. : En

LAC-0044-C-00-1023-00

* Document contains oversize pages available only in microfiche

The often criticized Vicos Cornell-Peru project – an action-oriented research program to improve the quality of life in a highland hacienda community in Peru – was one the earliest efforts to bring about planned social change in the developing world. The author of this study interprets data on the project from an anthropological viewpoint, presenting a comprehensive analysis of the project's background, interventions, and results.

During the period 1952-65, the Vicos project aimed to increase Vicosinos' status and self-esteem by undertaking a broad range of activities, e.g., the introduction of improved potato seeds, technology, and a credit package, other agricultural activities, educational improvements, health and nutrition programs, military recruitment, and the creation of new political institutions. Although many of these efforts succeeded, positive impacts were mitigated by a variety of unintended effects.

Potato production increased dramatically, leading to increased cash and commerce in the community and better diets; however, as the new technologies were available only to wealthier Vicosinos, the relative position of smallholders declined. Educational improvements increased literacy, Spanish speaking ability, and opportunities for secondary schooling, but lowered the status of women (due to unequal educational opportunities) and of the aged (as educated children took stronger roles in household decisionmaking); jobs for the secondary school graduates were scarce in Vicos.

Regularization of Vicosinos' military status led to the creation of a power bloc of veterans, generally committed to social and economic innovation, which tended to weaken kinship institutions and traditional elites. Traditional authority was further weakened by the (largely successful) transfer of political power to elected delegates and a governing body of literate Vicosinos. The project did improve Vicosinos' self-esteem and their position outside the community, but it also increased their status and role ambiguities.

The author concludes that project success (qualified though it was) was due to the anthropological sensitivity of key project staff and that project willingness to work with existing Peruvian institutions increased the transferability of Vicos innovations within Peru.

441

PN-AAL-011
MF \$2.16/PC \$21.71

Egypt: the Egyptian American rural improvement service, a point four project, 1952-63

Johnson, Pamela R.; El Dahry, Ahmed; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
A.I.D. project impact evaluation report, no.43, Apr 1983, xi, 26p. + 10 appendices : En

The long-term impact of the model Egyptian American Rural Improvement Service (EARIS) project (1952-63), still Egypt's most successful land reclamation effort, is evaluated in this report.

Alignment with Egypt's top political and developmental goals enabled EARIS to successfully reclaim 37,000 acres of lake bottom and desert land at three sites, build 13 complete and 64 satellite villages, and resettle 7,500 landless families. A semi-autonomous structure facilitated implementation but hindered transfer of responsibility to Egypt's line ministries, while infrastructure building was unrealistic and lacked long-term planning for upkeep and recurrent costs. The project's main accomplishment was to put needed inputs – land, water, credit – into the hands of small farmers. Political shifts and the move to large state farms on reclaimed land prevented its replication.

The 30,000 acre site at Abis was EARIS's most successful, thanks in part to the marketing, economic, and service opportunities offered by nearby Alexandria. Today, farm income in Abis has risen dramatically, average large animal holdings have increased from 1 to 4 per household, and land values have soared; prosperity is evident. Individual and cooperative investments have allowed farmers to intensify land use, control marketing, and process their milk and cheese. About 25% of cropland is devoted to high-value vegetable production, and cereal crop production equals or exceeds that of the Old Lands.

The two desert reclamation sites, Qoota and Kom Osheim, totaling 7,000 acres, have not fared as well. Only a fraction of the lands' productive potential is now being used due to the large-scale withdrawal – legal and illegal – of irrigation water by spontaneous land reclamation upstream. Some of the 1,600 settler families have abandoned their farms and many who remain depend on semi-skilled work in Cairo.

The project taught that small farms on reclaimed land are financially viable and highly productive if irrigation water is assured and well-managed and farmer choice permitted and that population increases result in land fragmentation, indicating the need for a diversified economic base. U.S. support for the project made a difference that is still felt.



HUMAN SETTLEMENTS

442

PN-AAM-340

MF \$2.16/PC \$15.86

Urban functions in rural development: the case of the Potosi region in Bolivia; part I: concepts, methods and application

Evans, Hugh

U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

Sep 1982, viii, 112p. : En

Part II: PN-AAM-341

9310210

OTR-0000-0-00-2053-01

In 1975, an A.I.D. project was initiated to help improve the contributions of urban centers to rural development. This report summarizes the concepts and methods underlying the project and initial applications in Bolivia's Potosi region, one of six pilot project areas.

An introductory chapter discusses the data needed to analyze the spatial dimensions of a region's economy, together with the main information sources in Bolivia and three field surveys – of urban centers, markets, and households – carried out to collect further information. A profile of the region's physical, demographic, and economic features shows that Potosi's development, while slow, was closely associated with the growth of urban population. The next three chapters examine the principal features of the urban-rural system – settlements, the linkages among them, and rural accessibility to urban-based functions. The region's existing spatial structure is analyzed and interpreted and spatial constraints to development are indicated. Specification of the general project strategy for use in Potosi is then detailed, and methods for designing packages of projects for each area of the region are discussed and illustrated. The report concludes with a summary of the considerable progress made to date and plans for the future. Eighteen tables, 12 maps, and 3 figures are included.

443

PN-AAM-341

MF \$1.08/PC \$12.22

Urban functions in rural development: the case of the Potosi region in Bolivia; part II: preliminary evaluation

Evans, Hugh

U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

Oct 1982, iv, 86p. : En

Part I: PN-AAM-340

9310210

OTR-0000-0-00-2054-01

An evaluation of the application in Bolivia's Potosi region of an A.I.D. pilot project to test an urban-based model of regional development planning is herein presented.

The study begins by describing Bolivia's regional planning system – and its lack of coordination and of spatial planning – and the agencies involved. Next, a model of the planning process used in Potosi (data collection, problem analysis, plan-making, and project implementation and evaluation) is discussed and the impact, or lack of it, of the project's approach on each of these elements described and exemplified. In light of the Potosi experience, the evolution of the project's basic

methodology is reviewed and recommendations to improve it proposed. Issues involved in replicating the project approach elsewhere (the region involved, institutional framework, the scope of work to be undertaken, available resources, and external support) are then discussed. A summary of the project's main impact in Potosi – the shifts of emphases from public works to productive projects and from a purely sectoral to a more spatial approach to planning – and recommendations for follow-up USAID/Bolivia action conclude the report.

An analysis of the use of a model based on accessibility to urban functions for evaluating project proposals – one of the key innovations of the Potosi project – is appended.

444

PN-AAM-362

MF \$2.16/PC \$21.97

Integrated improvement program for the urban poor (IIPUP); project identification and design

Wright, James O. Jr.

Planning and Development Collaborative International, Inc.; U.S. Agency for International Development. Bureau for Development Support. Office of Urban Development

Feb 1980, iii, 171p. : En

Work order no.4

AID/SOD/PDC-C-0155

Results of a study on the state of the art in project identification and design for IIPUP (Integrated Improvement Program for the Urban Poor) projects are presented and analyzed herein.

First, the goals, purposes, and limitations of IIPUP are highlighted and criteria for classifying target groups examined. Next, individual components of IIPUP projects are discussed. Organizational arrangements for integrating urban services are analyzed and possible financing arrangements, including cost recovery and funding mechanisms to support service integration, are evaluated. Principles to be followed in establishing a legal framework for IIPUP projects are addressed and strategies to initiate changes in the framework described. Finally, the need for flexibility and gradualism in developing IIPUP projects is considered, with particular reference to the selection of target groups, geographic extension, the introduction of program components into individual projects, and contingency planning.

Appended are case studies from both domestic and international experience and descriptions of several types of IIPUP projects.

445

PN-AAM-595

MF \$1.08/PC \$1.82

Dynamics of growth of secondary cities in developing countries

Rondinelli, Dennis A.

U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

Geographical review, v.73(1), 1 Jan 1983, p.42-57 : En
9310210

In the late 1970's, many developing country governments sought to promote the growth of secondary cities, both to stimulate the economies of surrounding rural areas and to slow



migration to primary cities. The dynamics of growth in 31 such cities are described in this article.

Discussion is given in turn to the major factors shaping the growth of the cities studied – favorable physical location and endowment of natural resources, selection as political or administrative centers, concentration of colonial or foreign investments, economic conditions favorable to regional commercial and service centers (the most important factor of all), the influence of transportation technology, and the effect of governmental investment in infrastructure and facilities.

A final section notes that the above factors do not uniformly or infallibly result in the initial and/or continued growth of secondary cities; almost all studies show the importance of the spontaneous responses of individuals to favorable circumstances, usually a combination of factors (14 are cited). These findings suggest that policymakers emphasize investments that support and diversify the trade, commercial, small-scale industrial, and agricultural processing and supply activities of secondary cities that lead to mutually beneficial linkages between the cities and their rural hinterlands.

446

PN-AAM-597

MF \$1.08/PC \$2.99

Integrated regional development planning: linking urban centres and rural areas in Bolivia

Rondinelli, Dennis A.; Evans, Hugh
U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Bolivia
World development, v.11(1), 1983, p.31-53 : En
9310210

Highly polarized settlement systems in developing countries reflect and tend to reinforce strong disparities in levels of development between the largest city and other regions and between urban centers and their hinterlands in rural regions. Integrated regional development planning seeks to create a more diffuse and articulated system of settlements in order to: (1) diversify the services and facilities available to rural residents; (2) increase their access to town-based markets, new sources of agricultural inputs and nonagricultural employment opportunities; and (3) provide guidelines for sectoral investment and location decisions. One approach to integrated regional development planning – "Urban Functions in Rural Development" – was tested in the Department of Potosi, Bolivia, and its results provide insights not only into the methodology of analysis but also into the complex relationships among rural development, patterns of human settlement, and processes of spatial interaction. (Author abstract)

447

PN-AAM-932

MF \$1.08/PC \$4.29

Suggested outline and approach for conducting urban development assessments in developing countries

Planning and Development Collaborative International, Inc.; U.S. Agency for International Development. Bureau for Private Enterprise. Office of Housing and Urban Programs
Feb 1982, ii, 29p. : En

An Urban Development Assessment (UDA) is designed to help A.I.D. Missions prepare urban projects by providing well-founded answers to such questions as whether specific urban problems or opportunities warrant the use of A.I.D. resources, which urban areas and sectoral policies deserve priority emphasis, and which indigenous institutions and decisionmakers should be involved in policy and program initiatives. This report presents a basic outline of the UDA.

The substantive content of the UDA includes: a review of urbanization, urban conditions, and associated development processes; a review of national development, macro-economic, spatial, and sectoral policies and strategies influencing urbanization and urban conditions; and a review of sectoral investment and operating programs. To guide those preparing a UDA, a 4-phase work plan and suggestions regarding major UDA sections are provided. An annex discusses key principles relating urban development to other national development policies.

448

PN-AAM-933

MF \$1.08/PC \$7.93

African urban indicators: current and projected urbanization and associated indicators

Planning and Development Collaborative International, Inc.; U.S. Agency for International Development. Bureau for Private Enterprise. Office of Housing and Urban Programs
Dec 1982, iii, 29p. + 2 annexes : En

Urbanization is proceeding more rapidly in A.I.D. Africa Bureau countries than is the economic growth needed to enhance the quality of urban life. This paper presents key indicators on urbanization and socioeconomic development to help the Bureau define country priorities for urban assistance.

After a statistical overview of urbanization in these countries, the paper examines population concentration in the largest cities, per capita rates of economic growth, selected social welfare indicators, and the interrelationship between urbanization and economic development, and then projects urbanization levels and rates to the year 2000. Results suggest that priority be accorded those countries (identified by name) which are: (1) most likely to experience substantially increased urban pressure or are already urbanized beyond their level of economic development; and (2) most likely to experience domestic resource problems if their rate of economic growth does not increase substantially.

Two annexes, one providing 18 figures on urbanization and related indicators, the other explaining the importance of urban policy formation within the national development context, and 14 tables are included.

449

PN-AAM-229

MF \$1.08/PC \$8.58

On the economics of integrated rural development

Klitgaard, Robert E.
Lincoln Institute of Land Policy; Harvard University. Kennedy (John F.) School of Government; U.S. Agency for International Development
Lincoln Institute monograph, no.81.6, Jul 1981, v, 58p. : En



HUMAN SETTLEMENTS

Under what circumstances should rural agencies be organizationally integrated in developing countries? This paper provides a framework, based on analogies with private sector firms, which presents the principal reasons for and against integrating rural development agencies.

Arguments in favor of integrated agencies include: (1) rural production inputs are naturally complementary; (2) economies can be achieved through combined production; (3) integration allows financial diversification; and (4) vertical integration reduces interagency transaction costs. Arguments against integration are that it entails both direct (financial) and indirect (managerial) costs, and that because integration is complex, the economies of specialization are lost. The framework also shows that integration creates a sort of monopoly, which can be good (e.g., can lead to increased bargaining power) or bad (can lead to corruption, politicization, and excessive expansion). A set of empirical questions is provided to help determine the strength of each argument (pro or con) in concrete circumstances.

The author discusses limitations to the framework posed by the realities of public agencies in developing country rural areas, concluding that the benefits of integration will tend to be smaller, and the costs larger, than a model based on the private sector might suggest. A brief application of the framework to a rural family planning and health project concludes the paper. A four-page bibliography (1937-81) is appended.

450

* PN-AAN-411

MF \$3.24/PC \$32.50

Peasant participation in Costa Rica's agrarian reform: a view from below

Seligson, Mitchell A.

Cornell University. Center for International Studies. Rural Development Committee; U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development

Cornell University monograph series, no.6, Dec 1982, viii, 241p. : References p.239-241, En 9311137

AID/TA-BMA-8

* *Rural Development Committee, Center for International Studies, 170 Uris Hall, Cornell University, Ithaca, NY 14853* \$6

To obtain data on beneficiary participation in Costa Rica's AID-supported land reform program, interviews were conducted with 753 small farmers, dwelling both within the Atlantic Basin, the program's point of emphasis, and outside of it. Results of statistical analysis of the data obtained and of pertinent secondary data are presented in this report.

Chapters cover, in turn, demographic, socioeconomic, and political characteristics of the settlers and evidence of their attitudinal and behavioral support for the program. Settlers' feelings of relative satisfaction when comparing themselves with various nonbeneficiary groups and with their own previous situations are assessed and their political participation in government and privately organized activities is evaluated. The related question of settler trust in the government and the political process is then examined.

It is concluded that although the reform program has on the whole been a positive experience for small farmers, they have made only limited economic progress. Further, a significant pattern of negativism is evident among Atlantic Basin settlers. Recommendations address the need to improve beneficiary

capabilities to achieve economic progress through increased literacy and education and greater participation in cooperatives.

451

PN-AAM-663

MF \$3.24/PC \$34.32

Agrarian reform in El Salvador

Strasma, John; Gore, Peter; et al.

Checchi and Co.; U.S. Agency for International Development.

Bureau for Science and Technology. Office of Development Information and Utilization

Jan 1983, 260p. : En

PDC-1406-I-00-1136-00

The current status of the agrarian reform program in El Salvador and recent legal and procedural changes made within the program are highlighted in this study. Contrary to their expectations, the study team, which visited El Salvador in November/December 1982, found agrarian reform to be progressing and to have the active support of both the government and the armed forces.

The background and history of Salvadoran agrarian reform are examined, changes in agrarian reform laws and procedures since 1981 are outlined, and current rural conditions are described. The authors proceed to discuss the formation of agrarian reform cooperatives, implementation of Salvadoran Decree 207 (Land Redistribution) and its unresolved problems, alternative arrangements for 100-500 ha properties, linkages with the nonreform sector, and the status and uses of agrarian reform bonds. Recommendations are made regarding the need to revise agrarian debt policy, write off or refinance first-year loans to cooperatives, create a Salvadoran agriculture insurance plan, and promote further studies to enhance the effectiveness of reform measures.

452

PN-AAL-008

MF \$2.16/PC \$17.55

Impact evaluation of housing guaranty programs in Panama

McDonald, Ann W.; Sorock, Margarita; et al.

U.S. Agency for International Development. Bureau for

Program and Policy Coordination. Office of Evaluation

A.I.D. project impact evaluation report, no.41, Mar 1983, xii,

31p. + 4 appendices : En

525HG08; 525HG09

In response to A.I.D.'s "New Directions" policy, the Government of Panama and USAID/P began in 1974-75 to reorient housing guaranty (HG) projects toward the poor majority. This report describes and evaluates the impact of the first two completed HG programs exemplifying this reorientation.

In the Nuevo Chorillo Housing Cooperative Project, physical outputs, i.e., housing solutions, were surpassed, but considerable delinquency in loan repayments to the cooperative and the latter's lack of a working system to promote community development make replication of the project doubtful. In the slum upgrading project at San Miguelito, basic infrastructure and services were provided as planned, but major revisions were made in the type and number of low-cost housing units due to weak demand and rapidly rising costs. Evaluation of the projects' impacts on beneficiaries was extremely difficult because the program planners tended to treat physical outputs as



project purposes. The most dramatic, positive impact, confirmed by beneficiary interviews, was an improved standard of living, especially in Nuevo Chorrillo.

It is recommended that future HG projects: (1) include short-term indicators of beneficiary impact (e.g., reduced population densities, time and labor savings, provision of basic services, cost-efficiency of solutions); (2) determine beneficiaries' housing preferences and seek their participation; (3) obtain data on specific low-income target groups as to their capacity and willingness to pay for alternative housing; (4) reliably calculate affordability through a full accounting of carrying costs and available household income; (5) seek more innovative cost reduction methods (e.g., less costly materials, lower construction standards, self-help construction with technical assistance); and (6) recognize that subsidies may be required indefinitely to ensure the accessibility of low-income housing. Finally, since inflation and program reorientation have reduced the number of jobs generated by the HG program, adjunct programs to provide jobs for unskilled laborers in other fields (e.g., light manufacturing) should be supported.

453

PN-AAL-854

MF \$1.08/PC \$9.49

Housing and health: an analysis for use in the planning, design, and evaluation of low income housing programs

U.S. Agency for International Development. Bureau for Private Enterprise. Office of Housing and Urban Programs
Nov 1981, ii, 65p. : References p.53-65, En

To establish a framework to monitor the health effects of A.I.D.'s Housing Guaranty program, existing literature on the health effects of low-income housing solutions in developing countries is reviewed in this report. A major finding is that in the absence of other improvements in the socioeconomic status of residents, housing by itself may not significantly affect health status.

An introductory section defines the terms health and housing and provides generalizations about their interrelationship. Discussion is then given to the connection between specific planning and design characteristics and specific diseases and pathological conditions. The discussion covers water, sanitation, and excreta removal facilities; general housing standards (space, temperature, ventilation, and illumination); food preparation and household storage; construction materials; home gardens and livestock raising; the physical planning of immediate surroundings; and general land-use planning. Priority linkages in the housing/health domain are explored next, followed by an assessment of the Housing Guaranty program and a strategy to evaluate the relationship between housing and health. A case study of a home garden as a health-related housing intervention concludes the report. A 13-page list of references (1933-81) is appended.

454

PN-AAL-366

MF \$1.08/PC \$10.14

Medidas propuestas para reducir costos en proyectos de infraestructura y urbanizaciones de vivienda minima (Proposed measurements for cost reductions of infrastructure and urbanization of low cost housing)

Cordon, R.O.

U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Honduras; Camp Dresser and McKee, Inc.

Jun 1982, 72p. : Es Report no.46
9311176

AID/DSPE-C-0080

To reduce construction costs associated with potable water, sewage, and drainage activities in A.I.D.'s low-income housing projects in Honduras, studies were conducted in two project areas, Tegucigalpa and San Pedro, to examine inherent project inefficiencies and to recommend improvements. Results of these studies are presented in this report. After briefly outlining the project's history, the methodology for collecting data for this study is presented, cost data are analyzed, and problems contributing to the high costs are identified.

Organizational and technical constraints to project implementation in two public service agencies, Servicio Autonomo Nacional de Acueductos y Alcantarillados and Division Municipal de Aguas, were found to contribute to the unduly high costs of construction. Specific factors include the lack of simple, written technical design standards, poor communications between and untimely project approvals by participating service agencies, and inflexibility in responding to particular needs in specific situations. Recommendations to rectify these problems are made. Appendices present financial data, agendas, photographs, listings of personnel, and technical guidelines for construction of public works.

455

PN-AAM-288

MF \$3.24/PC \$36.53

Manual for building temporary emergency shelters

Frazier, Barry; Birch, Lawrence W.

Florida Agricultural and Mechanical University. School of Architecture; U.S. Agency for International Development.

Office of U.S. Foreign Disaster Assistance
1 Sep 1982, 280p. : En, Fr, Es, Ar

AID/PRE/HUD-C-1738RFS

Detailed, illustrated instructions for selecting, designing, and constructing temporary postdisaster shelters using plastic sheeting as a primary construction material are presented in this manual.

The first section provides an introduction on how to use this manual to address specific shelter problems. In Section II, on design, the features of plastic sheeting are described and instructions are provided for its proper use and the avoidance of characteristic problems. The importance of meeting family, religious, community, and cultural needs in postdisaster planning is highlighted and locations to avoid in placing the temporary dwellings are noted. Building designs for environmental conditions such as strong winds, earthquakes, temperature extremes, and flooding are described, along with dimensions and room layouts for community service buildings, such as



HUMAN SETTLEMENTS

health and food stations and administrative offices. In the final section, instructions are provided for building different types of structures, for constructing foundations, walls, roofs, doors, windows, and vents, and for attaching plastic to various other materials used in construction.

456

PN-AAM-214

MF \$1.08/PC \$8.84

Case study: January 1, 1980 Azores earthquake reconstruction; a report after two and one half years

Shapleigh, Alexander; Sterne, Marx; et al.
U.S. Agency for International Development. Bureau for Near East. Portugal
Sep 1982, v, 44p. + 4 annexes : En, Pt

On January 1, 1980 a major earthquake rocked the Azores archipelago. This report details relief and reconstruction efforts undertaken following the disaster and the lessons taught by the experience.

Background information on the Azores at the time of earthquake and on the latter's economic and social consequences are sketched and Portuguese and U.S. government and private relief operations are detailed. The reconstruction program, which focused quickly on housing, is reviewed and assessed with regard to temporary housing solutions, the incentives provided the private sector for permanent rebuilding, and public housing projects. Target areas for future reconstruction work are enumerated.

Lessons taught by the experience include the advisability of decentralizing responsibility, of pooling national and foreign assistance funds, of distributing building materials rapidly, and of employing armed forces work brigades, private initiatives, and subsidized credit; the essentiality of local involvement; the need to pursue comprehensive disaster preparedness planning at the regional and local levels and to limit requests for international assistance to specific priority needs; the preferability of permanent to temporary housing solutions; and the possibility of providing adequate public housing for under 30,000/unit.

Supporting documentation and financial details are appended.

457

PN-AAM-637

MF \$2.16/PC \$16.77

Construction training manual for the pilot housing project, Kurtunwaare, Somalia

Bruce, James B.; Wright, Millard M.; et al.
Florida Agricultural and Mechanical University. School of Architecture; Berger (Louis) International, Inc.; U.S. Agency for International Development. Bureau for Africa. Somalia; Somalia. Settlement Development Agency
Experimental low-cost construction unit: publication, no.4, Jul 1981, vii, 124p. : En
6490103

A training manual in basic construction methods for use by settlers in the Kurtunwaare, Somalia housing project is herein presented.

The manual begins with an overview of project administration, including training objectives, the organization of construction teams, training facilities, the training program and methods

employed, records and files maintenance, and construction plans. The succeeding chapter focuses on foundation building and describes foundation layout, floor construction, and the use of piles, perimeter beams, partition grade beams, and subfloor fill. Next, masonry operations are explained, with reference to building layout and the construction of corners, exterior/interior walls, doors and windows, wall finishes, and roof anchor blocks. Lastly, carpentry operations are described, with an emphasis on roof design, truss fabrication and erection, roofing, and construction of temporary door/window frames and wooden doors and windows. Appropriate tools and their use are described in each section. One hundred forty-eight illustrations are included.

458

PN-AAM-638

MF \$1.08/PC \$9.75

Investigation of alternative roofing systems available for use in the Kurtunwaare pilot housing project

Bruce, James B.; Wright, Millard M.; et al.
Florida Agricultural and Mechanical University. School of Architecture; Berger (Louis) International, Inc.; U.S. Agency for International Development. Bureau for Africa. Somalia; Somalia. Settlement Development Agency
Experimental low-cost construction unit: publication, no.5, Jun 1981, iii, 71p. : En
6490103

Results of a study on roof systems considered for use in a pilot housing project for displaced nomads in Kurtunwaare, Somalia are presented in this report.

The study begins with a description of the pilot project and a list of all roofing systems and building materials available for it. Full evaluation is made of makuti (thatched) roofing systems – including traditional makuti (roof membrane), makuti modified with tar paper, and preservative and fire retardant treated makuti – as well as of roofing systems employing local fired clay tiles, corrugated fiber and asbestos cement tiles, corrugated aluminum and galvanized iron sheets, sulphur impregnated corrugated cardboard shingles, and reinforced concrete slab. Structural framing systems for both light and heavy roofs are examined as well. Comparative charts summarize information on the physical structure (including construction procedures and thermal effects), state of development, local environmental and economic impacts, and short- and long-term costs of each roofing type. In conclusion, corrugated fiber cement tiles, traditional makuti, corrugated galvanized iron sheets, reinforced concrete slab, and/or preservative treated makuti are recommended; local fired clay tiles and sulphur impregnated corrugated cardboard are recommended with reservations. The other types of roofs are not recommended.

459

PN-AAM-684

MF \$2.16/PC \$21.19

Necesidades basicas de vivienda en Centro America: 1981-2000 (Basic housing needs in Central America: 1981-2000)

Kimm, Peter M.
U.S. Agency for International Development. Office of Housing
Apr 1981, 157p. : Es



A study, results of which are presented herein, was conducted to delineate existing housing conditions in Central America and to project basic housing needs for that region through the year 2000.

The author first defines basic housing needs and target groups; explains investment categories, data sources, and the methodologies used; and presents resulting investment projections by activity and time period. The projections are then analyzed by project components and locations, and statistics are provided relating investment requirements to individual countries' gross national products.

Since only 30% of current housing efforts in Central America affects groups whose basic housing needs have not yet been satisfied, the author recommends doubling this percentage and points out that 90% of the increase in funding could be financed with recoverable assets.

Appendices include a more detailed presentation of the data collection and computer analysis methodologies used, data by individual country on current and projected housing investment conditions and needs, and a 118-item bibliography (1968-80).

460

PN-AAM-686

MF \$1.08/PC \$9.10

Government policy and the improvement of low-cost housing in seven cities, 1979

Strassmann, W. Paul

Michigan State University. Housing in Development Unit; U.S.

Agency for International Development. Bureau for

Development Support. Office of Urban Development

Mar 1980, 69p. : En

9311090

AID/DS-otr-C-0012

For a study of the nature and rate of low-cost housing improvement, surveys were conducted in seven cities of varying sizes and environments in six dissimilar developing countries. Brief sketches of low-cost housing and related policies are presented for each city: Rawalpindi, Pakistan; Colombo, Sri Lanka; Lusaka, Zambia; Nairobi, Kenya; Medellin, Colombia; and Tunis and Sfax, Tunisia. Household and dwelling characteristics in the seven cities are then compared, and housing improvements analyzed.

The author found that housing policies strongly affected the level of home improvements; where upgrading was allowed and encouraged, the value of housing doubled or tripled in a decade. Improvements were least where tenure was uncertain

and insecure, and modifications and additions actually forbidden; when subletting of extra rooms was allowed expansion was rapid. When dwellings were delivered unfinished and expandable, occupants would finish and expand them; where improvement loans had interest rates below the rate of inflation, many potential borrowers were interested, but funds tended to dry up. Many types of sanitary facilities cannot be installed until governments have supplied the necessary infrastructure. However, policymakers in these six countries gave housing in a broad sense a higher priority than is common among development economists.

461

PN-AAN-210

MF \$2.16/PC \$14.17

Improvement of vernacular housing in Jamaica to withstand hurricanes and earthquakes

Intertec; U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance

Oct 1981, iv, 104p. : En

OTR-000-0-00-1184-00

The vulnerability of native Jamaican housing to hurricanes and earthquakes is analyzed in this report and strategies to reduce this vulnerability are presented.

After assessing the risks posed by hurricanes and earthquakes to native housing, the history of Jamaican architecture and housing construction is set forth, with special reference to both non- and semi-engineered contemporary housing. Next, 9 different types of native construction using varied materials are analyzed as to their vulnerability. Both rural and urban building practices are examined and key issues related to housing, i.e., financing, land tenure, the extent of housing deterioration and its implications, and lack of a designated agency to maintain/upgrade existing dwellings, are investigated. Intermediate, short- and long-term vulnerability reduction strategies are assessed. Finally, a comprehensive program to upgrade non-engineered housing is recommended. Specific suggestions are to designate a lead agency, establish intergovernmental coordinating and program advisory committees, conduct a feasibility study, and prepare minimum performance standards for all types of native construction. Areas for A.I.D. involvement are specified.

Appendices include a list of recommended training aids and promotional materials; proposed curricula for instructors, contractors, and self-help builders; and a list of typical building costs.



ENVIRONMENT & NATURAL RESOURCES

462

PN-AAL-443

MF \$1.08/PC \$7.41

Draft environmental profile of Barbados

Bauman, Fred

U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources; U.S. Department of State.

National Committee for Man and the Biosphere

May 1982, ii, 49p. : References p.47-49, En

AID/SA/TOA-1-77

Given Barbados' high population density, rational use of its limited soil and land resources is the country's most important overall environmental concern. Thus concludes this environmental profile of Barbados.

Briefly reviewed are Barbados': demographic and public health characteristics; topography and climate; water resources; soils and land resources; vegetation; wildlife; coasts and beaches; fisheries; mineral resources; and air pollution problems. Also addressed are the Barbadian economy, Barbadian public and private sector institutions with interests in the environment, and legislation dealing with the environment and natural resources.

Barbados faces several environmental problems. Erosion due to man-made changes in the land and the natural fragility of the northeast coast may result in the loss of up to one-seventh of the island. Coastal pollution from oil slicks threatens economically vital tourist beaches, coral reefs, and the fishing industry. There is also a potential for shortages of groundwater by the end of the century. Appended are a list of 41 references (1970-81).

463

PN-AAL-805

MF \$3.24/PC \$26.91

Draft environmental profile of Malawi

Varady, Robert G.

U.S. Department of State. National Committee for Man and the Biosphere; U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources; U.S.

Department of the Interior. National Park Service;

University of Arizona. Office of Arid Lands Studies. Arid

Lands Information Center

Aug 1982, ix, 196p. : Bibliography p.179-196, En

National Park Service contract no. CX-0001-0-0003

The pressure caused by a growing population compounded by a lack of exploitable natural resources is responsible for most of Malawi's environmental problems according to this draft profile of the country's natural resources and environment. Reviewed in turn are Malawi's geography and climate; population and land use; environmental resources and policy; geology, soils, and minerals; energy resources; vegetation; faunal resources and the measures taken to preserve them; and environmental problems.

Malawi's most serious problem is environmental disease. Its public health is among Africa's worst, with a burgeoning population and a short life expectancy due to malnutrition and infectious diseases such as malaria, schistosomiasis, leprosy, and pneumonia. Inferior agricultural methods and deforestation have used up most of the land that could be used for new cultivation and threaten many types of wildlife, despite a fairly protective official policy. Periodically, unseasonal rains and storms have caused flooding and wind damage and have

destroyed crops. This could be alleviated by a national plan for warning and evacuation or recompensation, but none exists. Charts, graphs, and further technical information are among the eight appendices.

464

PN-AAM-253

MF \$2.16/PC \$19.37

Sahelian/Sudanian zones of Africa: profile of a fragile environment

Thomas, Gerald

New Mexico State University. Center for International Programs; U.S. Agency for International Development. Bureau for Development Support

Jan 1981, v, 139p. : En

9311282

AID/DSAN-XII-G-0166

The major drought which swept across sub-Saharan Africa during the period 1968-74 caused political upheaval and widespread starvation of livestock and people, focusing world attention on this fragile environment. This report addresses the dual challenge facing development assistance in the region: food production and resource conservation.

A profile of areas receiving less than 800mm of rainfall is presented in Section I; included are discussions of climate, soils, vegetation, energy, demographic characteristics, infrastructure, agricultural practices, and regional political and development organizations. Section II deals with the causes of desert encroachment and proposed solutions to this problem. Under present practices, soils and vegetation are rapidly deteriorating, the process of desertification is continuing, and food production is not keeping pace with population growth. An eight-point program to increase food production and reverse the desertification process is set forth. Alternatives for Rockefeller Foundation involvement are spelled out in Section III. It is concluded that good opportunities exist for improving coordination among development agencies, assisting with educational and training programs, and stimulating new innovations in research. A 68-item bibliography is appended. (Author abstract, modified)

465

PN-AAM-934

MF \$3.24/PC \$30.94

Legal, regulatory, and institutional aspects of environmental and natural resource management in developing countries

U.S. Department of the Interior. National Park Service; U.S.

Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources

Nov 1981, xiv, 223p. : En

A.I.D. and the U.S. National Park Service are conducting an extensive information gathering program in an effort to identify methods that will help developing countries conserve and manage their natural resources. This report, based largely on case studies of four countries (Sudan, Venezuela, Ghana, and Malaysia), examines legal and institutional prerequisites for improving overall environmental management in developing countries.

Section I, on issues, begins with a historical perspective, then describes the most serious environmental and natural



resource management problems facing developing countries, and discusses present approaches to environmental management, their difficulties and objectives. Section II uses lessons learned from the case studies to examine environmental management with regard to its institutional and methodological frameworks and its legal and regulatory aspects. In Section III, resource management needs and constraints on management efforts are described. Strategies for environmentally sound social and economic development are presented. Because of the wide variations in the developing world in approaches to management and in management needs, recommendations for poorer and middle-income countries are provided separately.

Appended is a 117-item annotated bibliography (1955-81).

466

PN-AAM-942

MF \$1.08/PC \$6.11

Feasibility study on mitigating tsunami hazards in the Pacific

Bernard, Eddie N.; Lander, James F.; Hebenstreit, Gerald T.
U.S. Department of Commerce. National Oceanic and Atmospheric Administration. Environmental Research Laboratories. Pacific Marine Environmental Laboratory; U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance

NOAA technical memorandum, ERL PMEL-37, Dec 1982, 41p. : En

This study shows that many aspects of U.S. technology have potential applications to the problem of providing early tsunami (tidal wave) warning information in developing nations of the Pacific which do not have their own regional warning network. A simple conceptual model is developed which shows how these technologies could be integrated into an early warning system, and a demonstration program which would confirm the practicality of such a technologically feasible system is described. Such a demonstration - to which the acronym THRUST (Tsunami Hazard Reduction Utilizing System Technology) is applied - would be a significant step toward achieving the goal of hazard mitigation in the developing areas of the Pacific community. It is recommended that an active program of tsunami hazard reduction in developing nations be established within A.I.D.'s Office of U.S. Foreign Disaster Assistance.

Appended are an annotated list of 19 international, U.S. Government, and other organizations involved in tsunami activities and an explanation of the possible role of the Geostationary Operational Environmental Satellite (GOES) in a tsunami early warning system. (Author abstract, modified)

467

PN-AAM-943

MF \$1.08/PC \$3.12

Tropical cyclone strike and wind probability applications

Jarrell, Jerry D.; Brand, Samson
Science Applications, Inc.; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Panama
1982, 24p. : En

Public officials are frequently required to make decisions relative to tropical cyclone preparedness actions. For such decisions to be defensible, officials usually adhere to an official government forecast, yet some allowance for forecast error

must be made. Complex relationships between errors in tropical cyclone forecast track and in the forecast wind distribution, complicated by lack of user familiarity, makes this a particularly difficult problem. This paper introduces the concept of strike and wind probability as a means of quantifying (by computer) the tropical cyclone threat, thereby allowing simultaneously for all types of errors. Such software probability products will soon be available for all the tropical cyclone areas of the world. Examples of these products and anticipated future developments are discussed. (Author abstract)

468

PN-AAM-944

MF \$1.08/PC \$2.60

Department of State tropical cyclone strike, wind and storm surge probability warnings: users manual

Science Applications, Inc.; U.S. Navy. Naval Environmental Prediction Research Facility; U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance
Aug 1982, iv, 17p. : En NAVENVPREDRSCHFAC document no.7WO513 UM-06
AID/SOD/PDC-C-0294

With the cooperation of A.I.D.'s Office of Foreign Disaster Assistance, the U.S. Navy has developed a series of computer models quantifying the risk of tropical cyclone strike, wind, and storm surge by developing probable threat indices. These indices are used by the U.S. State Department in warning U.S. embassies, missions, and consulates and in advising potential relief agencies or other governments of an imminent disaster. An introduction to the use of these models is herein presented.

The threat indices are color codes - green, yellow, orange, and red - for increasing probability of threat and decreasing lead time. A table is presented describing these codes for tropical cyclones in the Bay of Bengal; included in each of the indices are the degree of overwarning accompanying the forecast as a precautionary measure and key words describing types of actions appropriate for each threat level. A second table presents the normal times at which the warnings are issued (in a machine-readable format) in the various ocean basins. An appendix lists the cities for which threats are analyzed - generally tropical cyclone prone areas with populations greater than 250,000. When none of these cities is significantly threatened, no message at all is generated.

469

PN-AAL-773

MF \$2.16/PC \$25.48

Analysis of watershed management (El Salvador, Guatemala, Honduras)

Garcia, Luis
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs
21 Sep 1982, x, 97p. + 5 annexes : En
596000060
596-0000-C-00-2030-00

In Central America, slash and burn agriculture and extensive logging have seriously degraded vital watersheds, thereby reducing soil and water quality. This report presents the findings of an analysis of watershed management in El Salvador,



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Guatemala, and Honduras conducted to develop guidelines for a regional watershed management project.

The report first discusses the economic significance of watershed management and its importance in the efficient operation of the hydroelectric plants which generate 66% of Central America's electricity; current and planned hydroelectric projects are briefly summarized. The national institutions in the three countries and two regional agencies which deal with hydroelectric energy generation, natural resources, and watershed management are profiled. Possible sites for a watershed management project are considered and constraints to and opportunities for developing and implementing such a project identified. A final section outlines the objectives, strategy, organization, and main components of a proposed project to strengthen the natural resource management capacity of national institutions in El Salvador, Guatemala, Honduras, Panama, Costa Rica, and Nicaragua. Appended are organizational charts of the national institutions discussed, maps of watersheds and hydroelectric project locations, profiles of hydroelectric and other projects, and 15 tables of data.

470

PN-AAL-830

MF \$2.16/PC \$14.04

Curso regional de entrenamiento: manejo de cuencas y monitoreo ambiental (Regional training course: watershed resources management and environmental monitoring)

Ffolliott, Peter F.

University of Arizona; U.S. Agency for International Development. Bureau for Science and Technology
Nov 1981, iii, 116p. : Es

9310114

AID/CSD-2457

Environmental degradation of overpopulated river basins in developing countries is cause for concern and calls for immediate action. This compendium has been prepared as a basis for a regional training course in river basin management and environmental monitoring.

After an introductory chapter reviewing the importance and fragility of river basin environments, statistical methods for collecting and analyzing data are briefly explained. The interrelationships between hydrological processes and vegetation and soils are examined next, followed by techniques (e.g., remote sensing) for measuring hydrological ecosystem components. Hydrological measures are then discussed. Succeeding chapters cover, in the context of the hydrologic cycle: management of vegetation to affect water collection and quality; erosion processes and controls; water quality; systems for water collection and storage; small hydroelectric plants; storage tanks; agro-forestry; fuelwood management; economic aspects of water management projects; and institutional limitations to project design and implementation. Brief discussions follow on the use of simulation models to predict the impacts of planned interventions, the need for extensive environmental monitoring to assess actual interventions, and the concept of multiple use resource management.

471

* PN-AAM-557

MF \$4.32/PC \$14.69

Qualitative appraisal of the hydrology of the Yemen Arab Republic from LANDSAT images

Grolier, Maurice J.; Tibbitts, G.C. Jr.; Ibrahim, Mohammad M. U.S. Department of the Interior. Geological Survey. Office of International Hydrology; U.S. Agency for International Development. Bureau for Near East. Yemen
1981, viii, 103p. + attachments : En Open-file report no.80-565

* Document contains oversize pages available only in microfiche

LANDSAT images were analyzed in June 1976 to make a qualitative appraisal of surface and groundwater resources in the Yemen Arab Republic (YAR) for use in water management planning in that country. Results of that appraisal are herein presented.

Initial sections describe the YAR's environmental characteristics and previous hydrologic investigations, the LANDSAT imagery system, and the analytical methods used in the survey, the latter comprising a bibliographic search, image interpretation of geological, hydrological, and vegetative data, and reconnaissance field checking. Details of the occurrence of surface water and vegetation are given for specific drainage basins of the four regional catchment areas in the YAR - Rub al Khali, Wadi Jawf, the Red Sea, and the Gulf of Aden. It is concluded that although the survey greatly expanded existing knowledge of the YAR's hydrology, especially surface-water hydrology, more indepth study is needed to provide an adequate basis for hydrological forecasting and sound management of water resources. Recommendations for future investigations, as well as for institutional innovation and an improved survey methodology, are provided.

Appendices include glossaries of terms and place names used in the report and a LANDSAT image map of the YAR.

472

PN-AAM-558

MF \$3.24/PC \$18.72

Ground-water resources investigation in the Amran Valley, Yemen Arab Republic

Tibbitts, G.C. Jr.; Auel, James

U.S. Department of the Interior. Geological Survey. Office of International Hydrology; U.S. Agency for International Development. Bureau for Near East. Yemen

1980, vi, 138p. + attachments : En Open-file report no.80-774

The results of hydrologic studies and exploratory drilling to evaluate the water-bearing properties of the unconsolidated alluvial sediments and associated rocks in the semiarid Amran Valley of the Yemen Arab Republic are herein presented.

The valley's geography, climate, agriculture, industry, and irrigation methods are described, and its geohydrology (graben structure, water-bearing characteristics, and groundwater occurrence) is examined in detail. The history of exploratory well drilling in the valley and major drilling techniques are briefly described. The use of geophysical logs and the water transmitting and storage capacities of aquifers are examined, as is the chemical quality of water from the valley and trends in valley water levels. The study concludes that wells in the valley's south-central portion have strong irrigation potential and that the chemical quality of water from the basin aquifers is generally good, but that alluvial aquifers are overexploited,



water levels in wells declining, and current irrigation practices inefficient. Nine recommendations are made. Seventeen figures and 7 tables illustrate the text.

473

* PN-AAM-723

MF \$2.16/PC \$15.47

Environmentally sound small-scale forestry projects: guidelines for planning

Ffolliott, Peter F.; Thames, John L.

Coordination in Development, Inc.; Volunteers in Technical Assistance, Inc.

1983, 109p. : Bibliography p.101-108, En 9380162

PDC-0000-G-SS-0303-00

* VITA, 1815 North Lynn St., Suite 200, Arlington, Virginia 22209

As the demands being placed on developing country forest resources grow, so grows the need for environmentally sound small-scale forestry projects. This manual presents guidelines to assist community development workers in planning some of the more important types of such projects.

A planning process geared to local conditions is described, with attention paid to the role of education and training in planning and the effects of institutional limitations. The relationship between forestry and ecology is discussed and the difference between natural and man-made forests explained. Basic principles of good forestry practices – in regard to tree selection and harvesting and the protection of forests from fire, insects, and grazing animals – are set forth. Multiple-use forestry practices, wood product harvesting, fuelwood management, agro-forestry, shelterbelt and wind-break plantings, and reforestation and afforestation are individually evaluated as forestry systems and from an environmental standpoint. Appended are a set of ecological guidelines for use in evaluating small-scale community development projects and a 7-page bibliography (1953-81).

474

PN-AAL-799

MF \$1.08/PC \$9.88

Estudio sobre lena en hogares, pequeña industria y distribuidores de Guatemala (Study on firewood in homes, small industry and distributors of Guatemala)

Martinez, Hector

Tropical Agricultural Research and Training Center.

Department of Renewable Natural Resources; U.S.

Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs

Serie tecnica: informe tecnico, no.27, 1982, x, 64p. :

Bibliography p.53, Es 5960089

This report presents the results of three surveys carried out in Guatemala to determine: (1) the importance of fuelwood to households and small industries, including bakeries, lime kilns, brick kilns, and tortilla makers, especially in urban areas; (2) changes in the use of fuelwood during the last 5 years; and (3) the reasons for those changes. In fuelwood supply areas, the process of commercialization was also studied.

Of those households and small industries surveyed, it was found that 55% and 79%, respectively, used wood as their main fuel. In the last 5 years, 14% of households versus 3% of small industries switched from fuelwood to other fuels. When electricity was available, dependence on fuelwood dropped from 87% and 92% for households and small industries to 53% and 77%, respectively.

Fuelwood for town use is obtained from surrounding communal, municipal, and private forests while for the capital city, it may be obtained from up to 266 km away. Consumer prices for fuelwood varied from GTQ 0.05 to GTQ 0.25 per piece of wood. Numerous tables of data are included in the report.

475

PN-AAM-107

MF \$1.08/PC \$12.61

Diagnostico socio-economico sobre el consumo y produccion de lena en fincas pequenas de la peninsula de Azuero, Panama (Socioeconomic study of the consumption and production of firewood on small farms of the Peninsula of Azuero, Panama)

Jones, Jeffrey R.

Tropical Agricultural Research and Training Center.

Department of Renewable Natural Resources; U.S.

Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs

Technical series: technical report, no.32, 1982, xi, 83p. :

Bibliography p.70-72, Es 5960089

Deforestation in Panama began during colonial times with the need to clear land to extend agriculture; the land clearing, as opposed to land management, mentality still persists. This report presents results of a study to assess firewood production and consumption by small farmers on the Azuero Peninsula.

After a background assessment of the problem, the report presents basic data on fuelwood and energy supply and demand and on forest land ownership and management. The study sampling and data collection and analysis methodologies are explained. It is learned that forestry plays only a minor role in subsistence farming, providing fruit, and especially, wood products for home consumption and sale. Firewood, used by 74% of families as a source of household energy, is consumed at an annual rate of 3,285 kg/yr; 31% of consumers buy all or part of their firewood. The author concludes that, although the situation is not yet critical, deforestation on the Peninsula is extensive and will become more severe as population pressures increase. Nonetheless, the prognosis for reforestation in Panama is good as the demand for forest products is high.

Supporting data and a 34-item bibliography are presented in appendices.



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476

PN-AAM-675

MF \$2.16/PC \$14.69

Factors affecting the composition of energy use in developing countries

Dunkerley, Joy; Knapp, Gunnar; Glatt, Sandra
Resources for the Future, Inc.; U.S. Agency for International
Development. Bureau for Science and Technology. Office
of Energy

Energy in developing countries series: discussion paper,
no.D-73C, Dec 1981, x, 104p. : En
9365703

To help redress the problem posed by the escalating substitution in developing countries of oil and other commercial fuels for traditional energy sources, this study examines present and projected energy use in those countries. After an initial review of trends in major energy use over the past 30 years, an examination is made of energy supply (including energy prices and energy resources); factors affecting energy demand (changing energy use in the major end-use sectors, the reasons for the changes, and structural changes in the economy), and the effects of government policies on energy consumption. A summary of the study's findings and implications stresses the need to complement future government policy efforts to find substitutes for oil with coordinated efforts in regard to energy prices, supply, and major end-use sectors.

477

* PN-AAK-818

MF \$3.24/PC \$32.11

State of the art report on pyrolysis of wood and agricultural biomass

Chatterjee, A.K.
U.S. Department of Agriculture. Forest Service
1981, 248p. : En
USDA contract no. 53-319R-0-206
9365709

AG/STR-4-709-6-79

* Document contains oversize pages available only in microfiche

Pyrolysis of agricultural and forestry biomass, which yields clean-burning, high-energy fuels such as charcoal, pyrolytic oil, and fuel gas, provides energy-poor developing countries the most appropriate technology for using alternative energy resources. So concludes this state-of-the-art review, based on a literature search, of biomass pyrolysis.

The author defines the thermochemical conversion theory and basic pyrolysis processes and provides descriptions of typical and specific processes; lists potential and available biomass resources, along with the biomass properties relevant to pyrolytic conversion; and discusses the collection, storage, and preprocessing of biomass feedstock, as well as the recovery of the converted products. Case studies of pyrolysis activities in developing and developed countries are presented, along with an economic analysis of a biomass pyrolysis conversion facility and a brief discussion of the environmental effects of the conversion process. Recommendations for countries seeking to employ biomass pyrolysis conclude the study. Appended are a list of resource persons and institutions and a 53-item bibliography (1961-81).

478

PN-AAK-844

MF \$2.16/PC \$14.04

Ethanol from sugar crops: a critical review

Lipinsky, E.S.; Allen, B.R.; Bose, A.; Kresovich, S.
U.S. Department of Agriculture. Forest Service; Battelle
Pacific Columbus Laboratories
Jan 1981, v, 98p. : Bibliography p.94-98, En
Bioenergy Systems & Technology Project
9365709

PASA AG/STR-4709-6-79

Due to the hardships resulting from rising oil prices and periodic production shortfalls, many developing countries, especially those with warm humid climates, have explored ethanol production from sugar crops. This critical review offers information on ethanol production for development planners.

Two sugar crop-based ethanol systems, raw sugar facility retrofit and conventional juice extraction, are first examined. The agronomy of sugar crops (cane, beet, sorghum) is then described, as are the steps in crop processing (extraction, fermentation, distillation, stillage disposal). The costs of producing ethanol from a typical sugarcane processing plant and from a state-of-the-art molasses processing facility are presented, and the trade-offs between producing ethanol or raw sugar from sugarcane weighed. Finally, the properties of ethanol in automotive fuels are outlined, along with important storage, handling, and safety considerations.

Three major problems are cited in ethanol production from sugar crops: adverse environmental effects (10 gallons of waste to 1 gallon of ethanol); the high cost of conventional milling equipment; and the loss of potential revenue from raw sugar sales. A future possibility of producing ethanol from fibrous residues (bagasse) is noted. Included are a 64-item bibliography (1936-1980) and 31 tables.

479

* PN-AAL-770

MF \$3.24/PC \$33.28

Energy and fertilizer: policy implications and options for developing countries

Mudahar, Mohinder S.; Hignett, Travis P.
International Fertilizer Development Center; U.S. Agency for
International Development. Bureau for Science and
Technology. Office of Agriculture
Technical bulletin, IFDC-T-20, May 1982, xvii, 241p. : En
For Executive Brief, PN-AAL-769
9310054

AID/TA-G-1218

* IFDC, P.O. Box 2040, Muscle Shoals, AL 35660 USA US
\$15, Foreign \$20, Air Mail Extra

The fertilizer sector provides an important link between the energy and the agricultural sectors. This economic and technical analysis of the relationships among these three sectors: (1) estimates energy requirements for fertilizer manufacturing, packaging, transportation, and application; (2) evaluates the policy implications of energy supply and prices for fertilizer production, distribution, and prices; and (3) evaluates policy options to reduce the adverse impact of energy supply and energy prices on the fertilizer and agricultural sectors.

The major emphasis is on nitrogen fertilizers, which are not only highly energy intensive but are the most popular in developing countries. The authors find that the fertilizer sector accounts for only a small percentage of total energy use. The most promising means of saving fertilizer energy is more



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efficient use of fertilizer at the farm level. In fertilizer manufacturing, the greatest energy saving will probably come from operating existing plants more efficiently; many energy-effi-

cient innovations are available. Included are a glossary, 13 pages of references (1957-82), and extensive tables on energy use and fertilizer production. (Author abstract, modified)



In many developing countries, children must assume the arduous task of gathering fuelwood.



480

* PN-AAJ-620
MF \$2.16/PC \$15.99

Radio correspondence education in Kenya

Eilers, William L.; Layne, Patsy P.; et al.

U.S. Agency for International Development. Bureau for Africa.
Kenya; U.S. Agency for International Development.
Bureau for Program and Policy Coordination. Office of
Evaluation

A.I.D. project impact evaluation report, no.37, Aug 1982, xv,
26p. + 10 appendices : En

6150129

* Document contains oversize pages available only in
microfiche

If the Kenya Radio Correspondence Project – established in 1967 to upgrade the qualifications of primary school teachers through correspondence courses and radio instruction – had a flaw, it was that it was too successful. Thus concludes this impact evaluation of the project, which trained 5,000 teachers during the 4 years of A.I.D. involvement and 7,000 thereafter, and allowed Kenyans to pursue education certification without the personnel or system costs of formal schooling, a method of great potential value to developing countries, and applicable in many fields.

Unfortunately, the resulting numerous teacher promotions and salary increases, coupled with the hiring of some 5,000 new teachers annually, strained Kenya's education budget and led in 1974 to the government's abandoning the automatic promotion policy which had motivated many teachers to join the program. Enrollments fell drastically, and although the project-created Correspondence Course Unit (CCU) at the University of Nairobi survived as an institution, its operations and client services deteriorated. In an effort to increase enrollment, the CCU turned to commercial courses which were not in keeping with long-range socially sound objectives. Nonetheless, the CCU has demonstrated its resilience and has been selected to provide new and significant distance teaching services, including programs in adult literacy, primary teacher updating, and primary education for nomadic peoples.

The project taught that distance teaching requires well-organized field support in close touch with the target population; strong financial incentives for learners to invest time and money in courses; a reliable postal system; national radio transmission reaching most potential clients; a flexible institutional base with a corps of well-trained specialists; and a willingness to equitably distribute educational benefits to rural and disadvantaged groups. (Educators should remember, however, the limitations of distance teaching for technical subjects.) Other lessons learned are that A.I.D. missions should keep in touch with assisted institutions after project completion, and that informal exchanges of information among developing countries about the distance teaching method can be extremely valuable.

481

PN-AAM-840
MF \$1.08/PC \$8.06

Expectations of Malaysian mothers for the schooling of their children

Waite, Linda J.; DeTray, Dennis N.; Rindfuss, Ronald
Rand Corp.; U.S. Agency for International Development.

Bureau for Science and Technology. Office of Nutrition
Rand note, no.N-1947-AID, Mar 1983, xiii, 53p. : En
AID/OTR-G-1822

Peninsular Malaysia is undergoing rapid transition from traditional to modern systems of social stratification. Using data from the 1976-77 Malaysian Family Life Survey, this paper presents a model of the relationships between a mother's early life experiences and her expectations for her children's education, thus providing a basis for fuller understanding of the process of socioeconomic development and the intergenerational transmission of important social and economic characteristics.

The model examines three experiences in a woman's early life which are governed by her parents' desires and may subsequently influence her attitudes toward her children's schooling. These are: her education; her work experience; and her age at marriage or first birth. The model shows that a mother's schooling level and early work experience do affect her expectations for her children's education, but the magnitude and significance of these effects differ importantly by ethnicity and sex of child. For example, Chinese mothers – but not Malay or Indian – strongly favor sons over daughters in expected schooling, but modern-sector work experience changes this pattern for Chinese, dramatically increasing expectations for daughters' education. The age at which a mother has her first birth, does not, however, influence her expectations for children's schooling, regardless of ethnic group, when other early life experiences are held constant.

482

PN-AAN-259
MF \$2.16/PC \$19.76

Study of research priorities in the field of international training

Development Associates, Inc.; U.S. Agency for International
Development. Bureau for Science and Technology. Office
of International Training

12 Mar 1983, xi, 120p. + 4 appendices : En

Work order no.17

AID/SOD/PDC-C-0394; PDC-0000-I-17-0233-00

Results of a study to establish a research agenda for A.I.D.'s Office of International Training are herein presented.

Information was gathered through a literature review, a mail survey, interviews with concerned professionals, and through a workshop attended by representatives from the international education and training community to examine training programs and research needs of A.I.D., the World Bank, the National Academy of Sciences, the National Science Foundation, and other institutions. Results of the mail survey and the workshops are presented separately as is the proposed research agenda. Individual workshop proceedings are summarized.

Findings indicate that international training is one of the most important components in meeting human resource needs of developing countries, but that major problems in training foreign nationals need to be resolved. Key research areas include: third country and regional training institutions; alternative training modes; roles of the private sector and the military in training; women in training; cultural perceptions affecting the transfer of science and technology; training technology; and the science and technology infrastructure of developing countries.

483

PN-AAN-267

MF \$2.16/PC \$24.83

Literacy at work: linking literacy to business management skills

Kahler, David W.

Creative Associates, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Education

1982, iii, 159p. + attachment : En

French synopsis: PN-AAN-300; Spanish synopsis: PN-AAN-301

9311242

AID/DSPE-C-0045; DPE-1242-C-00-0029-00

The Literacy-Oriented Functional Education (LOFE) research project examined how economic improvement serves as an incentive for small business entrepreneurs in developing countries to increase their literacy levels through practical skills training programs. This document is a product of that research.

Chapters examine in turn: (1) the design, implementation, and evaluation of two LOFE field activities; (2) the economic arguments of policy planners in support of literacy programs; (3) a framework for assessing on the individual level the economic value of literacy; (4) social and linguistic motivations for literacy; (5) personal factors - values, self-awareness, and occupational concepts - influencing the acquisition of literacy; and (6) the existence and quality of literacy/functional skills programs as a variable influencing continued learner participation.

It is concluded that small business owners and other informal sector producers respond to literacy training when it is based on participants' felt needs and is clearly linked to improved business and economic opportunities. Eight recommendations are made regarding design and implementation of literacy/functional skills training for small enterprise owners and managers.

A 24-page bibliography (1951-79) is included.

484

* PN-AAM-437

MF \$1.08/PC \$7.80

Management skills training for foreign engineering students: an assessment of need and availability

Dunnett, Stephen C.

National Association for Foreign Student Affairs; U.S. Agency for International Development. Bureau for Science and Technology. Office of International Training

1982, viii, 60p. : Bibliography p.33-38, En

9260071

PDC-0000-I-08-0233-00

* *Publications Order Desk, National Association for Foreign Student Affairs, 1860 19th St., N.W., Washington, DC 20009*

Due to a shortage of trained manpower, beginning engineers in developing countries are often placed in responsible positions requiring management skills. A survey, reported here, was made of U.S. engineering schools enrolling AID-sponsored students in order to determine their policies on management training.

Following a literature search and establishment of a management training advisory board, the survey instrument was developed and sent to 197 deans of U.S. graduate schools of engineering. The survey sought to identify (1) the need for engineering students to obtain management skills; (2) those skills considered most useful; (3) the effectiveness of current teaching practices in those skills; (4) current credit and advising policies related to taking management courses; (5) programs, people, and studies concerned with the issue of management training; and (6) a rating of various possible academic programs which address the need for management training. The survey results indicate that this need is now inadequately addressed. A survey of U.S.-trained engineers who have returned to their home countries to practice engineering is recommended, as well as a detailed study of U.S. engineering schools that attempt to provide a management framework for their technical programs.



Microscopes are a new experience for these students enrolled in an A.I.D. participant training program in Thailand.



SOCIAL SCIENCE

485

PN-AAL-016

MF \$1.08/PC \$9.49

Private sector: ethnicity, individual initiative, and economic growth in an African plural society: the Bamileke of Cameroon

McFerson, Hazel M.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation *A.I.D. evaluation special study, no.15*, Jun 1983, xi, 29p. + 5 appendices : En

Of the more than 200 ethnic groups in Cameroon, the Bamileke appear to be the most economically successful. Reasons for their success are analyzed in this study of traditional Bamileke culture and its adaptation to contemporary economic conditions.

Unlike most other African ethnic groups, traditional Bamileke society provided avenues of upward mobility to everyone, with improvement of status through hard work and individual initiative. Emphasis was and is on competition in work, effort, savings, and economic improvement, and on frugality rather than emulative consumption. Individuals are expected to make their own way in the world while retaining a strong ethnic identity and contributing to the group.

Traditional Bamileke institutions have been highly adaptive to modern economic functions. The Mandjong, for example, a traditional title society, plays an important role in generating capital through a savings and loan system. Women have always been important economic producers, and modern-day women's societies, deriving from earlier associations of the best women cultivators, strongly influence economic development and capital accumulation.

The Bamileke spirit of enterprise has also been influenced by land pressures and inheritance patterns. The high population density of the Western Province of Cameroon – the traditional Bamileke home – has led young people to push out into urban areas, where they have found economic success, albeit not without support from others in their group. Similarly, the patrilineal system of inheritance – another divergence from the African tradition – allows inheritances to be used for economic gain, rather than shared with poorer family members.

The Bamileke experience demonstrates that group solidarity does not necessarily stifle individual initiative and private enterprise, but can be a positive force in economic development. While the Bamileke success has developed in a policy environment which is non-ideological and pragmatic, with little government intervention, not all ethnic groups have responded to the same stimuli. In a plural society, ethnicity is a vital social issue and must be considered in any strategies of public or private sector development.

486

* PN-AAM-509

MF \$2.16/PC \$13.65

Report of an exploratory workshop on the role of anthropologists and other social scientists in interdisciplinary teams developing improved food production technology

International Rice Research Institute

(Exploratory Workshop on the Role of Anthropologists and Other Social Scientists in Interdisciplinary Teams Developing Improved Food Production Technology, Los Banos, PH, 23-26 Mar 1981)

1982, iv, 101p. : En

* *IRRI, P.O. Box 933, Manila, Philippines*

In response to increasing awareness that sociocultural factors must be considered if the full effects of applied agricultural research are to be realized, a workshop was held at the International Rice Research Institute in 3/81 to explore the strengths and weaknesses of anthropology and related social sciences for interdisciplinary research in food production technology. The six discussion papers in this volume present preliminary results of the workshop.

The following topics are covered: (1) interdisciplinary development and the transfer of postharvest technology at the International Potato Center; (2) social organization and small watershed development; (3) rice insect pest management technology and its transfer to small farmers in the Philippines; (4) the anthropologist's role in helping to adapt Western technology during the Masai Livestock and Range Development Project in Tanzania; (5) socioeconomic use of aerial survey and intervention testing for interdisciplinary research; and (6) the role of a cognitive anthropologist in a farming systems program in Guatemala.

Policy recommendations are presented regarding: training social scientists for interdisciplinary work; identifying key research problems for interdisciplinary teams; defining other roles for social scientists in food production technology; and facilitating research institutions' use of social scientists' expertise.



487

* **PN-AAK-967**
MF \$1.08/PC \$7.67

Arusha windmill: a construction manual

Stanley, Dick
Volunteers in Asia; Volunteers in Technical Assistance, Inc.
1977, 57p. : En

* VITA, 1815 North Lynn St., Suite 200, Arlington, Virginia
22209, \$3.00

The Arusha windmill is a low-cost, highly efficient machine which can be used not only for pumping, but adapted for rotary motion as well. The windmill, which is extremely adaptable to the rapidly changing wind conditions in the Arusha region and has deep pumping capability, can be constructed from commonly available pipe and metal materials and does not require sophisticated skills to construct, operate, or maintain. This manual provides detailed instructions for constructing the windmill - at a cost of only 10-20% of that for imported windmills - and for operating it.

After an explanation of the design, with lists of the materials and tools required, details of construction are provided, followed by directions for assembling and raising the windmill, and for operating and maintaining it. Possible alterations for conditions different from Tanzania's (including various pumps) are suggested and application of the windmill for rotary power is described. Finally, formulas and charts useful for designing a windmill suitable to other environments are provided.

488

* **PN-AAL-005**
MF \$2.16/PC \$16.38

Costa Rica private sector study

Pratt, Robert G.; Adamczyk, Christine; et al.
U.S. Agency for International Development. Bureau for Asia;
U.S. Agency for International Development. Bureau for
Program and Policy Coordination. Office of Evaluation
A.I.D. *evaluation special study, no.9*, Mar 1983, xv, 58p. + 6
appendices : En

* Document contains oversize pages available only in
microfiche

Although a development strategy stressing industrialization based on import substitution and participation in the Central American Common Market (CACM) has helped Costa Rica achieve growth with equity since 1960, the country is now in a severe economic crisis. Key factors endemic to the crisis are identified in this report on the effect of public policies and supporting donor interventions on Costa Rica's recent economic and social history, with special reference to the private sector.

It is found that the success of the industrialization strategy, which was due almost entirely to external opportunities, was accompanied by: (1) dependence on the export of a few traditional commodities, prices for which have recently fallen; (2) policies fostering the establishment of capital-intensive and inefficient industries to the relative neglect of agriculture; (3) the near exhaustion of import substitution opportunities; (4) heavy reliance on borrowed, often foreign, investment capital; (5) a policy bias against exports; and (6) the failure of the nationalized banking system to attract internal savings and provide adequate financial intermediation.

On the social level, substantial progress has been made in such areas as education and health, but at the cost of a large and inefficient bureaucracy in which ever more resources are allocated to pay public employees, with decreased public

benefit. Further, the progressively unsustainable cost of social programs has led to increased external borrowing and a huge and unmanageable foreign debt.

It is concluded that: (1) public policies, while fostering economic and social progress, failed to prepare for or adjust to adverse external conditions during 1978-82; (2) donor support, despite major positive contributions, had little effect on these policies; and (3) the private sector, especially the key industries of food processing and apparel, reacted predictably to market and public sector signals throughout the period.

Lessons taught by the Costa Rican experience are summarized and private sector needs and constraints for the period of recovery spelled out. Appendices include several statistical tables and an analysis of the impact of the CACM on Costa Rica.

489

PN-AAM-016
MF \$1.08/PC \$11.57

Technology and management needs of small and medium agro-industrial enterprises in Kenya: implications for an international agro-industrial service center

Wood, Dennis H.
Devres, Inc.; U.S. Agency for International Development.

Bureau for Development Support. Office of Agriculture
1 Jun 1981, vi, 79p. : En
6980135
AID/SOD/PDC-C-0223

Kenya's agro-industrial sector, and ways in which its technological and management needs can be met by the services of an international agro-industrial service center, are evaluated in this study.

The study begins with background information on Kenya's agriculture, fisheries, and forestry sectors and continues with a description of its agro-industrial subsector. Next, the major needs of Kenya's small and medium agro-industrial firms in the areas of working capital, raw materials, management and technical assistance, marketing, information, storage, quality control/packaging, joint ventures with developed country firms, and foreign exchange are identified and prioritized. Organizations that provide assistance to these types of enterprises are described and the effectiveness of their assistance is evaluated. Finally, the positive implications for an international agro-industrial service center in meeting the needs of these enterprises and providing services to them are noted. Sixteen tables and a list of Kenyan agro-industries by type are appended.

490

PN-AAM-310
MF \$1.08/PC \$4.03

Techniques of production, efficiency and profitability in the Sierra Leone clothing industry

Chuta, Enyinna
Michigan State University. Department of Agricultural
Economics; U.S. Agency for International Development.
Bureau for Development Support. Office of Rural
Development and Development Administration
African rural economy program: working paper, no.30, Jan
1980, 21p. : Bibliography p.19-21, En
AID/ta-CA-2; AID-521-c-48



TECHNOLOGY

Intelligent planning of programs and projects to expand small-scale, labor-intensive, rural industries requires empirical data on the success of alternative production techniques in individual industries. This study, based on a 1974-75 survey of 132 tailoring firms in Sierra Leone, seeks to fill that need.

Following an overview of the Sierra Leone clothing industry, data from five representative firms are synthesized. The major production techniques used by the firms are identified and the technical and economic efficiency of these techniques compared. Next, the circumstances under which tailoring equipment should be purchased or rented are assessed. A final section summarizes the findings and examines their implications for policy formation and project design. The author concludes that small firms that use cheap equipment and produce diversified products and services are both efficient and profitable, and that the greatest constraint on profits among machine-renting firms is uncertainty about equipment availability during times of peak work loads.

491

PN-AAM-457

MF \$1.08/PC \$8.19

Small scale enterprises in Egypt: Fayoum and Kalyubiya governorates; phase I survey results

Badr, Mahmoud; Seale, James; et al.

Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Development Support. Office of Rural Development and Development Administration

MSU rural development series: working paper, no.23, Mar 1982, 56p. : En

9311191

AID/ta-CA-2

To help identify and implement programs and policies to generate off-farm employment in Egypt, detailed field surveys of existing small-scale enterprises were conducted in Kalyubiya and Fayoum governorates. This paper reports on those investigations and their results.

Following introductory sections describing the study areas and the surveys' objectives, data sources, and methodology, findings are analyzed with regard to employment sector composition, distribution by size of enterprise and size of community, ownership patterns, types of labor employed, capital investments, and seasonality of enterprise. The data indicate, surprisingly, that in the areas studied there are over 90,000 small enterprises employing 140,000 individuals, mostly in rural, artisanal industries with 10 employees or fewer; 76% of the surveyed establishments are one-person enterprises. Of particular significance are the findings on the important role played by women - who own and operate 43% of the surveyed industries and make up 30% of the sector's labor force - and the broad diversification of productive activities both within and outside of the household. Seventeen data tables are included.

492

PN-AAM-458

MF \$2.16/PC \$14.43

Small scale industry in Kenya

Kilby, Peter

Michigan State University. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Development Support. Office of Rural Development and Development Administration

MSU rural development series: working paper, no.20, 1982, 98p. : En

9311191

AID/ta-CA-2

In Kenya, as in many developing countries, industrial employment and output are disproportionately skewed toward large-scale enterprises. This study examines the potential of Kenya's small-scale industrial sector.

After an introductory statistical analysis of the industrial structure, particularly as related to employment, and the effect thereon of the size distribution of firms, the nature and extent of the small-scale subsector, both rural and urban, are examined on the basis of the distinction between traditional and nontraditional small industries. Next, the effectiveness of government programs promoting small business, including Kenya's Small Industry Development Program, the Industrial Estate Program, and various lending programs, is evaluated. The final chapter discusses the need for further government support of small business through provision of land, technology, and capital, concluding that a vigorous small-scale enterprise sector contributes importantly to employment, a flexible and cost-efficient industrial sector, and future domestic control of large-scale industry.

493

PN-AAM-459

MF \$2.16/PC \$17.42

Small-scale manufacturing enterprises in Jamaica: socioeconomic characteristics and constraints

Fisseha, Yacob; Davies, Omar

Michigan State University. Department of Agricultural Economics; University of the West Indies, Kingston. Institute of Social and Economic Research; U.S. Agency for International Development. Bureau for Development Support. Office of Rural Development and Development Administration

MSU rural development series: working paper, no.16, 1981, 121p. : En

9311191

AID/ta-CA-2

An extensive survey of small-scale, off-farm enterprises (those with 25 or fewer employees) in Jamaica was initiated in 1978. Findings from Phase II of the survey, which focused on obtaining information about proprietors and the problems and constraints they face, are examined in this study.

Introductory sections provide capsule descriptions of typical small-scale enterprises in Jamaica and a socioeconomic profile of proprietors (owners/managers). The following business constraints, in order of importance, are then identified: inadequate financial resources (especially working capital); depressed product demand; shortages of raw materials; lack of adequate transportation; shortages of machinery and parts; inadequate and expensive fuels and utilities; and, possibly, weaknesses in managerial capacity. In each case - managerial



capabilities being the exception – the problems enunciated are those perceived by the proprietors themselves. These problems are found to vary by location and enterprise type. Possible interventions to resolve problems are reviewed and recommendations provided.

494

PN-AAM-461
MF \$1.08/PC \$4.42

Employment growth and change in Sierra Leone small scale industry: 1974-1980

Chuta, Enyinna; Liedholm, Carl; et al.
Michigan State University. Department of Agricultural Economics; University of Sierra Leone. Njala University College. Department of Agricultural Economics; U.S. Agency for International Development. Bureau for Development Support. Office of Rural Development and Development Administration

African rural economy program: working paper, no.37, Aug 1981, 23p. : En

9311191
AID/ta-CA-2

Surveys of small-scale industries in Sierra Leone, conducted in 1974 and 1980, are herein compared, in order to examine recent growth and change in this sector.

First, rates of enterprise and employment growth are examined. It is shown that while employment in small-scale enterprises increased over the 6-year period, the magnitude of the increase varied importantly by industry and by locality size, with the greatest increases being in urban areas and in food-related industries. Rates of industrial entry and closure are then examined, and a high rate of early business failures is found. Patterns of change and reinvestment are also analyzed to determine whether or not the country's entrepreneurs introduced new goods, new production methods, new kinds of equipment, and invested new capital into their businesses. Finally, following the observation that small-scale industries have continued to play an important role in creating jobs despite the absence of favorable economic policies and promotional efforts in Sierra Leone, suggestions are made for supporting their further growth. Appended is a description of the 1980 survey methodology.

495

PN-AAL-818
MF \$1.08/PC \$5.72

Consommations de combustibles domestiques au Senegal sur foyers traditionnels et sur foyers ameliores (Domestic fuel consumption in Senegal in traditional and improved hearths)

Madon, Gerard; Diop, Lamine; Lagandre, Eric
University of Dakar. Center for Studies and Research on Renewable Energies; U.S. Agency for International Development. Bureau for Africa. Senegal
Mar 1982, 40p. : Fr

The ongoing process of deforestation in the Sahel has been hastened by increased cutting of trees for fuelwood. This paper reports on a study in Senegal to quantify the relative firewood consumption of traditional hearths (open fire or fuel-wasting ranges) and improved cookstoves known as "Ban Ak Suuf" (BAS). BAS stoves were distributed in an attempt to reduce the

work and time required for collecting firewood and to slow deforestation. Two home economics monitrices selected five families in each administrative region for firewood consumption measurement at each meal for two weeks.

Firewood economies resulting from the use of BAS stoves were estimated at 30-40%. Greater comfort was cited as an additional benefit by the users of the BAS stoves, particularly due to less smoke and faster cooking. An expanded stove distribution program is recommended. Since the mean firewood consumption in urban areas is at least double that in rural areas, a research and development effort is recommended to produce a portable BAS stove model adaptable to urban use. Survey questionnaires and data are appended.

496

PN-AAM-694
MF \$1.08/PC \$9.49

Contraintes a la diffusion du foyer ameliore en milieu urbain proposition d'amelioration (Constraints on the diffusion of improved woodstoves in urban areas and recommendations for improvement)

Association of Applied Technological Studies and Management in Africa; U.S. Agency for International Development. Bureau for Africa. Mali
Nov 1982, 66p. : Fr

Since drought has exacerbated the problem of diminishing firewood supply in the Sahel, the use of improved firewood stoves is imperative to reduce fuel consumption. This study analyzes results of a survey of users and builders of improved stoves in Bamako, Mali, following a 1981 promotion campaign led by the National Union of Mali Women (UNFM).

The survey found that about 300 stoves are in use, most for less than a year, and have proven almost universally satisfactory. Stoves are built largely gratis by agents of the Direction of Waters and Forests or by private builders who do not depend on stovebuilding as their main occupation. The grapevine information system, by neighbor and word-of-mouth, has been successful in publicizing the stoves, although there are more stoves in areas where there is a stove builder.

Future needs are to recruit more builders (from among the young and other irregularly employed people) to meet the growing demand for the stoves and to improve the stoves still further, e.g., by developing models that are portable and adapted to other fuels such as propane gas, sawdust, peanut hulls, cow dung, and cereal straw.

497

PN-AAN-102
MF \$1.08/PC \$6.50

International transfer and acquisition of technology: final report

Black, Ronald P.; Todd, W.M.; Cain, Melinda
University of Denver. Denver Research Institute; U.S. Agency for International Development. Bureau for Program and Policy Coordination
Mar 1983, vi, 43p. : En

Related documents: PN-AAN-101; PN-AAN-103
9300092
OTR-0092-C-00-2280-00

Technology acquisition is a complex and dynamic process, influenced by such factors as government policy, participants'



TECHNOLOGY

skills and capabilities, supporting infrastructure, and the role of multinational firms. In this study, a number of policy-relevant hypotheses concerning the technology transfer process are examined in the light of case studies.

Three principal themes emerge: the systemic nature of the transfer process; the importance of human factors (e.g., interpersonal relations and managerial skill); and the effect of government policy on the process. With regard to the latter, protectionist policies have hindered transfer, while policies encouraging indigenous entrepreneurs have been successful. The analysis shows that only a small part of the technology acquisition process is concerned with technological issues; other factors requiring attention include inputs by R&D and financial institutions, transportation and communication systems, legal and policy factors, behavioral patterns and customs, organizational factors, and market conditions.

Several recommendations are made for A.I.D., among them: more management training for entrepreneurs and assistance with technology choice; support for R&D institutions; cooperation with multinational corporations; sensitivity to public interest groups; and most importantly, a flexible, noninterventionist approach that focuses on goals rather than procedures.



Modern drilling technology facilitates oil exploration in the Philippines.

498

PN-AAN-103

MF \$1.08/PC \$10.79

International transfer and acquisition of technology: documentary review

Black, Ronald P.; Todd, W.M.; Cain, Melinda
University of Denver. Denver Research Institute; U.S. Agency
for International Development. Bureau for Program and
Policy Coordination

Mar 1983, iv, 78p. : Bibliography p.54-78, En
Related documents: PN-AAN-101; PN-AAN-102
9300092

OTR-0092-C-00-2280-00

Technology transfer from industrialized to developing countries has given rise to official concerns about technology "packaging," restrictive controls on technology use, inappropriate technology choices, and high costs. This review critically examines current literature on technology transfer.

Technology transfer is first viewed historically and from the perspective of developing countries. Commercial technology transfer is then discussed, with reference to the role of multinational corporations, the appropriability theory (which explains efforts to protect sophisticated technologies from being stolen), induced innovation, the product cycle (from custom-made to standardized), technology acquisition, appropriate technology, and developing country technology transfer policies. Next, pertinent trends from development literature on health, construction and building materials, PVO's, agriculture, and A.I.D. evaluations are discussed. Finally, the technology transfer components of selected A.I.D. projects, policy statements, and evaluation documents are assessed. It is noted that A.I.D.'s policy guidance has been weak in regard to the substance of PVO work, selection of participants for U.S. training, and the relationship between donor agencies and intermediate technology delivery institutions. A 328-item bibliography (1962-1982) is appended.



499

PN-AAL-236
MF \$1.08/PC \$7.28

Structural design of low-volume roads

National Academy of Sciences. National Research Council.
Transportation Research Board

Transportation technology support for developing countries: synthesis, no.4, 1982, vi, 48p. : En

9311116
AID/OTR-C-1591

The vast majority of roads in developing countries are low-volume roads. This report synthesizes current structural design concepts and methods for such roads.

The first two chapters treat the fundamentals of road design and performance (including design and performance phases, structural and functional failure, stress distribution, serviceability and performance, distress mechanisms, and equations for predicting road roughness) and the relation of economic considerations to varying design philosophies. The next four chapters discuss key design factors: (1) traffic patterns (through mixed-traffic analysis); (2) soils and subgrades; (3) the effects of moisture and frost on the strength and volume of construction materials; (4) road surface materials, especially the granular materials and and bituminous surface treatments characteristically used for low-volume roads; and (5) improvement of material quality through compaction and chemical stabilization. The last two chapters present and illustrate structural design methods used by the U.S. Army Corps of Engineers, the U.S. Forest Service, and the United Kingdom Transport and Road Research Laboratory. Included are 33 tables and 38 figures.

500

PN-AAM-393
MF \$1.08/PC \$10.14

Cairo urban transport project, vol.1: project programming

Gakenheimer, Ralph W.

Cairo University; Massachusetts Institute of Technology.

Technology Adaptation Program; U.S. Agency for International Development. Bureau for Near East. Egypt
Technology adaptation program report, no.82-3, Mar 1982, 70p. : Bibliography p.69-70, En

2630013
AID/NE-C-1291

Project programming as a new component in Egyptian urban transportation planning is addressed in this study, the result of a joint Massachusetts Institute of Technology/Cairo University project. Focus is on adapting a U.S. programming method to the Egyptian environment, in which a variety of independent government agencies are responsible for transportation project development/implementation.

First, the Egyptian agencies involved in urban transportation planning are described and their role in decisionmaking is evaluated. The role of private sector construction/design firms is also considered. Next, a highly flexible prototype programming method is presented. The method has four components for forming program options: a project information file; scenarios and budget estimation; a preference file; and set formation. The use of these components is discussed, as is a methodology for evaluating program options, based on analysis of network benefits, non-network economic benefits, functional criteria, or a combination of these factors. A final section summarizes the project's achievements and lessons learned, concluding that multiple agency participation in decisionmaking can be effectively managed and that the prototype method presented here leads to identification of superior programming options.

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(Continued from inside front cover)

Development Needs

Private economies in the developing world encompass a wide range of activities undertaken in an equally wide spectrum of settings (see, for example, item 485, which describes the unusually strong economic success of the Bamileke tribe of Cameroon). A.I.D. and other development organizations have responded to this diversity by utilizing a variety of means to stimulate the private sector. The degree of success achieved by

these efforts is the subject of an A.I.D. evaluation discussion paper (item 256) which evaluates the effectiveness and costs of specific approaches to private enterprise development. The authors conclude that relatively small public sector investments can effectively spark private sector growth. Given the staggering magnitude of the economic challenge facing the developing world - it has been estimated that 100,000 new jobs must be created every day for the next 20 years to satisfy Third World employment demands - the wisdom of such investments is difficult to doubt.

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