AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

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EXECUTIVE SUMMARY

The purpose of this study is to establish priorities for improvement of agricultural education and training programs throughout Sub-Saharan Africa. This exercise is expected to stimulate thought and dialogue on the specific constraints hindering human resource development in Africa, to improve agricultural education and training, and to encourage more relevant research and experimentation.

With one or two exceptions, food production throughout Sub-Saharan Africa remains stagnant and production per capita continues its decade-long decline. Most analysts attribute this poor performance chiefly to three factors:

1) a limited capacity for policy analysis and formulation,
2) inappropriately structured and inefficient institutions, and
3) a critical shortage of trained people.

Therefore, it is appropriate that the Africa Bureau of the Agency for International Development has begun an in-depth investigation of the linkages between human resources development and agricultural growth, of which this review of agricultural education and training interventions represents one aspect.

As a unique collaborative effort between the divisions responsible for education and human resources development (EHR) and agriculture and rural development (ARD), this study is significant: it indicates the desire to more fully integrate the food production and education systems in AID's activities in Sub-Saharan Africa. The usual lack of integration, which originated in the colonial period, has resulted in much duplication of effort and in an excessively academic orientation to education, as will be detailed below.

This paper focuses on the main issues related to the resource transfer which AID has provided in attempting to meet trained personnel requirements identified in Sub-Saharan African agricultural development activities. It

represents part of an attempt to assess whether, and to what extent, training has reached and influenced primary agricultural producers in adopting improved farming practices.

This study examined 135 projects which were selected from an initial search of 2,000 AID Sub-Saharan projects. These 135 projects, having been selected on the basis of their focus on agricultural education and training, were then examined for type of intervention, intended target group, magnitude, etc. Nineteen were selected for in-depth analysis. These case studies identified the types of constraints the project attempted to overcome, the type of delivery system the project employed to transfer the technology, and the constraints the project faced during the course of action. In addition to this project analysis, interviews and surveys were conducted with various personnel to investigate different points of view and biases among different agencies and departments. This information was augmented by extensive publication and literature review which gave the team a varied knowledge base from which to work.

An historical overview is also included in order to present a perspective on the current status of agricultural education and training. As part of this effort to establish existing capability, approximately 250 African agricultural education and training institutions are identified (see Annex III). These institutions have been categorized according to country distribution and type and level of education and training programs, including formal and nonformal educational approaches.

To further investigate the current status of agricultural education and training, a series of interviews were conducted with experts in the World Bank and in AID. The results of these discussions indicate a consensus on the most critical constraints to programming effective projects:

(1) a lack of qualified manpower in the host country at all levels of implementation, and inaccurate assumptions of the manpower capability during design phase;

(2) problems with host government agricultural policy such as a lack of sufficient incentives within the agriculture sector to attract and hold qualified personnel; and,

(3) weak institutional linkages for implementing this policy.

Interventions were ranked in order of priority. They were:

- training for farmers and farm families
- primary and secondary schooling, and
- mid-level technical training.

Those interviewed agreed that there has not been any cohesive agricultural education and training strategy and therefore, interventions in this area have evolved through various channels in reaction to donor perceptions, host country conditions, and shortcomings. Agricultural education and training is a vital component of both rural development and human resource development strategy and should be considered an integral part of the general education strategy. However, given that the success of increasing productivity in Sub-Saharan Africa has been poor, and given the continuing deficit of qualified manpower in the agricultural sector, it is imperative that these interventions be examined in a comprehensive and integrated manner in order to determine, for the future, the most effective means of programming agricultural education and training activities.

For project specific data from 1957 to 1981, the portfolio of 135 projects were studied, categorized and analyzed for trends, characteristics, etc. Some of the more notable findings were as follows:

1. AID's global contribution to education and human resource development has declined from almost 6% to 2.5% of the overall development budget from 1974 to 1983, indicating the priority allocation towards the sector has generally declined. The same pattern of allocation can be observed in African budgets, whic show a decline from 12.2% in 1974 to 4.6% in 1983.

2. Africa has received an increasing share of global development funds than any other region (8% in 1974 and 14% in 1983). Despite this, commitment of funds to education/human resources and agriculture has declined overall.

3. The 135 selected projects implemented over the past 27 years cost 810 million. Approximately two-thirds of this amount was attributed

to agricultural education. Seventy three of these projects were completed by 1982.

4. Overall numbers of projects programmed increased sharply from 21 during 1957 to 1969, to 114 from 1970 to present.

5. Higher education degree programs were given priority emphasis, while attention to primary and secondary schooling has only emerged in the mid-70s.

6. Nonformal education targeted to the small farmer increased over this period, especially in the 1970s.

7. Average cost of projects increased while average duration decreased.

8. Project activity in the 1960s was focused primarily on East and West Africa, while regional emphasis in the 70s expanded to include he Sahel (29 projects), Southern Africa (19 projects), and Central Africa (5 projects).

9. One hundred and seven of the 135 projects were targeted towards mid-level technical staff, 68 towards high level management and administrative personnel and 44 towards farmers.

Of the 135 projects, 58% had no evaluation documents available including several completed projects. From the portfolio of 135 projects, 19 were selected for in-depth document analysis. The selection was based on the frequency of evaluations and the availability of documents. Project profile abstracts of each of the 19 are presented, and constraints faced by the projects are highlighted. These projects are rated as to their degree of satisfactory performance. The fact that most projects were rated as satisfactory may be correlated with the availability of documentation and frequency with which evaluations were conducted. Half of the 19 projects contained training in the management and administration of agricultural programs at university degree level. The majority of the projects included mid-level technician training, with a heavy emphasis on extension supervision and methods. Seven of the 19 projects focused on training at the community level. Project design and implementation constraints are discussed from the host country and AID/contractor standpoints. Within each of these constraint

categories are administrative and technical issues. The severity of overall implementation constraints fall mainly with the host country whereas design constraints were considered primarily AID responsibility.

Following are the Preliminary Recommendations.

I. PRELIMINARY RECOMMENDATIONS:

These recommendations have grown out of the various aspects of the study which include review of past and ongoing project activities, personal interviews and the review of relevant literature on the subject of agricultural education and training.

Since different views have been voiced in this study, it is felt that no one strategy for Africa is possible in agricultural education and training. If there is an overall strategy which the study suggests, it is to apply the recommendations below to the formulation of strategy for each country receiving AID assistance. In this way, strategy formulation for a country can be done at two levels:

a) developing a strategy for the type of intervention most suitable to specific country/regional needs based on host country identification of needs; and,

b) developing an implementation strategy on how/why AID is to become involved, how to collaborate with the host government and/or other donor assistance, and how to identify project activities.

The development of these country-specific and overall AID strategies should engage direct participation of AID missions. The recommendations are as follows:

1. Identify a dual strategy for agricultural education and training projects by setting:

a) short-term objectives for specific learner groups, i.e., farmer training, upgrading of extension agents and technicians, etc.; and,

b) long-term objectives applying to general education and upgrading of standards, curricula and institutional capability.

It seems inefficient to have only one strategy for the vast African continent because:

a) countries and regions differ in their degrees of economic progress since the early 1960s; and,

b) the mix of agricultural conditions, cultural dispositions toward agriculture and educational expansion vary from one region to another.

A dual strategy as outlined above would allow for adaptability in prioritizing AID's emphases on clientele groups and general institution-building needs within the context of regional resource availability and geopolitical realities and constraints. For instance, past efforts in AID's training programs in agriculture have had short-term focus on certain technical levels accompanied by short-term shifts of emphasis at the farmer level. These shifts do not appear to have produced long-term changes, notably among the grass-roots level of production. The core of a future strategy needs to avoid these shifts of emphasis and concentrate agricultural development at the grass-roots farmer and basic primary education level, thereby enabling implementation activities to have wider effect and support. The few examples of formal school agricultural programs (notably in Kenya, Malawi, and Swaziland), as well as formal and nonformal education programs in certain Latin American countries, are worthy of consideration regarding ways in which a dual strategy might apply in generating short- and long-term results. Also, given the 5-year timeframe of AID projects, a strategy could identify achievable targets within and beyond that period, provided proper follow-up evaluations are planned.

2. Base the development of country strategy and the future selection of countries for agricultural education projects on the success of past efforts of AID in completing projects and on the types of projects implemented. Criteria for selection could include:

a) the levels of training which have been addressed, namely, the spread between managerial, technical, and farmer level training within the context of formal and nonformal education;

b) the number of projects which have been completed, thus providing information which can be used in the design and support of future programs; and,

c) the overall magnitude of implementation activities during the past two decades.

The countries which show potential to yield adequate information due to the larger range of activities as identified above and would be suitable for further field investigations are Tanzania, Cameroon, and Botswana.

3. Tie both the education and agriculture sector plans under one economic umbrella of operation in an educational strategy for agriculture, starting with a focus on primary education, an area neglected in past AID project formulation. This focus should be followed by the gradual integration of post-primary training levels. Rural/agricultural sector resources and facilities need to be reflected at all levels of the education system, with sensitivity to students as potential end users of agricultural resources as well as eventual managers of such resources. Malawi and Swaziland are worthy examples where agriculture education is being included in secondary schools. The rural private sector uses a large percentage of youth, the majority being under 16 years of age in most developing countries. It is only in these early formative years that youth can obtain agricultural training through primary education where mass education exists. The other basic education focus within the large private sector is for adults at nonformal education levels. The two-pronged direction for agricultural training, on young children and untrained adults, is suggested since:

a) both groups operate within family-based agricultural systems and can reinforce each other; and,

b) emphasis in the past has been biased towards managerial and higher-level technical training in order to build up institutional capabilities.

At present, consideration of the social and private benefits to education in agriculture over the long term makes primary education attractive since costs to formal and nonformal basic education are significantly lower.

4. Conceptualize and design ways to integrate other development sectors with agriculture through the orchestration of the education sector, linked with community development. Due to difficulties in crossing administrative borders of ministries, little attempt has been made to adequately integrate within projects the common food-related goals in the health, nutrition and other sectors. Furthermore, most past AID training projects have been exclusively related to agricultural production disciplines and to training at technical and senior levels. Consideration could be given to ways to use more multi-sectoral teams in feasibility pre-design studies and in design processes. Specifically, inputs from educationists, both formal and nonformal, and closer working relationships between health educationists, nutritionists and other personnel in design, implementation and evaluation stages of agriculture education projects could substantially enhance integration efforts.

5. Concentrate in advance on institutionalizing data collecting networks before any attempt is made to enhance planning capability within the Ministry of Agriculture. There should be an attempt to match training activities to country needs by establishing a more reliable micro data base and infrastructural profile of the agriculture sectors to which training in identified skills will be directed. Often, the assumption that data exists and is accessible prevails as a basis of training, when in fact, data-gathering skills and data management procedures are needed and often neglected. Technical and higher level individuals are often trained to manage information and formulate discussions without adequate statistical data-gathering and information-monitoring skills. As a result, ministry-level technicians and managers prove to be ineffective. Interventions which add to technical ability should include training in data collection and data management. Similarly, host-country training institutions should be capable of insuring the relevancy of training which most likely would entail shifting the focus of training from a small nucleus of administrators and

policy-workers to suppliers and users of information. Likewise, participant training in the U.S. and third countries should avoid preoccupation with technically sophisticated data management methods at the expense of teaching basic micro-data and statistical profiling skills.

6. Develop realistic objectives for formulating post-implementation human resource management plans for effective utilization of trained manpower. Recording of post project operations often ceases since AID obligations end at project termination. Also, field verification of interventions carried out by the host country after AID withdrawal of support are usually not done. As a result, from a management and cost/benefit point of view, questions remain on how trained personnel were utilized or underutilized in perpetuating government goals. Utilization appears to be the ultimate test for training effectiveness. Factors in developing effective resource management objectives include:

a) whether governments have the capability to absorb the recurrent costs associated with the employment of trained manpower;

b) the extent to which overall internal budgetary constraints of government limit the type of training or institutional development required;

c) the effects of participant trainees on the sustainability of institutions after project completion;

d) how training institutions have developed the capability to adapt to new training needs in accordance with established or planned government objectives;

e) how performance of trained personnel provided the government with clues on how to improve its ability to restructure training content;

f) the extent to which technologies have been adapted by beneficiaries to improve their own traditional system of practices; and,

g) how technologies have affected yields of production, and more positively, incentives and attitudes of users favorably.

7. Develop more adaptive technology for improving the extension approaches through nonformal education methodologies and innovations. There is a need for applied research on those extension activities which effectively use the

existing indigenous infrastructure. This research would highlight:

a) behavioral and attitudinal change occurring among male and female farmers' food consumption, health and nutritional priorities;

b) motivational factors affecting the performance of extension workers; and,

c) the acceptability of packages of information and practices for delivery by extension workers.

Activities and training programs involving youth in farm and farm-related services such as the vocational trades and small-scale enterprise development will develop skills and attitudes attuned to rural development. A focal point of extension activities in most African agricultural communities should be the application of more innovative extension approaches and technologies. Women should receive appropriate emphasis in this area due to their triple role as nurturers, producers (of foodstuffs) and managers in the family and the community.

8. Investigate ways to strengthen capabilities of existing educational and training institutions and to develop networks of activities and support between them. Many institutions in past AID agricultural projects have incorporated other smaller agencies or institutions into their service or production function. As these linkages form, there has been little reference to the effects of these linkages on strengthening or overburdening:

a) the resources of each institution or agency; and,

b) the networking itself, i.e. linking objectives, sharing personnel and costs, internal management, etc.

Consideration needs to be given to whether to develop the resources of larger institutions which affiliate with smaller ones or to develop specialized capabilities in the smaller institution which ultimately serves the larger overall training function. Inter-institutional links may have caused internal management problems and a lower quality of operation. If so, an investigation

would need to be conducted on how new management training approaches could remove these constraints. Regional inter-country institutional links may require similar but wider consideration encompassing political and economic management of objectives and resources.

9. Identifying more clearly the roles of the U.S. and host country private sector agencies, voluntary organizations, and the corporate community in promoting agricultural training programs. Further information is needed about cost factors of involving PVOs over the other types of agencies and the degrees and rationale of host country acceptability of one agency over another. Clarification is required about which type of agency, company, or institution can offer the best training for particular skills and how to assess their degrees of achievement according to the agent's capability. Also, information about what types of interventions are most appropriately used by the different implementors would shed light on the agent's capability, while avoiding comparisons between the agents themselves.

Besides PVOs and other agencies, investigation should be made about the activities of multilateral and bilateral donors, such as the Food and Agriculture Organization (FAO). Areas for joint activity could be identified once AID has examined how donor projects were implemented and the past experience of donors in overcoming constraints to agricultural growth.

10. Scrutinize CDSS descriptions to see if they balance realistically with the present AID Sector Strategy on education and agriculture development and the present situation of a country's stage of development. CDSSs should be examined as to whether they are consistent with new data, experience and the past trends of other international agencies, like the World Bank, in developing agriculture programs. Other points of consistency of examining CDSSs might include:

a) the linkage between universities and organizations responsible for

agricultural development, and more generally, the overall education system in agriculture;

b) the relevance of the CDSS with the country's planned policy and updated needs, i.e., whether a type of training intervention used in the past has relevance for the future training needs or requires further adaptation;

c) the reflection of AID's Bureau Sector Strategies worldwide in individual African CDSSs.

Fresh criteria in developing CDSSs may be needed in order to link agricultural policy and education in agriculture and to assess whether a project-in-design following CDSS strategy is realistically matching the current country demands.

11. Investigate the present manpower capability of AID to manage, provide technical assistance and supervise its activities in adapting to the present trend of projects having higher costs with shorter duration. Manpower expertise should be viewed in light of the fact that the rate of projects being approved peaked at 33 projects for one year in 1978 compared to 21 projects approved throughout the 1960s. Manpower capability studies should also take into consideration AID's principal constraints in areas of design which involve administrative issues of logistics, commodity support and personnel recruitment.

An inhibiting factor in assessing AID's capabilities has been the poor retrievability and general lack of necessary documentation of past projects in spite of the modern information technology available. A better monitoring system to highlight successes and constraints of all projects is needed. Individuals who were involved in implementing and periodically evaluating projects should be identified in all technical documents so that those officers can be contacted and used as information sources. Additionally, the frequent rotation of AID administrative project staff has led to a lack of continuity and a short-term exposure of officers to projects requiring consistent and more long-range monitoring.

12. Hold operational seminars for design officers regionally, the purpose being to involve them directly with hands-on application in designing evaluation projects. Periodic seminars, perhaps semi-annually for one week, would identify specific strategy and design activities to be stressed. Topics for applied activities or research could include issues in the above recommendations with analysis and solutions developed at the mission level between seminars. The regrouping of the design offices as a result of these seminars should improve problem-solving in project implementation stages.

Furthermore, seminars could be held in countries which offer success examples and opportunities for verifying field information relating to technical issues. Tanzania and Cameroon are suggested since combined they had 16 projects directed toward different levels of interventions.

In conclusion, we have offered the above suggestions for possible future investigation. These recommendations are to act as an umbrella of issues for consideration, acknowledging that the sub-issues can be expanded. Ultimately, we suggest as the very first step that a qualified contractor should be commissioned to develop the scope of work for conducting such seminars.

II. METHODOLOGY

The bulk of the information obtained on agricultural education and training activities was gathered from the study of past and ongoing AID projects. Additional information was obtained from literature review and selected interviews and surveys.

The AID projects selected for study were taken from an initial search of approximately 2000 Sub-Saharan projects. One hundred and thirty five projects were finally selected on the basis of being totally or partially focused on agricultural education and training. These projects were classified and examined for type of intervention, intended target groups, and magnitude of agricultural education and training components. Of these 135, 19 were selected for in-depth study on the basis of project characteristics and limitations with regard to sufficient documentation. The in-depth study is a three-part examination of:

1) constraints the project attempts to overcome;

2) types of constraints emerging during project design and implementation phases;

3) the nature of the technology transferred, delivery system used and final output produced.

Interviews and surveys were conducted with a dozen professionals from various departments in AID and the World Bank to complement the desk analysis. These interviews and surveys were carried out to investigate certain perceived trends and constraints and any Agency or Department bias on the subject of agricultural education and training.

In classifying and discussing these 135 projects, categorizations have been made and used that need to be defined. Initially, the team classified agricultural education and training into formal and nonformal approaches.

Formal education interventions consist of and are subdivided into these levels:

(1) primary education: the first six years of formal schooling.

(2) secondary education: the second six years of formal schooling.

(3) post-secondary or higher education:

(a) certificate/diploma programs: formal post-secondary education and vocational/technical training programs, generally for low- and mid-level staff. Programs are usually 2 or 3 years in duration.

(b) degree programs: formal university programs, generally for intermediate and senior-level technical and managerial staff, which award degrees equivalent to the B.S., M.S. or Ph.D. degree granted by American universities. The program of studies usually lasts 4 years.

AID's program of formal education support (primary, secondary and higher) uses one or more of several types of assistance:

(1) support geared for improving the quality of education in the classroom except for improving the schools' personnel. This includes material supplies (books, paper, furniture, etc.), curriculum development and improvement, and general advisory support.

(2) the personnel training not included in (1). This is an attempt to improve the quality of education by supplying or training personnel for positions as teachers, managers, and administrators.

(3) building and grounds improvement and construction as well as equipment supply (water heaters, sanitation equipment, etc.). This is any attempt to create or improve facilities in which education can take place.

The term "nonformal agricultural education" is broad and can be applied to any attempt to educate or train the population outside of a formal institution of learning while maintaining instructional links with institutions. The rural population and farm families have been the principal beneficiaries of AID's nonformal education activity. This is AID Africa's intention which is illustrated by the types of nonformal education activities implemented in Africa programs. These include:

(1) mass media efforts, directed at farmers and other rural groups;

(2) extension training of farmers and other rural groups;

(3) on-the-job training of managerial and technical personnel, usually through a one-on-one approach;

(4) seminars or refresher courses for managerial and technical personnel, utilizing group training;

(5) farmer groups and cooperatives;

(6) private sector interventions;

(7) farmer training centers.

One of the primary considerations in the programming of formal and nonformal agricultural education and training is to determine the target group or groups to be reached. The team identified the target groups to consist of the following:

* Management/Administration Level (MA): Indigenous personnel in this target group are officials and professionals in the highest decision-making positions. High level government officials as well as top level private sector management personnel are targeted for improvement at the "top" of the infrastructure pyramid. Through the training of this target group, policymaking, planning and management capability is improved, as is the overall effectiveness of developmental efforts.

* Technical Support Services Level (TS): Organizations and personnel under this category are the developmental support and implementing entities at the middle of the "pyramid." This target group is responsible for implementing and facilitating developmental policy that is determined at the management/administrative level. Technical support organizations include cooperatives, research agencies, extension agents, the education system, parastatals, etc.

* Farmer/Rural Population Level (F): This is the base of the pyramid. This target group is the population that is supposed to be helped by developmental programs. Management/Administrative level makes the decisions and Technical Support level carries out these decisions in order to improve productivity by the farmers/rural population. In some cases, this target group is qualified further to give special emphasis to women and/or youth.

III.A. HISTORICAL PERSPECTIVE

Colonial Period

Colonial rule preceeded the emergence of independent African states in the 1950's with a few exceptions such as Ethiopia. The colony required an agricultural education system which reflected the economic needs and cultural prejudices of the colonial rulers and not those needs and aspirations of the African people.

Five stages can be identified in the history of educational development in Africa including the colonial experience:

- pre-colonial indigenous education;
- missionary-initiated "Western" education;
- the beginning of colonial government intervention in the mission-operated educational system;
- the development of formal educational policies by colonial governments and the educational system's expansion following World War Two; and
- the post-independence development assistance era.

Prior to the introduction of Western educational systems, traditional forms of agricultural education and training were based on example, folklore, mythology, and "rites of passage." This informal system was carried out during the everyday activities of the community. Traditional education was also religious in nature, typically related to Islam. The emphasis of this more formalized system was on the memorization of sacred writings from the Koran. By the late 1800's, Christianity became the basis of the educational institutions which were dominated by European missionaries throughout much of colonial Africa. European governments found this convenient so that all forms of education, including agriculture, remained in church hands well into the twentieth century.

In order to tighten their administrative control, colonial governments

experienced the need to train larger numbers of Africans in simple administrative skills requiring literacy and numeracy. Governments expanded their involvements in all levels of education and perceived the need for more highly trained African assistants. The African educational systems became reflections of immediate needs of foreigners rather than of the long-term requirements of the colonial states. Even less attention was given to the needs associated with agricultural education. Any concern for agriculture in the British curriculum dealt primarily with skill training related to export crop production needs. Otherwise, attention to this sector was left primarily to the determination of individual school administrators. As states demanded independence, most colonial systems were left with only a very basic program of agricultural training and education at the university level and a highly limited program at lower technical levels.

The basic difference of the French approach was to integrate colonial possessions with France itself and assimilate the people into French political, socio-cultural and economic patterns. As a rule, the French disregarded indigenous institutions and patterned the curricula after that used in France. In spite of a bias toward values alien to the African environment, they did place a comparatively heavy emphasis on agricultural studies.

French and British policies were often overly endowed with an elitest attitude not befitting the action-oriented, highly applied needs of African agricultural development. The Belgian, Portuguese, Italian, German, and Spanish colonial regimes followed suit, the only emphasis in agriculture being an isolated case by a concerned individual or mission school.

In summation, colonial agricultural education existed almost entirely at the primary and middle school levels. The post-independence development assistance era has seen the primary school system rapidly expanded, however, with agricultural education becoming, to a limited extent, a part of "general education" or "rural science."

Changes in African education since the colonial period have integrated agriculture to varying degrees at all educational levels as in Swaziland and Malawi, and at secondary levels in East Africa. AID has been especially active in recent years in support of such integrative efforts. While the shortcomings of colonial education in Africa continue to be important factors in African education, there is growing recognition and change towards adapting education to local economic and cultural requirements.

III.B. AID EXPERIENCE IN AGRICULTURAL EDUCATION AND TRAINING

Since the United States began providing development assistance to Sub-Saharan Africa, approximately 2,000 projects had been implemented by the end of 1981, of these, 770 have focused on agricultural development, nutrition, education, and human resource development. A review of these projects yields a total of 135 projects dealing with agricultural education and training which have been funded by AID since 1957 when the first effort, Agricultural Extension and Production, was initiated in Ghana. These 135 projects represent a total budgetary outlay of $670 million in grants and $131 million in loans, for a grand total of $801 million.

All of these projects have involved substantial host country contributions making the total investment sufficient to produce significant and lasting results. However, little quantitative information is available to show how training at various levels has actually contributed to agricultural production and to the generation, dissemination, and promotion of the adoption of improved technology, especially by small producers. Even less is known about the spectrum of factors which contribute to the impact of training or lack of it, or increased agricultural production. If the fifteen-year profile of per capita food production indicating declines in Sub-Saharan Africa is used as an indicator, returns on all agricultural investments, including training, are small to negative. Unquestionably, past AID experience has contributed substantially to increasing the number of trained cadres at all levels.

Changing Agricultural Education and Training Emphasis

Of the 135 projects funded in the past 27 years, the heaviest emphasis was placed on higher education programs or advanced university degrees (77 projects

or 57% of total projects). Limited activity occurred in primary and secondary education programming. One important trend in agricultural education and training in recent years has been the increasing attempt to design a broader array of nonformal training focused on the needs of the small farmer. Out of the 135 projects, 44 projects were directed specifically towards this target group (33%).

Trends in the changes of magnitude of funding and timeframe for various types of projects are also noteworthy. Over this period and particularly in the 1970s, projects have become increasingly capital intensive. In the 50s and 60s, the average project cost was $3.3 million with the average duration of 11.5 years, whereas in the 70s and 80s, average project cost increased to $6.4 million and average duration decreased to 5.2 years (see graph 1).

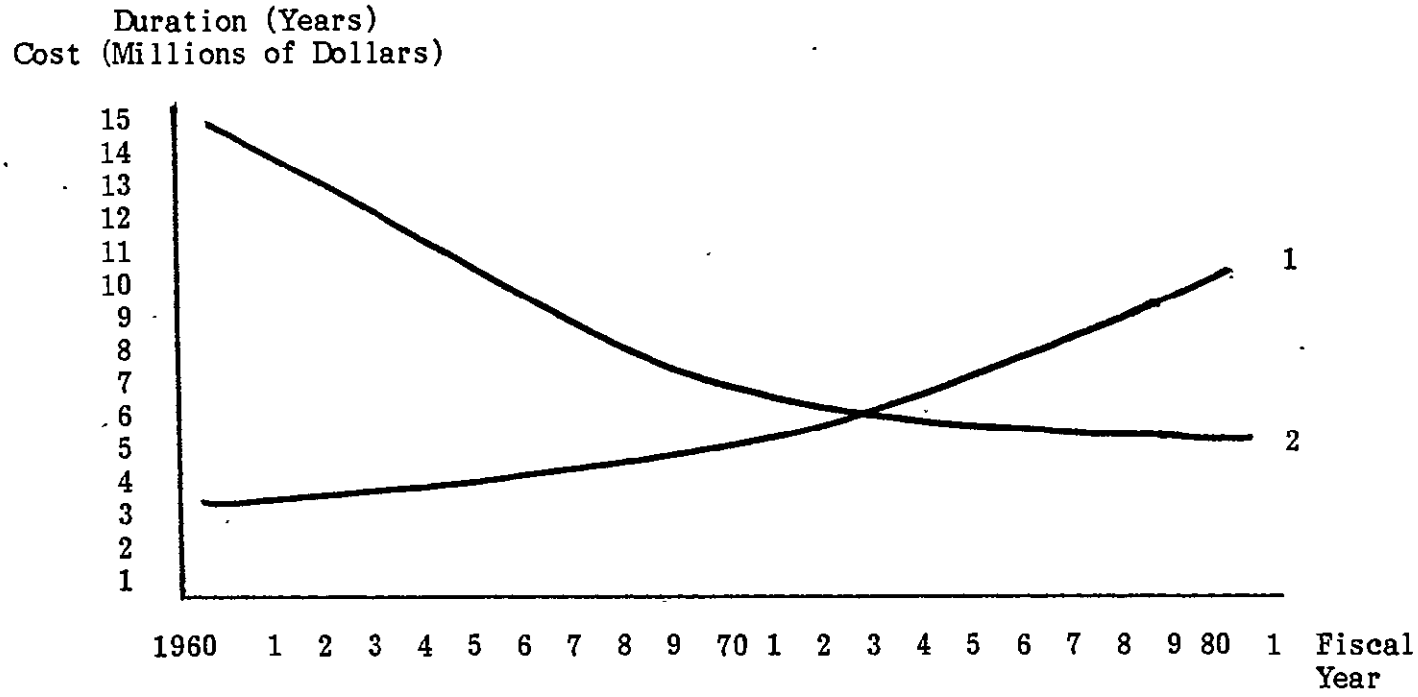
TABLE 1: Comparison of Average Funding and Duration of Projects

	Pre-1970	Post-1970
Total Number of projects	20	115 *
Total Amount Invested (Mil. $)	65	736 *
Average Cost of Project (Mil. $)	3.3	6.4
Average Duration (Year)	11.5	5.2

* 1978 was the peak year with 33 projects for a total of $330 million approved.

GRAPH 1

Average Cost and Duration of AID Projects
Programmed, 1960 - 1981



1 = Average cost of AID projects programmed (each FY) in millions of dollars.

2 = Average duration of AID projects programmed (each FY) in years.

The trend illustrated above, average project cost doubling while average project duration is being cut in half, raises the question of how AID's managerial, technical, and supervisory personnel have had to adapt their activities in a more high cost, short duration development effort.

Regional Distribution of Projects

The projects were implemented in 29 countries, 50% of which were in 8 countries (Tanzania, Kenya, Liberia, Botswana, Cameroon, Ethiopia, Mali, and Nigeria). Distribution of all AID projects for agricultural education and training in Sub-Saharan Africa (1957-1981) by country and target group are illustrated in Table 3.

The review of all projects implemented in the past indicates that prior to the 1970s, West and East Africa received equal attention at the expense of the other regions. During and after the 70s, however, the activity was expanded to the Sahel and Southern Africa. The following table demonstrates the regional shift in activity during the period before and after 1970.

TABLE 2: A Time Comparison of AID Agricultural Education and Training Projects in Sub-Saharan Africa by Regions, 1957 to Present

Region	Pre-1970	Post-1970	Total
The Sahel	0	29	29
West Africa	9	32	41
Central Africa	0	5	5
East Africa	11	29	40
Southern Africa	1	19	20
Total	21	114	135

Table 4 below presents the same projects divided by region and target groups which indicates that East and Southern Africa experienced a larger number of projects programmed toward higher managerial levels than projects targeted toward farmer families. The ratio of these projects in other regions were more balanced. It should also be noted that in East and West Africa more than half of the projects programmed had been completed by 1982, with the reverse true in the other regions thus indicating a regional shift in recent years.

TABLE 3: AID Agricultural Education and Training Projects Implemented in Sub-Saharan Africa - 1957 to 1981, by Country and Target Group

	Total Number of Projects	Number of Projects per Target Group* (MA)	(TS)	(F)	Number of Projects Completed by 1982
Botswana	6	5	4	0	3
Burundi	1	0	1	0	0
Cameroon	6	2	4	3	1
Chad	3	2	3	1	1
Ethiopia	6	3	5	2	6
Gambia	2	1	2	2	1
Ghana	6	3	6	2	5
Guinea	1	0	1	0	0
Guinea-Bissau	1	0	1	0	0
Kenya	7	5	6	2	5
Lesotho	2	2	1	1	1
Liberia	7	3	6	4	5
Malawi	2	1	1	0	1
Mali	6	1	5	3	3
Mauritania	2	2	2	0	1
Niger	4	1	4	4	3
Nigeria	6	3	5	0	6
Rwanda	2	2	2	0	2
Senegal	5	3	5	2	1
Seychelles	1	1	1	1	1
Sierra-Leone	1	0	1	0	0
Somalia	3	2	3	2	2
Sudan	5	2	4	2	1
Tanzania	10	7	5	2	6
Uganda	3	0	3	0	3
Upper Volta	4	3	4	2	1
Zaire	5	1	4	1	1
Zambia	3	2	1	2	0
Zimbabwe	1	1	0	0	0
Africa Regional	6	1	5	3	1
Central & West Africa	9	4	6	2	7
East Africa (ADO)	1	0	1	1	1
Southern Africa	6	3	5	0	4
ADO - Niamey	2	2	0	0	0
TOTAL	135	68	107	44	73

* KEY: MA = Management/Administration, high level decision makers.
TS = Staff of Technical Support Services, autonomous organizations, parastatals, cooperatives, school systems, research institutions, etc.
F = Farmers and the Rural Population (including rural women and youth).

TABLE 4: AID Agricultural Education and Training Projects in Sub-Saharan Africa - 1957 to present, by Region and Target Group

REGION	Total No. of Projects	No. of Projects * for each target (MA)	(TS)	(F)	No. of Projects completed by 1982
The Sahel	29	15	26	15	11
West Africa	41	16	33	13	25
Central Africa	5	1	4	1	1
East Africa	40	22	32	12	27
Southern Africa	20	14	12	3	9
Total	135	68	107	44	73

* KEY: See Table 3.

NOTE: The 135 agricultural education and training projects are listed and characterized in Annex I.

Trends in AID Resource Allocation:

Table 5 below summarizes AID's fiscal commitments to both agriculture and education. Statistics are provided indicating the level of commitment both for AID's global program as a whole and for the Africa Bureau's program. Figures are provided for Fiscal Year 1974-1983.

The statistics presented in Table 5 indicate that, while overall total and sector AID funding, both globally and regionally, have frequently increased during this ten year period, the proportion devoted to both agriculture and education has generally declined. Despite this, it is also clear that a far greater proportion of AID resource expenditures in Africa has been directed toward agriculture and education than has been true of other regions or of the Agency as a whole, indicating a basic high level of concern within the Bureau regarding both sectors' activities.

TABLE 5

AID's Global and African Regional Budget Commitments to Agriculture and Education
(In Millions of $US)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AID Total	1632.6	2049.8	3168.9	3156.6	3738.3	3348.0	3779.0	3912.0	4419.0	4723.0
Nutrition/ Agr & Food	274.5	410.3	582.0	474.3	548.7	673.2	631.0	653.0	701.0	700.0
(% of Tot)	(16.8)	(20.0)	(18.4)	(15.0)	(14.7)	(17.5)	(16.7)	(16.7)	(15.9)	(14.8)
Education/ Human Res.	88.9	79.6	95.3	94.4	98.3	109.0	98.0	103.0	104.0	116.0
(% of Tot)	(5.4)	(3.9)	(3.0)	(3.0)	(2.6)	(2.8)	(2.6)	(2.6)	(2.4)	(2.5)
Africa Total	131.0	193.9	169.7	165.1	213.0	294.0	415.0	463.0	606.0	648.0
(% of Tot))	(8.0)	(9.5)	(5.4)	(5.2)	(5.7)	(7.6)	(11.0)	(11.8)	(13.7)	(13.7)
Nutrition/ Agr & Food	40.5	50.4	122.4	106.5	89.3	109.8	102.0	108.0	130.0	142.0
(% of AFR))	(30.1)	(26.0)	(72.1)	(64.5)	(42.0)	(37.3)	(24.6)	(23.3)	(21.5)	(21.9)
Education/ Human Res.	16.0	14.9	16.7	18.7	24.0	33.7	30.0	25.0	37.0	30.0
(% of AFR))	(12.2)	(7.7)	(9.8)	(11.3)	(11.3)	(11.5)	(7.2)	(5.4)	(6.1)	(4.6)

NOTE: Figures were derived from Actual and Projected Amounts in the Congressional Presentations and therefore are subject to some degree of variance in accuracy from year to year.

IV.A. PROJECT PROFILE ANALYSIS

An inventory of 135 agricultural education projects in Africa stressed education and training as follows: 33 projects were predominantly education; 61 had major components in education; and 41 had minor emphasis on education. From the inventory of 33 projects having predominately agricultural education and training components, 19 projects in nine mostly anglophone African countries have been analyzed and presented in Annex II. Project profile abstracts of each of the 19 projects were developed based on the available documents obtained from the Development Information Utilization Office of the AID Science and Technology Bureau in Washington. These 19 projects were chosen on the basis of:

1) a significant agricultural education and training focus;

2) availability of project evaluation documentation, such as Project Appraisal Reports (PARs); and

3) a spread of levels of application including primary, secondary, higher and nonformal education.

The profile abstracts presented in the appendix highlight the types of constraints faced by those programs in the design and implementation phases. They are meant to act as models of programs which have varying rates of success judged from project performance as described in available documents. Each project is rated as very satisfactory, satisfactory, or not satisfactory. The abstracts discuss project purpose, constraints to be overcome, implementation system in terms of training provided, the degree of success in achieving outputs, and, finally, the major constraints the project faced.

The project profiles mostly include those projects specializing at the levels of farmer training, extension training for technical field staff, and university degrees in higher level administration and management of agricultural programs. Two of the 19 projects focus on primary level education. However, due to the lack of adequate documentation on these, and due to the general lack

of AID-sponsored projects in Africa at the primary level, several descriptions of projects in Latin America and Asia are appended to offer suggestions of what approaches could be used for developing agriculturally-related programs affecting primary school children, families, and teachers. These projects are in Thailand, Paraguay, Chile, Haiti, Guatamala and Honduras. Two of the 19 projects include agricultural programs operating at the secondary school level; this number is also limited since AID strategy during the last two decades did not concentrate on agricultural training in secondary schools.

Half of the projects contained training in the management and administration of agricultural programs at university degree levels. The majority of projects, namely 15, included training at the technical support level, with a heavy emphasis on extension supervision and methods. Seven projects focused on training at the community level, namely of farmers, on family farm plots.

While the number of evaluation documents available for analysis influenced judgements for rating by degrees of satisfactory performance of each project, performance rating also considered the cost expenditure per project beneficiaries, the training level as appropriate to needs designated by countries, the presumed effectiveness of the technologies used, the mix of effectiveness of the research and applied extension approaches, and, lastly, overall project implementation factors.

Eight projects were rated as very satisfactory, six as satisfactory and two as not satisfactory. Success factors did not appear significantly related to any particular region, country, duration, or magnitude of funding. Six of the eight projects considered very satisfactory were approved in the early 1960's. It is recognized that, due to the selective sample under analysis, little conclusive evidence of a statistical or comparative nature can be drawn from these project descriptions.

The following is a discussion of some of the categories of constraints

faced in project design and implementation. These constraints are divided according to those attributed to host-country operations and environment, and those attributed to AID and contractor operations.

Host Country

Design Constraints

1. Administrative Issues

- lack of data for planning/evaluation purposes
- weak establishment of supervisory and communication structure for implementation at the field and administration levels
- weak participant collaboration in planning content of project or program
- budgetary supports hampered by environmental factors or political interest
- manpower planning: criteria for trainee selection lacking; inadequate number of trainers available; provision for continuity of staff often does not take into consideration incentives and pay promotions

2. Technical Issues

- data on skill needs weak: training not always appropriate for skills required
- emphasis on developing research capabilities stressed over applied research through extension
- initial resistance to extension functions making implementing structures hard to establish or perform
- village level programs limited as part of extension training programs

Implementation Contraints

1. Administrative Issues

- weak administrative and organizational structures for implementation: poor interaction between advisors and government officers due to physical isolation

- weak management and reporting procedures/skills of trained ministry personnel

- weak inter-institutional program coordination (research institute & extension services): difficulties sharing facilities and services between ministries

- increased pressures to expand rural youth programs does not match with Ministry of Agriculture resources to deliver

- program operations

  a) budgetary allocation not reflecting program objectives;
  b) internal political disturbances;
  c) change of ministry leadership delays policy- and decision-making;
  d) continuity of staff: frequent rotation; relaxation of incentives produce low morale; graduates motivated to leave government service; senior level shortages
  e) inappropriate post-participant trainee placement into project operations;
  f) delays in schedule require costly extension of resources;
  g) commodities: poor upkeep/maintenance of equipment;
  h) lack of support in assisting construction or allocation of facilities, i.e. office space.

2. Technical Issues

- trained personnel:

  a) inadequate staffing of trained workers:
     - difficulties in placing graduates in ministry positions
     - delayed selection of trainers
     - shortage of manpower slows progress
  b) lack of follow-up training for trained teachers;
  c) lack of experience;
  d) weak management and agricultural education skills;
  e) less team work approach among non-U.S. trained Ministry of Agriculture staff.

- trainee selection:

  a) insufficient number for project needs;
  b) poor backgrounds due to educational lag in country, particularly for senior level training;
  c) counterpart selection faces competition with other donor-assisted programs;
  d) slow recruitment of students cause under-capacity operation of host country training institutions;
  e) participant training schedules behind due to host country selection delays.

- curriculum instruction and methodology:

  a) curriculum policy changes during project: curriculum development process not rapid or comprehensive enough; full-time teaching of training staff and their supervisory duties with returned participant trainees' research is overtaxing teachers' abilities to respond to curriculum development needs or develop new areas for research;
  b) inadequate availability or use of research facilities;
  c) lag in dissemination of information of trials and research through extension training with farmers;
  d) practicals too theoretical or not relevant to field situation;
  e) poor incentives for farmers: costs or lack of popularity and usage of local technologies discourage farmer adoption; low Marketing Board prices; poor attitudes of project beneficiaries cause resistance to innovation; poor economic returns on crops.

- evaluative data:

  a) effects of extension training on crop production not known during project; data showing yield effects of technologies lacking;
  b) performance data between training centers or on trainees not available.

AID/Contractor

Design Constraints

1. Administrative Issues

   - roles of technical staff, project manager or Chief of Party not sufficiently delineated

   - commodities:

     a) equipment procured is inappropriate and of low utility and is difficult to maintain;
     b) stipulation to purchase U.S.-made equipment not flexible enough;
     c) project loan for obtaining commodities not as workable as a grant.

2. Technical Issues

   - participant training: not relevant to local situation; lack of provisions to train agro-mechanics and repair personnel

   - evaluation: inadequate measure of performance of contractor or implementing agency

Implementation Constraints

1. Administrative Issues

- logistics problems in implementing, i.e. lack of transport
- poor organization of commodity records
- delays in constructing facilities
- personnel:

  a) delay in timely recruitment of qualified expatriate personnel;
  b) recruitment of less motivated, less qualified personnel;
  c) problems of personnel renewal/nonrenewal of contract (due to not communicating deadlines).

- equipment:

  a) improper sizing of equipment;
  b) poor condition of equipment;
  c) difficulties in procuring spare parts;
  d) haste in purchasing results in inappropriate equipment because of fiscal year deadline;
  e) inadequate consultation with users;
  f) control and management of equipment causes conflicts between expatriate and local staff.

2. Technical Issues

- too many expatriates on project due to insufficient number of counterparts (i.e., participant trainees away on training)
- delegation of teaching duties to less qualified, less trained junior staff; contract technician assumes too many administrative duties (or research activities) over teaching and advisory responsibilities due to lack of host country administrative and management personnel
- loss of foreign instructors
- inadequate language competency of advisors
- staff rotation causes disruptions
- lack of high quality technical support

Generally, responsibility for design constraints fell on AID with implementation constraints largely existing in the host country operations. The severity of constraints faced by the host country is seen in the general program operations and technical issues concerning utilization of trained personnel, trainee selection, and curricular concensus. AID's main constraints involved administrative issues of logistics, commodity support and personnel recruitment.

IV.B. RESULTS OF THE OPINION SURVEY CONDUCTED WITHIN THE WORLD BANK AND AID

Introduction

A number of interviews and surveys have been conducted in order to capture the experience and opinions of individuals within the World Bank and the Agency for International Development. Individuals were selected from a range of Divisions and Bureaus, with experience in Sub-Saharan Africa, Latin America, Asia and the Near East, and with background in development issues from the point of view of education, agricultural rural development, and agricultural training and extension. Within AID, the Bureaus covered included ARD, EHR, PPC, FVA, S&T, NE, and ASIA. Within the World Bank, both the education and extension/training experts with experience in West and East Africa were interviewed. The surveys were designed to complement the findings of the document analyses. They are considered critical in that the individual interviews have elicited information about project strategies not available through structured and sometimes scarce reports and documents.

The survey attempted to bring out discussion of three basic issues:

A. Strategy: What has been the strategy of the World Bank or of AID for agricultural education and training in the past, (if any)? How has it developed, changed, and evolved? What is the present trend in strategy formation?

B. Constraints: What are the administrative constraints to design, implementation and evaluation within your organization and other donor agencies?

C. Intervention: What are the types of agricultural education and training interventions that should receive priority attention and funding keeping in mind the tradeoffs between need, cost-effectiveness, short term versus long term solutions, comparative advantage of the implementing agency's compatibility, commitment, and the strategy and capability of the recipient country?

Findings

A. Strategy: In the experience of both the AID and World Bank officials, there is no agricultural-specific education and training strategy at present. Any kind of strategy that does exist is incorporated separately and in a piece-meal "component" fashion within AID's Education Sector Strategy or in its Agricultural Rural Development Sector Strategy. Despite the lack of an official strategy, analysis of the actual types of interventions that have occurred over the past 20 years in the Bank and AID does provide an outline of the approaches that have been implemented.

The approach of the World Bank to education is one that has evolved from funding for construction, equipment and "hardware", inputs, and from technical assistance using formal and nonformal education at various levels. From 1963 to 1974 Bank lending was directed towards developing technical and vocational training capabilities at various levels, and towards upgrading secondary schools in order to meet manpower requirements outlined in the development plans of the host country. Lending expanded shifting technical assistance into areas of nonformal education and training, aid to improve management and administrative capability, educational radio and television, and curriculum development. From 1975 to 1978, it was determined that too much emphasis had been placed on secondary and higher education at the expense of primary education and training for rural farmers. Four basic goals had been established by the World Bank:

"(1) at least a minimum basic education should be provided for all as soon as available resources permit;

(2) further education and training beyond the basic level should be provided to meet critical needs for manpower;

(3) the efficiency of education systems should be improved and formal and nonformal methods integrated; and

(4) opportunities should be equalized in the interests of both increased productivity and social equity."

Currently, the World Bank strategy is outlined in the Education Sector Policy Paper , (April 1980) and emphasizes five basic points:

1. "Basic education should be provided for all children and adults as soon as the available resources and conditions permit. In the long term, a comprehensive system of formal and nonformal education should be developed at all levels."

2. "To increase productivity and promote social equity, efforts should be made to provide education opportunities without distinction of sex, ethnic background, or social and economic status."

3. "Education systems should strive to achieve maximum internal efficiency through the management, allocation, and use of resources available for increasing the quantity and improving the quality of education."

4. "Education should be effectively related to work and environment in order to improve, quantitatively and qualitatively, the knowledge and skills necessary for performing economic, social, and other development functions."

5. "To satisfy these objectives, developing countries will need to build and maintain their institutional capacities to design, analyze, manage, and evaluate of programs for education and training."

In keeping with these goals, and with the agriculture education sub-component of the education policy paper, the present trends of The World Bank indicate:

- aid for primary and nonformal education has increased while aid to secondary schooling has decreased sharply;
- aid to the development of curricula has become increasingly technical; curriculum development in management is emerging;
- support of formal agricultural education has decreased;
- strong emphasis is placed on nonformal agricultural education through project-related training and extension service projects;

- construction is still the major lending outlay, although it is decreasing in magnitude;
- technical assistance to improve the qualitative aspects of education has increased;
- project-related training has increased substantially as a component of projects in other sectors.

It should be noted that the Bank's Education Policy contains an agriculture education component, whereas AID's Education Sector Policy does not, as will be seen below.

In the interviews, a description of the evolution of AID strategy was only addressed to a limited extent. Initially, the strategy meant to build on and add to the existing colonial education structures. A long term development approach was initiated through Title XII, expanding the participation of Land Grant institutions in upgrading their capabilities and methodologies in international agricultural education (e.g., Oklahoma State in Ethiopia, West Virginia University in Tanzania). Agricultural education and training interventions were taken from experience in Latin America and Asia and transplanted on the African continent. A more complete picture of the strategy can be drawn from Africa Bureau Agricultural Strategy Papers, from examination of actual project activity, from the AID Policy Paper: Basic Education and Technical Training, and from Country Development Strategy Statements (CDSSs).

Agricultural strategy papers of AID's Africa Bureau place greater stress on manpower development. The current AID Policy Paper on Food and Development, dated May 1982, includes among the Agency's four major policy objectives a commitment to the "development of human resources and institutional capabilities, especially to generate, adapt, and apply improved science and technology for food and agricultural development." Over the recent years this policy has been translated more frequently into projects which provide training

that directly responds to perceived needs for trained agricultural personnel.

The AID Policy Paper: Basic Education and Technical Training , dated December 1982, describes the following approaches:

1. "Internal efficiency of the basic education system: through improvements in retention, promotion, and other efficiency measures at each level; through increasing the involvement of parents and community organizations in activities supporting local schools to increase relevance and acceptability of schooling; through programs that increase rural income, food availability and thus health of the students; through support of national efforts to increase enrollment."

2. "External efficiency of vocational education and technical training programs: through realistic assessments of demand for skilled labor and the amount of training required; through training programs which take into account migration patterns, labor market incentives and disincentives, distortions in the labor market, and the complementarities between skills training programs and other education programs designed to improve literacy and numeracy levels; through attention to in-service and on-the-job training."

3. "Local initiative and diversification of education and training opportunities: through policies which encourage local administration and wider participation of parents and community leaders in education decisions."

To reiterate, the recent AID Education Sector Policy has no reference to agricultural education and training.

In reviewing recent CDSSs, certain shifts in emphasis occur with regard to agricultural education and training strategies. First and foremost, USAID assistance will focus as directly and immediately as possible, on increasing the agricultural productivity of the smallholder farmer. This will be accomplished for the most part by increasing the effectiveness of agricultural extension services. Another focus will orient agricultural research and development towards developing technology which is appropriate for the needs of this target group. AID assistance to extension services will vary according to the need of the individual country, but overall emphasis is placed on improving the methodology of appropriate technology transfer. In some cases, a shift will be made in the objective of research from improving specific crop technology to

improving farming systems. AID hopes to promote through the extension services a multiplier effect of knowledge and skills transfer. In addition, AID aims to reach specialized groups through cooperatives. In some cases, AID is expanding the use of educational radio and the mass media as a means of disseminating information to the masses (CDSS country summaries are presented in Annex V).

AID will also continue its assistance to formal education, in terms of both training participants for staffing universities and government ministries, and providing assistance in developing curriculum. This curriculum will address the actual employment opportunities available to rural populations.

The female population has been specifically identified as a major contributor to food production. AID strategy has placed increasing emphasis in reaching them through extension services. In addition, AID will promote the training of women as extension workers.

Overall, AID emphasizes those programs and projects in which it has a comparative advantage, that is, in which other volags or pvos are not already operative, and with which AID can coordinate with the development objectives of the host country.

B. Constraints: The individuals were asked to identify what major constraints hinder agricultural education and training activities within their institutions, and to specifically identify constraints to developing successful design, implementation, and evaluation.

Constraints within the donor agencies:

- lack of manpower and poor centralized planning and supervision;
- projects too theoretical in approach;
- inability to define the problem at the micro-design level;
- inappropriate timeframe in designing;
- inaccurate estimation of costs (including recurrent costs);
- suggested training not relevant to needs;
- lack of good communication with host government/ministries;
- frequent staff turnover, hampering continuity of project;
- shortage of qualified implementing personnel;

Constraints in Design: These were assessed to be primarily threefold: (1) Unrealistic assumptions were made about needs, manpower, host country administrative capability and timeframe. These occurred out of a lack of pre-design information. (2) Lack of flexibility in the design permitting adjustments to unforeseen delays, costs, political changes, and to feedback and input from indigenous personnel about the relevancy of the project and about the balance between theoretical and practical instruction. (3) Projects must avoid the "enclave" approach by actively involving host country participation in design and implementation levels, thereby strengthening decision-making capabilities of the host country in developing projects.

Constraints to Implementation: There was a concensus among those interviewed that a lack of qualified manpower on all levels was one major constraint to successful agricultural education and training activities. This indicates that invalid or inaccurate assumptions were made on the part of the host country and/or of the implementing agency as to the manpower capability. In addition, the training is oftentimes irrelevant to the actual needs of the particular job. A realistic distinction needs to be made between the "needs" for manpower and the quantity that the host government can actually afford to hire and maintain. Another shortcoming in manpower assessment is that the training for complementary jobs leads to an imbalance of supply and demand. For example, in Nigeria the ratio of individuals trained to be engineers and technicians, (six engineers to every one technician) turns out to be almost exactly opposite of what is needed in practice (one engineer for six technicians).

Lack of sufficient incentives in the agricultural sector and limited agricultural jobs on all levels exacerbates the already-existing shortage of manpower. Although starting salaries are relatively high, pay promotions are limited. This results in a diminished mid-career motivation and a high drop out rate. Although higher salaries may not be possible, development of better

career paths, provision of in-service and remedial training, and utilization of indigenous personnel with experience and knowledge in projects can improve attitude and status. Better promotions can also reduce turnover rates of the agricultural managers and technicians. Lack of appropriate government policies, such as farmer credit and pricing policies, along with the cultural bias against agricultural pursuits, further reduces motivation. Reduced incentives and opportunity in this sector occur regardless of the availability and quality of training.

Weak linkages between project and host country related institutions, and lack of support by the host government was also frequently cited as a major shortcoming during the implementation period.

Constraints to Evaluation: The individuals noted the difficulty of objectivity, and the lack of precise specification of the goals and objectives in order to measure progress. There was overemphasis on and concern with the physical developments (construction, etc.) at the expense of evaluation of other less tangible components. One individual mentioned the importance of evaluating the projects within the context of the timeframe necessary for measuring success. Often projects are measured too near the project's end and too late to suggest changes. This is particularly relevant to those having formal education approaches where the returns to investment may not be measurable for a considerable amount of time. One individual also suggested that evaluations should be conducted by a joint team of US and host country experts in order to include host country opinion about the relevancy and impact of the project. In addition, better records should be kept of the names of individuals and agencies conducting the evaluation.

C. Interventions:

Those interviewed were asked to rank, by order of priority, various forms of targeted agricultural education and training interventions. The priority types of intervention given by those interviewed are farmer training, secondary education, and mid-level extension. These ranking decisions were based on what each individual considered to be of highest need in the host country. Although farmers and farm families (women and youth) were identified as the target group in greatest need of attention, some skepticism was expressed as to the cost-effectiveness of farmer training activities. Of all the various types of farmer training methodologies, the Training and Visit System developed by the World Bank was identified as being the most effective means of skills and information transfer (see Training and Visit below).

Formal secondary education was the type of intervention that was judged to be second in priority. In this case, the emphasis was to increase education levels through increased efficiency of the secondary school system, in addition to increased equity in access to secondary schooling. Basic education through primary and secondary schooling in rural areas should be considered a necessity for any rural development strategy. This view is backed by studies which have found that basic education does increase the productivity of the small farmer.

The issue of whether or not to increase the agricultural content of primary and secondary curricula received considerable discussion and variance of opinion. Those who believed the agricultural content should be increased on this level agreed that it should be increased through general upgrading of the curriculum content, keeping away from a technical and skills-oriented approach. Those who believed that the agricultural content should not be increased on this level argued that it detracted from the general education, which was already too technical and skills-oriented, and was not well integrated into the overall curriculum. The point of agreement was that the agricultural content on the

primary and secondary school level should remain as general education. Agricultural technical training should be left for post-secondary vocational schooling, higher education, and extension training activities. In addition, there is a built-in cultural resistance to increasing agricultural content in the secondary schools. The rural population looks at education as means to shift their lifestyles away from agricultural pursuits and towards urban and more lucrative careers.

Mid-level technical training was the intervention given the third highest priority. Although there has already been a significant amount of activity in this area, it is viewed as one type of intervention that we (U.S. development community) have a comparative advantage in, and therefore is a relatively cost-effective intervention. In the future though, more attention should be given to training for this level that is not necessarily agriculture-specific. The skills of this level of manpower should be assessed to more accurately determine the skill package needed for these individuals. In some cases, it may be found that accounting, bookkeeping, and other administration and mid-level management skills training may be more relevant to actual needs.

Other types of interventions that were mentioned and emphasized by those interviewed included:

- in-service and remedial training including upgrading of skills for mid-career personnel;
- adult education through literacy and numeracy campaigns in addition to concepts which specifically improve the entrepreneurial skills of the farmer;
- training of instructors and trainers to develop host country self-sufficiency in carrying these activities out.

The emphases mentioned by those interviewed - farmer training, secondary schooling, and mid-level technical training - suggest a need for a "dual" strategy for agricultural education and training. The short term needs of the farmer would be addressed through farmer training and extension activities. The

longer term strategy would address upgrading general education levels and improving host country self-sufficiency in training, planning, management and administration.

Some of the characteristics of specific types of interventions emerged in the course of the interviews. The ones listed below are noteworthy in that they address issues faced in targeting interventions for the top priority target group - the rural farmer.

* Agricultural Vocational Training:

  - need to provide for farmer credit and land availability for the young farmer;
  - the certificate received should be considered of equal status as other vocational schools and not restrict qualification for further education;
  - if post-secondary agricultural schooling is the only type that is available in a certain area, it will be used as a means for further education and not necessarily a means to follow agricultural pursuits.

* Training and Visit System: has proven to be one of the most effective means of extension services. The aspects that contribute to its success include:

  - singularity of purpose: clear priority is placed on increasing agricultural production, extension activity is restricted to and focused on training farmers rather than being bogged down by a multiplicity of other functions that detract from the main purpose (such as collecting for agricultural credit banks, acting as distributors, etc.);
  - extensionists go to the farmer: the problem of getting the farmer to consistently come into the extension centers is removed; the farmers are reached;
  - clearly outlined schedule and duties: the extensionist has a well-outlined set of duties, and scheduling to visit the farmers regularly, the farmer develops an expectation of the visits and information and training;
  - feedback: the program allows for continual feedback from farmers about what methods and techniques are effective, the extensionists relay information between the farmer and their own agricultural trainers. Experience shows that as farmers discover the benefits from extension, they initiate and respond to additional information and training;
  - extensive training provided: both for the farmer (one visit every two weeks) and for the extensionists, continual problem-solving, upgrading of skills and methodologies and transfer of research.

Some of the restrictions for a successful Training and Visit Program include:

- transportation: there needs to be a feasible means for reaching the farmers;
- labor: because of the nature of individual farmer outreach activity, this is a rather labor intensive means of intervention which requires a large number of qualified extensionists.

* Targeted Interventions for Women

- cultural biases reduce women's participation in agricultural schooling below the post-secondary level;
- vocational and post-secondary agricultural schools need to enforce enrollment targets for women, and not compromise these numbers to enroll more males;
- maternal/child health programs can be used to provide agricultural training or information dissemination as it is an outreach framework that is already in place, trusted, and acceptable.

Summary of Results

It is difficult to reach any definitive conclusions from the opinions of the experts in the field of agricultural education and training interventions because of the limited number of individuals reached at this point. However, the results do indicate the types of concerns and the recommendations for future development activity that these individuals envision.

* In order to program effective agricultural education and training interventions in the future, better pre-design manpower assessments (taking into account the capability of the host country, the effective demand of the labor market, and the priorities of the host government development policies) must be conducted.

* The projects must be designed with enough flexibility to adjust to inaccurate and inappropriate assumptions. Formulative evaluations should be stressed to constructively shape and correct the project over the duration of implementation.

* Since the small farmer and farm families (women and youth) were identified as the target group needing priority attention, each implementing agency needs to realistically assess its ability to design and implement projects in this

area. The types of interventions, and the comparative advantage of different agencies to implement these interventions, may or may not justify the level of activity. In some cases, the dire need for assistance will justify intervention despite poor cost-efficiency, and should be assessed within this "emergency management" context.

* The individuals supported the strategies of the World Bank and AID to emphasize the need to improve efficiency and capability within existing organizations and delivery systems rather than building and expanding into additional organizations and systems of extension.

* Provision of universal basic education (equity of availability) is viewed as a necessity, as part of rural and human resource development. The curricula should be standard, and should be relevant to cultural attitudes and economic realities. The technical agricultural skills content of primary and secondary schools should not be increased as it detracts from the transfer of basic education.

ANNEX I: 135 AID Agricultural Education and Training Interventions in Sub-Saharan Africa, 1957 to 1981

ANNEX I: SELECTED AID AGRICULTURAL EDUCATION & TRAINING INTERVENTIONS IN SUB-SAHARAN AFRICA, 1957 TO 1981
(See Notes at end of Annex 1 for Definitions of Terms)

Country	Project #	Formal				NFE	Tng Site			Target			Magnitude			Budget ($M)		Duration	EDA	Description of Ag. Training Component:
		P	S	HD	CD		HC	TC	US	MA	TS	F	Dom	Maj	Min	L	G	FY		
Botswana	6330015		x			x	x		x	x	x			x				73-81	x	Tng of GOB and parastatal personnel to improve range mgmt/livestock programs.
	6330056					x	x			x	x			x			1.8	76-82	x	Training in storage management.
	6330059					x	x			x			x				0.2	75-78		Training in land use, crop production and livestock.
	6330067		x			x	x	x	x	x				x			4.8	78-84	x	Tng (academic & ag. technical) to improve performance of MOA.
	6330074		x	x		x	x	x	x		x		x				9.2	78-86	x	Expand curric. and tng of faculty to improve tng capability of Ag. College.
	0330215					x	x			x	x			x			0.5	78-83	x	Support of horticulture development by extensionist and GOB Training.
Burundi	6950101		x			x	x	x	x		x				x		5.5	80-85		Tng personnel in seed production and agronomy to staff seed farm.
Cameroon	6310001					x	x				x			x			1.5	76-83	x	Tng of extensionists and operational personnel for seed demonstration plots
	6310002					x	x				x	x	x				1.0	77-82		Creation and staffing of Family Agriculture Center; Womens' roles emphasis
	6310004		x			x	x	x	x	x		x			x		6.2	78-84		Tng in agriculture and livestock development to improve farmer technology & government support.
	6310008		x			x	x	x	x	x				x			4.2	79-85		Tng in planning and statistics to improve GOC management capability.
	6310015		x			x	x		x		x	x			x		1.3	80-85		Tng of Farmers & Research personnel in breeding, nutrition, & disease control in support of livestock program.
	6310022		x			x	x	x	x		x			x			0.6	80-84		Training in aquaculture techniques to staff fish production center.
Chad	6770001					x	x	x			x	x		x			2.2	77-81		Tng in cereals and irrigation to asst parastatals to improve irrigation prm.
	6770002		x			x	x	x	x	x	x			x			5.4	78-83		Four-part project including training in planning, extension, education & resch
	6770014		x			x	x	x	x	x	x			x			10.0	78-83		Tng to assist MOA in crop production, research, seed mult. and grain mkting.

Country	Project #	Formal P	S	HD	CD	NFE	Tng Site HC	TC	US	Target MA	TS	F	Magnitude Dom	Maj	Min	Budget ($M) L	G	Duration FY	EDA	Description of Ag. Training Comoonent:
Ethiopia	6630111 *			x		x	x		x	x					x		2.9	64-76	x	Part Tng to assist COE in planning and programming.
	6630135 *	x	x			x	x		x		x			x			1.5	62-74	x	Support and administration training to Secondary School System.
	6630138			x		x	x		x		x			x			9.6	60-80	x	Academic training and salary topping for university support.
	6630181					x	x	x	x	x	x				x	40.0	1.0	78-82		Training of COE and Extensionists in support of Ag. Sector Development.
	6630213					x	x				x			x			1.2	78-82		Tng for extension instructors in rural population concerns; especially women.
	6630214					x	x					x			x		0.7	78-79		Training farmers in techniques to improve production.
Gambia	6350203			x		x	x	x	x	x	x	x			x		6.0	79-83		Tng in farming and resource management all levels of personnel affected.
	6350215					x	x				x	x		x			0.8	80-81		Training for technology transfer to farmers including women.
Ghana	6410007					x	x				x				x		3.7	57-73	x	Training of Extensionists in food production techniques.
	6410041			x		x	x				x		x				0.8	66-76	x	AID supplies agricultal faculty for support of education system.
	6410070 *			x	x	x	x			x	x		x				1.6	75-82	x	Training of MOA adminstratoors and managers for improved capability.
	6410072 *					x	x					x		x			3.4	77-82		Plow training for farmers.
	6410095					x	x			x	x	x		x			0.5	78-81		NFE system established; personnel and staff trained for system.
	6410102					x	x	x		x	x				x	11.7	9.4	80-84		Training in farm input management and technical assistance to extension svcs to demonstrate improved technology.
Guinea	6750201					x	x		x		x		x				14.1	76-83	x	Tng of faculty, researchers & extentionists to upgrade faculty & Research Center.
Guinea-Bissau	6570009					x	x				x				x		4.5	80-85		Tng of improved rice production tech- for extensionists; womens' role emph.

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget ($M) L	Budget ($M) G	Duration FY	EDA	Description of Ag. Training Component:
Kenya	6150100					x	x		x	x	x	x		x			N/A	70-79	x	Extension farmers & GOK trained in support of range development.
	6150101 *				x	x	x			x	x	x	x				2.5	60-73	x	Tng of extension & GOK in crop and livestock. Emphasis on youth.
	6150102 *		x	x	x	x	x				x		x				1.9	60-74	x	TA to Egerton College & training for faculty and extension agents.
	6150133					x	x			x				x			0.4	65-74	x	Participant Tng in ag. planning and economics to assist MOA.
	6150169			x		x	x		x	x	x			x		23.6	26.2	78-85		All types of tng to multi-faceted Ag. Systems project.
	6150171					x	x				x	x			x	13.5		75-80	x	Technical support and tng for coop officials in tng farmers.
	6150180			x		x	x	x	x	x	x			x			6.0	79-84	x	Tng for MOA and researchers in a # of ag. research disciplines.
Lesotho	6320064			x		x	x		x	x					x		0.3	77-81	x	Part Tng in design and implementation to assist GOL in Ag. Sector Analysis.
	6320065			x		x	x	x	x	x	x	x			x		6.3	78-84	x	MOA ext and farmer adoption tng for success of farm sys. research project.
Liberia	6690127					x	x				x	x			x		1.4	77-82	x	Coop staff & farmer Tng in support of Coop Development project.
	6690135					x	x				x				x		4.3	80-84		Tng for research staff & extentionists for upgrading technology transfer.
	6690137			x		x	x	x	x	x	x			x			1.6	77-82		Academic and practical tng for GOL personnel in Ag. planning and analysis
	6690139					x	x			x	x	x		x		6.6		78-82		Tng of GOL and extensionists to support Coop prog.; farmers trained.d.
	6690142					x	x			x	x	x			x	5.0		75-81	x	Tng of GOL and extents. in ag inputs to support rural development program.
	6690153			x	x	x	x	x	x		x		x				3.9	77-82		Tng of staff of rural dev. institute upgrade higher education & ext svcs.
	6690163					x	x					x		x			1.8	80-85		Production methods and technical tng rural population; women stressed.
Malawi	6120054			x		x	x		x		x			x			N/A	72-79	x	TA and participant tng for teachers & staff for rural ag. project.
	8120202			x		x	x		x	x				x			9.0	79-84		Tng for scientists and administrs to support COM ag. research imprvmt. proj

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget ($M) L	Budget ($M) G	Duration FY	EDA	Description of Ag. Training Component:
Mali	6880207				x	x	x				x			x			7.0	77-85	x	Jr.Ag. technician trained in ext & management for Apprentice Center.
	6880210			x		x	x	x	x	x	x			x			18.4	78-83		Ext & Mgmt Tng for Haute Valley Dev. Personnel.
	6880213					x	x				x	x			x		4.4	78-82		Tng of staff & Ext Agents of para-statal (grain prod) Ext Tns Farmers.
	6880215					x	x					x			x		1.0	79-82		Farmer Tng in support of Reg. Dev.
	6880219					x	x	x			x				x		0.6	79-81		Tng to support ICRISAT project, for Researchers & Extentionists.
	6880225					x	x				x	x		x			0.5	80-83		Construction & Curriculum dev. for start-up of Tng Ctr. for Rural Women.
Mauritania	6820204			x		x	x		x	x	x				x		1.8	78-82		US & on job Tng for vegetable prod officials in GIRM, Tng for supporting Ext Agents.
	6820207			x		x	x	x	x	x	x	x		x			6.0	80-85		On job & seminar course work Tng for Farmer Ext Agents & GIRM officials, 3rd country visits for Farmers, Cases Development.
Niger	6830201 *					x	x			x	x	x		x			16.1	74-82	x	Expansion of Tng Ctr & Demo plots, Tng of staff for them, aim to imprv. Farmer Tng, Cereals Project.
	6830202			x		x	x		x	x	x	x			x		5.4	76-82		US Tng for MA, Tng Assistance for herders - range + livestock.
	6830205					x	x				x	x	x				4.7	77-81	x	Tng Ctr & Village Tng for Rural Dev, Demo Tng, reaches many, Center built. Radio program active.
	6830240					x	x				x	x	x				13.6	81-86		Estab of extensive Tech. Tng Ctr network, construction & Tng, many farmers trained, Women's role emph.
Nigeria	6200602			x		x	x		x		x			x			9.1	60-76	x	Estab of University Ag Dept., US & Part Tng for Faculty & Staff.
	0200742			x		x	x		x		x		x				6.0	65-77	x	Part & On job Tng to upgrade & expand Faculty of Ag at University of IFE.
	6200743 *			x		x	x		x		x			x			7.1	65-77	x	TA & Part Tng for improvement of Ahmadu Bello University to Tng Ag personnel.
	6200708					x	x			x					x		0.6	63-74	x	Part Tng to Ministry of Ag. & Natural Resources to estab more effective dev guidance.

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget ($M) L	Budget ($M) G	Duration FY	EDA	Description of Ag. Training Component:
	6200770 *		x			x	x		x	x	x			x			4.7	65-74	x	Part Tng to assist ABU & IFE in Ag performance and Ext Svcs, Part Tng for supporting Govt. agencies.
	6200773 *					x	x			x	x				x		1.1	65-73	x	Part Tng for Upper & Mid-level Admin to assist GON in planning, & execution Soils and Water Conservation.
Rwanda	6960107					x	x			x	x			x			2.6	79-84		Tng for dev of crops storage facility, Tng for support of Agency of GOR as well as Coop & Ext personnel.
	6960109	x				x	x	x	x	x	x		x				5.8	79-84		Two subprojects 1)to Dev Learning Ctrs, uses teacher Tng, GOR Tng 2) supports Secondary Women's School for Ag Science; Youth stressed.
Senegal	6850201 *					x	x				x	x		x			6.7	75-79	x	Tng of Ext personnel and Farmers in support of cereals production.
	6850202					x	x		x	x	x	x		x			4.7	75-85		Tng for Farmers, Mgmt staff and GOS personnel for improved range/livestock development.
	6850205		x			x	x		x	x	x				x		23.7	78-83		Part Tng of implementing agency of GOS to improve development capabilities.
	6850224		x			x	x		x	x	x				x		6.0	78-83		Tng to assist parastatal in livestock production.
	6850235					x	x				x				x		7.7	79-84		Tng of Ext Agents of parastatals as well as future trainers for cereal production; womens' role stressed
Seychelles	6620002					x	x	x	x	x	x	x		x			1.5	79-82		Tng for GOS Mgmt and Research personnel and Demo Tng for Farmers to assist and disseminate foodcrop research findings
Sierra Leone	6360102					x	x				x			x			5.9	78-84		Extension technicians trained in rsch and extension inputs supporting a comprehensive development project.
Somalia	6490038 *		x			x	x		x	x	x	x		x			5.6	82-75	x	Training in agricultural science for staff of a farmer training center also for farmers.
	6490101					x	x			x	x	x	x				5.1	78-82		Training of farmers, extensionists & ministry to create an ongoing ext./ research program.
	6490112					x	x			x	x		x				7.8	79-84		Training of extensionists and GOS pers to improve agricultural services and delivery to rural poor.

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget L	Budget G	Duration FY	EDA	Description of Agricultural Component:
Sudan	6500018					x	x			x	x	x		x			14.5	78-85		Farmers trained by establishing Ag Development Ctrs. ADCs staffed and MOA trained. Mostly farmer training.
	6500020		x			x	x		x		x				x		26.0	78-87		Tng for personnel of Ag Research Corp- a newly created institution.
	6500021		x			x	x				x	x		x			6.6	78-83		Tng to strengthen planning and resrch. institutions; Farmers also trained. Assistance to U. of Juba.
	6500035		x			x	x	x	x		x			x			1.1	79-82		Ag Research Station renovated. Tng to staff Yambio faculty and Ext personnel
	6500047		x			x	x		x	x					x		4.9	81-83		Training to support TA to GOS in Ag planning/stats.
Tanzania	6210065 *	x	x	x		x	x		x		x		x				0.9	65-75	x	Formal and Nonformal Tng and Part Tng to create and improve P,S & HD.
	6210092 *		x			x	x		x	x	x			x			9.5	70-82	x	Tng for Farmers to support seed mult program; Part Tng to GOT.
	6210101		x			x	x		x	x				x			1.4	69-78		Part Tng for GOT to support Ag Dev Pri
	6210107		x			x	x		x	x	x			x			8.5	70-83	x	On job and Part Tng for MOA, Coops and Research Institutions.
	6210119 *		x	x		x	x		x	x	x		x				7.1	73-82	x	Tng for MOA, parastatals and Tng inst. Improves mgnt of trained manpower, and improves training quality.
	6210135		x			x	x		x	x	x			x			2.4	78-83		TA and Tng for Higher ed and Research Institutes; Trains faculty, Ext and GOT personnel.
	6210139 *	x				x	x				x	x			x		0.3	76-80		Feasibility of primary-age vocational training; ag included.
	6210143					x	x			x	x	x		x			21.2	78-82		Tng for across-the-board support for extensive dev.; Women's role stressed.
	6210149		x			x	x		x	x			x				6.0	79-85		Training for GOT for Incr rural/ag dev; Women's role stressed.
	6210160					x	x					x		x			0.5	80-84		Villagers trained in drip irrigation systems; at village and in Insts.

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget L	Budget G	Duration FY	EDA	Description of Agricultural Component:
Uganda	6170012 *		x			x	x		x		x		x				2.3	63-75	x	Saturation Ext Tng for Farmers.
	6170023 *		x	x		x	x		x		x		x				2.3	64-77	x	Tng & TA to improve Ag Ed Inst. and capabilities.
	6170060 *		x			x	x		x		x		x				1.1	71-76	x	TA to improve Makerere U. capab to Train Grad. Faculty in Ag.
Upper Volta	6860212					x	x			x	x	x		x			2.2	78-82		Tng of Farmers for income-generating food enterprises. Tng of Exten. for further effectiveness of proj; Women stressed.
	6860221					x	x	x	x	x	x		x				9.1	78-83		TA & Tng for expansion/creation of Tng Ctrs for mid-upper level Ag personnel.
	6860226					x	x				x	x	x				1.7	78-83		Creation of Tng Ctrs & Tng of Ext in support of Sahel Women Tng Prog.
	6860244					x	x	x	x	x	x			x			3.0	81-86		Tng for GOUV Admin for incr. dev capa.
Zaire	6600052		x			x	x		x	x			x				3.5	77-83	x	Tng for MOA for increased dev capa.
	6600059					x	x				x	x			x	7.0	9.9	76-83	x	Trains Ext & Farmers for incr. maize production.
	6600064		x			x	x		x		x			x			3.4	77-83		Tng for personnel of INERA; assists Zaire in research capability.
	6600077		x			x	x	x	x		x			x			4.5	78-83		Tng for personnel of institutions; Estab of Tng Ctr.
	6600082					x	x				x			x			0.4	78-81		Tng for Ext Agents for incr. effectiveness of Ag Outreach Institution.
Zambia	6110075		x			x	x	x	x	x				x			4.8	80-85		Tng for GOZ officials for increased effectiveness.
	6110201		x			x	x	x	x	x	x	x		x			12.5	80-86		Tng of Extentionists/Farmers in support of Ag Research/Ext.
	6110204					x	x					x			x		1.1	81-84		Farmers trained by Extentionists in Rice Prod technique.
Zimbabwe	6130204					x	x		x	x					x		0.8	80-83		Tng proj with small Ag component. Tns officials on Tech info transfer.

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget L	Budget G	Duration FY	EDA	Description of Agricultural Component:
Africa Regional	6980387					x	x	x			x	x		x			0.6	76-81	x	Has several country-specific subcomponents in Ghana and CAR. Mostly Farmer and Ext Tng Ctrs.
	6980388					x	x	x			x	x	x				7.1	76-86	x	Creation of Tng Institutes for Women - Chad. Trainees demonstrate for Farmers in villages in Ag production.
	6980410					x	x					x		x			12.5	76-84	x	Farmers trained to produce high yield rice and use improved Technology.
	6980414					x	x		x		x					x	2.4	79-83	x	Training for Southern & East Africa in using landsat images - some Ag.
	6980418		x			x	x		x	x	x					x	10.2	75-84		Training of Port.-speaking Africans in all development areas - Ag incl. Extensive US training.
	6980429		x			x	x		x		x			x			12.0	81-84		US Tng for staff WARDA. Tng for Ext Agents. General TA support for Tng Ctr
Central & West Africa	6250014					x	x		x	x					x	4.5		76-78		Training for Entente states. Livestock officials.
	6250507		x	x		x	x	x	x		x		x				2.0	69-76	x	TA & Tng to college for estab. of a Ctr for Ag Science; faculty & staff trained in-country and US.
	6250521		x			x	x		x		x		x				0.7	71-78	x	TA to PAID, incl US Tng for counterparts to expand enrollment - Cameroon.
	6250530		x			x	x		x		x		x				1.6	70-79	x	TA to U. of Cameroon to estab school of Ag; US Tng for faculty and general On job Tng.
	6250600					x	x			x					x		0.1	72-76	x	Creation of Tng programs to instruct Senegal River States in grain mkting.
	6250616					x	x			x	x	x		x			1.3	75-80		Training for levels of Ag Research. Emphasis on Demonstrations.
	6250915		x			x	x	x	x	x					x		1.9	76-83		Training for staff of Niger River Commission for improved Dev. Policy.
	6250916		x			x	x		x		x	x		x			4.1	75-82	x	Training for Sahel crop production cadre. Also creates structure for cont training of Farmers.
	6250928		x			x	x		x		x			x			37.8	78-84	x	Sahel pest mgmt. Tng for Research labs and Outreach programs.

Country	Project #	Formal P	Formal S	Formal HD	Formal CD	NFE	Tng Site HC	Tng Site TC	Tng Site US	Target MA	Target TS	Target F	Magnitude Dom	Magnitude Maj	Magnitude Min	Budget L	Budget G	Duration FY	EDA	Description of Agricultural Component:
East Africa (ADO)	6180652					x	x				x	x		x			1.1	70-74	x	Subprofessionals trained in cereal research. Farmers trained with Demo plots.
Southern Africa (OSARAC)	6900004	x	x	x	x	x	x				x			x			1.7	65-78	x	Improvement and expansion of U of Botswana, Lesotho and Swaziland. Creation of Diploma Schools.
	6900008					x	x			x	x			x			0.1	70-73		Tng of regional Ag Technicians in soils, crops. Will transfer knowledge to lower-level personnel.
	6900026			x		x	x	x	x			x		x			0.4	71-79	x	Dept. of Ag Engin estab Personnel trained. Fills gap in Govt of Malawi capability.
	6900054			x		x	x		x			x		x			3.3	76-80		Develops Bunda College into Ag Tng Institution (Malawi). Tng for staff and a fifty percent incr in no. of Bunda trainees.
	6900065			x		x	x		x	x	x				x		2.5	78-83		Tng for Govt of Lesotho personnel to staff newly created Farm Res arm of GOL.
	6900067			x		x	x		x	x				x			3.5	78-83		Training to Govt of Botswana to Improve Ag planning.
ADO - Niamey	6260203					x	x			x					x	10.0	8.2	76-84		Training for Entente Ministries for increased food production.
	6260204					x	x		x	x					x	9.0	4.8	76-84		Tng for livestock cadre in the Entente States in support of sector project.

NOTES:

1) * = the project has been examined in depth and is presented in the project profiles, Annex II.

2) Formal (Agricultural Education):

P = Primary
S = Secondary
HD = Higher (degree)
CD = Higher (certificate-diploma)

3) Nonformal classification may include one or more of the following:

Mass Media, Extension Training, On-the-job Training, Seminars/Refresher Courses, etc.

4) Training Site:

HC = Host Country
TC = Third Country
US = United States

5) Target (Group):

MA = Management/Administration, high level decision makers.
TS = Staff of technical support services; autonomous organizations, parastatals, cooperatives, school systems, research institutions, etc.
F = Farmers and the rural population (women and youth).

6) Magnitude (of Agricultural Education Component):

Dom = Dominant component - judged to be more than 2/3 of project effort and/or funds
Maj = Major component - judged from 1/3 to 2/3 of project effort and/or funds
Min = Minor component - judged less than 1/3 of project effort and/or funds

7) EDA = Evaluation Documents Available.

ANNEX II: Project Profiles

PROJECT PROFILES

PROFILE 1

ETHIOPIA
Agricultural Advisory Service Project #6630111
1964-1976
$2.9 million, Grant

Constraints the project attempts to overcome:

This project assisted the Ministry of Agriculture in improving its planning and programming capabilities by training Ministry staff in planning and evaluation skills. Emphasis was placed on improving plant protection programs and the better utilization of machinery equipment. Ethiopia's planning efforts in agriculture had lacked various expertise in economics and marketing, library resources, grain marketing equipment and instructional aids.

Technology used, delivery system and final output:

Ethiopians were trained in the U.S. at the B.S. and M.S. level to undertake positions in the MOA's Planning and Programming Department. U.S. technical advisors and equipment, including spray planes and one reconnaissance plane, assisted in research and administrative improvements. Peace Corps volunteers were involved in collecting production and marketing data regionally. By 1974, the MOA Planning and Programming Department had increased its staff from 2 to 36 professionals, they being the returned participant trainees. The project generally achieved its targets in a timely way, although there was initial resistance by the Ministry to establishing the Planning Unit and the Economics and Statistics Department due to personnel inadequacies. Also, political unrest and changes in the staffing of government agencies hampered developments.

Constraints developed during the course of the project:

- severely restricted Ministry budgets limited the staffing of the Planning Unit, particularly for data-gathering;

- changes in key technical leadership in planning effort resulted in inadequate development of planning policy in the MOA;

- general lack of reliable data;

- manpower and funding and other supporting services were not adequately provided by host country;

- trained technicians lack experience in planning;

- lack of continuity of staff impedes MOA planning efforts;

- slow recruitment of contract personnel by AID;

- political unrest changes staffing patterns.

Available Documents:

PP 1968, 1970, 1971
Audit Report 1969
Project Appraisal Reports 1969, 1972, 1973

Rating: Very Satisfactory

PROFILE 2

ETHIOPIA
Comprehensive Secondary Schools Project #6630135
1962-1974
$1.5 million, Grant

Constraints the project attempts to overcome:

This project provided technical assistance and facilities to expand curricula in Ethiopia's secondary schools to include vocational practical arts training. Ethiopia lacked staffing and commodities to promote a more practical education leading to employable skills for high school graduates in fields of agriculture, business, and the trades.

Technology used, delivery system and final output:

Instruction and commodities were provided to general secondary schools in agriculture, business education, home economics, industrial and commercial arts and trades. Vocational training capabilities at all 20 secondary schools were strengthened through: (1) training 30 participants in upper level school administration; (2) in-service and pre-service training of teachers in vocational/practical arts subjects; (3) upgrading libraries with supplemental vocational/practical arts materials; and (4) providing staff to teach the new subjects in the schools. Technical assistance assisted in planning and implementing the project. The project was intended to boost enrollment in the secondary school level by making each school's curriculum more relevant to the needs of youth.

Constraints developed during the course of the project:

(Documents Unavailable)

Rating: Insufficient Information

PROFILE 3

GHANA
Agriculture Management Development Project #6410070
1975-1982
$1.6 million, Grant

Constraints the project attempts to overcome:

The project aims to improve the managerial effectiveness of Ministry of Agriculture personnel and to develop the capacity to plan and implement programs through management training. This training was required for all managers at all levels in the MOA. Ghana had incurred a growing food deficit and was experiencing increasing caloric and protein intake deficiencies as well as general economic deterioration. The aim of better management in the MOA was ultimately directed to helping to improve production on the small farms and to increase farm incomes.

Technology used, delivery system and final output:

Training for MOA personnel consisted of three programs at two training institutions and at the nationa university: 1) a two-week annual in-service management training program to improve services for farmers; 2) a one-year diploma program in management of agricultural programs; and, 3) a two-year graduate degree program for administrators in planning positions.

These programs operated at only 20-60% capacity due to the lack of aggressive recruitment of students and delayed selection of trainers by the MOA. In spite of other delays and university disturbances which disrupted its programs, the training institutions developed strong curricula and facilities capabilities. Students demonstrated enhanced desires to improve planning and management skills of the MOA, but such improvement was slow in becoming evident. Weak host country support and commitments generally retarded the achievement of targets in the various programs.

Constraints developed during the course of the project:

Institution building:

- slow recruitment of students by MOA for training caused below-capacity operation of training institutions;

- reliance on weak administrative and organizational structures in MOA and training institutions for planning and implementing the training;

- change of Ministry leadership delays policy making;

- delayed clearance and arrival of American technicians caused program start-up problems;

- effective placement of graduates in Ministry positions was weak;

- alumni/graduates become frustrated and often desire to leave government service;

- inter-institutional program coordination lacked effective

communication strategies;

- lack of reliable data for evaluation of training programs;

- internal political disturbances delay program operations;

- delayed selection of trainers by MOA caused program start-up problems;

- budgets do not reflect program-objective relationships.

Documents Available:

PP 1974
Project Evaluation Summary 1979

Rating: Satisfactory

PROFILE 4

GHANA
Farmers Associations and Agricultural Development (FAAD) Project #6410072
1977-1982
$3.4 million, Grant

Constraints the project attempts to overcome:

This project aimed at encouraging the small farmer in the northern region of Ghana to adopt more economical means, to increase the use of plow oxen, and to prepare and maintain his farm land. It was designed to relieve the lack of capital for farm machinery and to help the farmer overcome the dependence on mechanization with its inherent constraints of lack of spare parts and constant shortage of fuel. However, the project did not intend to replace any existing technology. Rather, it introduced more effective oxen drawn plowing techniques which, with manual labor, was considered to be able to double the acreage under production of small farms of 4 - 5 acres each.

Technology used, delivery system and final output:

The project used demonstration and farm trials through extension work to train 50 farmers in using basic oxen plowing technologies. A foundry, established to produce animal drawn plows and carts and bullock nose rings, employed local artisans who were trained to reproduce these items in private shops. Farmers who have adopted the technology have doubled and in some cases tripled the amount of land cultivated. These farmers also received a group loan which has enabled them to purchase bullocks and other related equipment. Farmers were trained in the proper use of animal traction and application of dung and bedding compost to extend the life of the soil. The adoption rate of farmers of the technology has generally been slow, making continued progress of the project doubtful at the same pace of activity.

Constraints developed during the course of the project:

- lack of raw materials to produce materials/local technologies for project use slowed progress;

- costs of technology discouraged farmers from adoption;

- farmer attitudes towards livestock as wealth and a status symbol conflicted with their desire for more mechanization rather than oxen labor;

- inability to keep project costs in balance with expenses created a need for external institutional support.

Documents Unavailable

Rating: Not Satisfactory

PROFILE 5

KENYA
Crop and Livestock Extension Project #6150101
1960-1973
$2.5 million, Grant

Constraints the project attempts to overcome:

This project provided advisory and technical assistance to the Ministry of Agriculture's program to expand and upgrade extension staff through participant and in-service training. Prior to the project, Kenyan farmers were not being adequately reached to learn more efficient farming practices. In addition, rural youth were not well organized to participate in extension programs. Kenya was emerging from the colonial era towards independent nationhood and required administrative personnel to replace the expatriates. Therefore, this project focused mainly on training and extension at senior planning, field technical and farmer levels and placed less emphasis on introducing new technologies. Training was provided for the following groups:

- Ministry of Agriculture staff: national planning and information services;

- Extension agents: maternal/child health and home economics; range/grassland development and management; livestock production, marketing and veterinary techniques; instructional methods and materials;

- Farmers and rural youth: crop and livestock production; developing clubs and farmer organizations.

Technology used, delivery system and final output:

Outputs of the project were successfully achieved through various levels of training. At the higher education level, university training in extension methods were given to agricultural officers in each of Kenya's 41 administrative districts. Training in advanced agricultural technology was given in the U.S. and other countries. Other participant training for field staff included youth extension methods. Extension staff were trained to develop and run educational programs for rural youth. Permanent Ministry staff were trained in home economics and maternal/child health. In-service training was provided for agricultural field staff in extension methods and in developing extension materials and audio-visual aids. Finally, information services were established in Ministry headquarters with personnel trained in demonstration equipment and techniques. Various films were also produced.

Generally, anticipated targets of the project were successfully met. In 10 years of the project's operation, the agricultural production index increased by 75% with exports totalling $117.6 million by 1968. Kenya witnessed a large increase in the production of maize, wheat, tea, coffee, pyrethrum and milk during her transition from being a colony to an independent country. Ninety-five percent of the positions filled by expatriates in 1962 were held by Kenyans by 1969, when 318 Kenyans had received participant training in agriculture. Home Economics and Rural Youth programs became more important factors in improving rural living. New certificate level programs and training centers were started or expanded, and training in agriculture started at the

nation's universities. The MOA training division established a National Coordinator of Extension focusing on pre- and in-service training. As a result of the above factors, the lasting institutional development was well assured upon U.S. withdrawal from the project.

Constraints developed during the course of the project:

Planning/Design:

- participants' collaboration with GOK officials and USAID technicians in planning the content of their programs was weak, although participants did review the plans;

- the appropriateness of post-training placement presented minor problems;

- the timely recruitment of qualified technical assistance was weak;

- data on agricultural census figures was either not reliable or unavailable;

- the need for better program planning involving farmers and field staff emanated from the poor supervision and communication with subordinate field staff;

- implementation of the project was constrained by the inexperience of the younger trained Kenyan staff in Ministry positions, i.e. in developing planning-ahead strategies, reporting and information gathering etc.;

- transfers of field staff to other areas in the country without consideration of family needs or language barriers produced low morale;

- lack of staff pay promotions within divisions also produced low morale.

Commodities:

- there were difficulties in finding suitable equipment in the U.S. for leather tanning and processing hides and skins. Some equipment was second-hand, reconditioned or burnt out;

- when FAO instructors were lost, delays occurred in recruiting replacements;

- cooperation among staff between Ministries in providing equipment or services was weak.

Project Effects:

- the increased pressure to expand the rural youth program did not match the MOA's ability to provide necessary resources, such as materials, trained personnel, travel and communications;

- the establishment of information services was slow because qualified Kenyans were put in higher priority positions of the Ministry.

Documents Available:

PP 1969
Project Appraisal Report 1969, 1972
End of Tour Reports 1963-1968

Rating: Very Satisfactory

PROFILE 6

KENYA
Higher Agricultural Education Project #6150102
1960-1974
$1.9 million, Grant

Constraints the project attempts to overcome:

This project developed the resources of the Egerton College of Agriculture to provide agricultural instruction at the diploma level and to train agricultural specialists in vocational, managerial, and teacher training skills. The college was established to fulfill a regional need for an agricultural institution of learning having a recognized standing in Africa for training in the various agricultural sciences.

Technology used, delivery system and final output:

The project provided U.S. technical instructors to the College to teach agricultural science, engineering and range management. Participant training for Kenyans prepared them to become vocational agriculture instructors in the College. The College trained teachers for secondary school agricultural programs and trained agricultural field personnel responsible for carrying out the government's agriculture programs. The curriculum included home economics courses. The project met its targets satisfactorily with an enrollment in 1970 exceeding 575 students, although the lack of physical facilities at the College constrained project ability to accommodate more students.

Constraints developed during the course of the project:

- lack of demonstration equipment limited effective instruction;

- poor English language competency or inadequate backgrounds of students selected for training, particularly in engineering skills;

- transfer of trained participants to other sectors outside the project, i.e. private industry.

Available Documents:

PP 1969
Project Appraisal Report 1969

Rating: Very Satisfactory

PROFILE 7

NIGER
Cereals Production Project #6830201
1974-1982
$16.1 million, Grant

Constraints the project attempts to overcome:

This project aimed at improving Niger's institutional capacity to (a) develop improved technology for cereals production; (b) communicate this knowledge to the small farmers; and (c) provide agricultural inputs to encourage farmers to adopt higher yielding technology in cereals production. Due to continuing drought conditions in the Sahel and lack of management skills and isolation of farmers, Niger needed to accelerate its expansion of the agricultural sector. The project site was located in the southern part of the country where there is more sufficient rainfall and an estimated 90% of the cereal producers' farms.

Technology used, delivery system and final output:

The project developed adaptive research units, grain storage systems, seed multiplication centers with demonstration plots for linking research and information-dissemination. Participant training was provided as well as on-the-job training to existing field aides. The cooperative program for farmers made a strong start and research aspects of the project were given adequate emphasis. Weaknesses in the communication system between farmers and agricultural organizations occurred because a strong extension training linkage was not built into the project design. Stress was laid on training top-level counterparts while keeping training for middle-level counterparts to a minimum. This led to revisions in the training design focusing on more in-service training for field cadres. A shortfall in farm demonstration and extension activities occurred primarily due to the poor performance of a group of 150 farm-level extension agents with little training assigned to areas removed from the project's seed multiplication concerns. Research units, though functioning adequately, did not have a direct link to problems at the farmer level.

Constraints developed during the course of the project:

The extension functions of the project were the most difficult to initiate and implement:

- initial resistance to extension functions on the part of host government officials in that structural arrangements within the government made broad-based extension programs very difficult to implement;

- extension agents (aide-encadreurs) trained are too generalist and are involved in more technical research activities rather than extension methodologies;

- research lacked coordination with other agricultural services, particularly extension services;

- interaction between extension seed multiplication advisors and government officials was hindered by their physical isolation from the MOA and from each other.

Other constraints included:

- an inadequate system of measuring seed performance at the farm level;

- inadequate language competency (French) of U.S. technical advisors.

Documents Available:

PP 1975, 1981
Progress Reports 1976
Special Evaluation Report 1976
Project Appraisal Report 1977
Project Evaluation Summary 1979

Rating: Satisfactory

PROFILE 8

NIGERIA
Agricultural Extension Project #6200770
1965-1974
$4.7 million, Grant

Constraints the project attempts to overcome:

This project provided technical advisors to help establish and upgrade agricultural extension organizations, introduce and develop programs addressing farmer needs and stimulate other supportive services. The project addressed the lack of incentives and technologies at the farmer level and sought to train extension agents as well as planners to develop planning and management units at the state level. Ministries of Agriculture in seven of Nigeria's twelve states were involved.

Technology used, delivery system and final output:

The faculties of agriculture at the Universities of Ife and Ahmadu Bello were strengthened to carry out research and extension services. State Extension Services developed package demonstrations displaying improved cultivation techniques, and in-service training for 2,000 extension workers and Extension Demonstration Units to work directly with the farming community. Graduates of Nigerian universities were selected for training in the U.S. A deliberate attempt was made to limit commodities to a small amount in support of extension activities, realizing the difficulties in procuring equipment in Nigeria. Overall project objectives were met satisfactorily. Increased crop production and a greater use of fertilizer by farmers were measures of progress. Extension service functions in each state met with different degrees of effectiveness, mainly due to inadequacies operating in the northern states. Despite the breakup into states and disruptive effects of the Civil War, organization of the various state extension services progressed well.

Constraints developed during the course of the project:

Most problems encountered were surmountable. Major constraints were:

- low Marketing Board prices resulting in poor farmer incentive;

- conflicts with other donor interests;

- lack of credit for smaller farmers in livestock production;

- variations in developing extension programs in different parts of the country due to trained manpower shortages;

- program loan for obtaining needed commodities not as workable as a grant due to purchasing procedures;

- inadequate host-country operational budgets made logistics difficult;

- overloading of expatriate personnel in some areas and not enough counterparts;

- inadequate measures of aggregate effects of extension services on production of crops during projects;

- political unrest and changes slowed progress in project implementation;

- poor budgetary supports for participant trainees;

- poor spare parts procurement procedure for essential commodities;

- extensive rotation of advisory staff and lack of continuity.

Available Documents:

PP 1969, 1971
Project Appraisal Report 1966, 1969, 1971
Progress Report 1972

Rating: Very Satisfactory

PROFILE 9

NIGERIA
Agricultural and Veterinary Medicine Project #6200743
1965-1977
$7.1 million, Grant

Constraints the project attempts to overcome:

This project developed the institutional capability of Ahmadu Bello University to train agricultural middle-level technical personnel to meet research and extension requirements in the six northern states in Nigeria. A Faculty of Agriculture was established with the assistance of Kansas State University. Through training in extension and veterinary medicine, the project would work in particular to improve the lag in agricultural production, with an emphasis on livestock and marketing among northern farmers.

Technology used, delivery system and final output:

The Faculty of Agriculture prepared, executed and coordinated curricula and research programs for degree level training. Technical assistance also expanded the training programs in three non-degree agricultural schools. An emphasis on extension training and veterinary medicine was present in all programs.

A strong emphasis on research at the University enabled participant trainees to return to Nigeria to conduct their thesis work. However, their supervision by expatriate staff was constrained by the latter's teaching load. Practical training and problem solving were integral parts of the host country institutions' curricula featuring practical work assignments at farm enterprises and in group projects. Administrative problems in running the project were minimal and curriculum and extension programs were considered to relate appropriately to needs of the North. The Nigerianization of leadership positions in the University faculty was slow due to the scarcity of agriculturalists from northern Nigeria eligible for upgrading. Nevertheless, the number of graduates through 1975 was 587, an increase over previous estimates. Also, 80% of the graduates held positions in the northern states by 1974 and the training institutions were being increasingly staffed by Nigerians. While the quantifiable targets of the project were impressively achieved, it is less clear to what extent the extension programs impacted on small farm holdings or measured trainee performance and effectiveness.

Constraints developed during the course of the project:

Several design issues developed constraints:

- a low number of students qualified (6th form graduates) to enter training due to the general educational lag in the north;

- B.Sc. graduates in agriculture from northern Nigeria have been in short supply due to this educational lag;

- difficulties recruiting Bachelor graduates for further agricultural training due to the obligation to do a one-year obligatory National Youth Corps service.

Other constraints were:

- continued overloading of expatriate staff until local counterpart staff became available contributed to heavy teaching loads;

- incomplete facilities to match enrollment projections at the University;

- the organization of commodity records was a small problem;

- ability of institution to engage in new research projects was limited due to the priorities that the staff placed on teaching and supervising the research of participant trainees.

Documents Available:

PP 1970, 1971
Project Appraisal Reports 1966, 1971, 1973, 1974

Rating: Very Satisfactory

PROFILE 10

NIGERIA
Soil and Water Conservation Project, Northern Nigeria #6200773
1965-1973
$1.1 million, Grant

Constraints the project attempts to overcome:

This project developed an institutional technical capacity for improving water and land conservation practices in northern Nigeria. Because of progressive soil and water losses and decreasing crop yields in the northern part of the country, the federal government established a Federal Soil Conservation Service with headquarters in Kaduna with the aim of executing a sound soil, water and related resource management program.

Technology used, delivery system and final output:

The Service established a training program to train conservation technicians at both federal and state levels to do conservation planning and applications. AID de-emphasized the field work and demonstration aspects of the project and concentrated on strengthening the training of senior field personnel. It was intended that, in the future, universities continue this training. Training materials were developed and soil conservation courses were sponsored for junior level staff. On the demonstration sites, yields were increased 10% to 25%, although overall project activities were thought to only minimally effect the total production outcomes.

Constraints developed during the course of the project:

- two technical assistance teams were separated geographically causing logistical problems in implementation;

- lack of continuity in host country political structure;

- shortage of host country senior-level personnel who could benefit from training;

- delays in defining duties and responsibilities of Federal Service personnel responsible for providing leadership and direction in program development and training vis a vis state needs;

- participant training behind schedule due to delays of host government in designating civil service status;

- difficulties in establishing permenent appointments for trained staff;

- delays in the small amounts of commodities ordered;

- restrictions on purchasing spare parts due to foreign exchange controls;

- wide dispersion of project sites limited effectiveness for training and demonstration purposes;

- a general scarcity of high level Nigerian manpower trained in soil conservation and executive leadership has limited country performance by hampering effective continuation of programming and policy making after the technical assistance team leaves.

Available Documents:

PP 1969
Project Appraisal Report 1966, 1969, 1971

Rating: Satisfactory

PROFILE 11

SENEGAL
Senegal Cereals Production Project #6850201
1975-1979
$6.7 million, Grant

Constraints the project attempts to overcome:

This project assisted the Government of Senegal to achieve higher levels of agricultural productivity and to help SODEVA (a semi-autonomous agricultural development and extension organization) to diversify and intensify productivity in Senegal's groundnut basin. The production of cereals, principally millet, had been inadequate and the need to reach farmers directly with improved techniques was evident.

Technology used, delivery system and final output:

Through SODEVA as a training and implementation institution, extension personnel were upgraded and the SODEVA units were established to reach local farmers. An applied research unit, the National Center for Agriculture Research (CNRA), was established to assure coordination of research and extension. Local farmer attitudes toward newer technology packages and practices were surveyed and rural councils and local cooperatives were established.

Farmers increased their use of semi-intensive and less intensive technologies and resisted the highest technology for these reasons: (1) farmer hesitancy to prepare land because of insecure land tenure; (2) conflict between use of labor for plowing or harvest; (3) limited availability of equipment; and (4) doubt about the economic benefits of higher technology usage. Some useful social impact studies of the project were produced, yet USAID/Senegal had still to demonstrate that expanded extension services in this project had a direct impact on increasing production among farmers. The project also made provisions for incorporating local artisans in metalworking to support farmers' needs. Youth and women were major target groups in the farmer communities. The collaboration with the Promotion Humaine Ministry assured that the project objectives involved these above groups directly.

Constraints developed during the course of the project:

- problems servicing non-European equipment and obtaining spare parts;

- data too limited to show a trend towards higher yields as the levels of technology increased;

- acceptance by farmers of higher level technologies limited;

- general lack of reliable data to measure achievement of project purpose;

- number of participant trainees planned is too limited to fulfill higher level personnel needs of project institutions.

Documents Available

PP 1974, 1975
Audit Report 1981
Special Evaluation Report

Rating: Very satisfactory

PROFILE 12

SOMALIA
Agricultural Services Project #6490038
1962-1975
$5.6 million, Grant

Constraints the project attempts to overcome:

This project provides research and training assistance to the Ministry of Agriculture in developing an effective research program and extension service for farmers. An agricultural research station, aimed at improving present crops and introducing new ones, utilized field study equipment to perform crop adaptation trials and demonstrations. A farmer training center was established to train farmers in irrigated and dryland farming methods using demonstrations. In order to improve agricultural practices in Somalia, research, testing and institution building activities were included in all phases of this project.

Technology used, delivery system and final output:

The main focus of this project was on developing research and training capabilities. The project provided training by the University of Wyoming, the contractor, in the following areas:

- in-service and pre-service courses for extension service personnel;

- short courses for farmers through a farmer training center;

- participant training in U.S. for research center and ministry personnel.

Advisory and research responsibilities consisted of:

- consulting with Ministry of Agriculture on methods and means of strengthening the extension services;

- developing, operating and maintaining an agricultural research station.

The National Agricultural Center, though belatedly constructed in this project, has produced improved results in rice, safflower and grapefruit. The extension component of the project contractor's efforts lagged behind due to inadequate Government of Somalia funding of a training center and lack of required Somali extension staff. Also, the delay in the Center construction considerably restricted the dissemination of research results to the farming community. After the first three years, the project schedule was 12 to 18 months behind. However, a well-equipped soils laboratory facility was operating ahead of schedule. Although by 1969, 87 Somalis had been trained or were undergoing training in agriculture, the overall project generally lagged and operated with numerous inefficiencies in meeting targets.

Constraints developed during the course of the project:

Institution building:

- funding support and staffing from the Government of Somalia was inadequate and poor manpower planning in the Ministry caused delays in selecting appropriate candidates for training;

- lack or delays of contractor training advisors joining the project retarded certain training functions of the participating country institutions;

- the counterpart staff available was inadequate due to competition of this project with other donor-assisted programs which required Somali personnel;

- changes in Ministry leadership delayed policy and decision-making;

- delays in constructing facilities by the contractor appeared due to insufficient cooperation of the host government.

Research Activities:

- the emphasis on research resulted in inadequate extension training programs and the slow dissemination of research findings to farmers;

- research activities tended to be more institution-based without involving farmers directly in research and testing.

Documents Available:

PP 1970
Progress Report 1965
Project Appraisal Report 1969, 1970
Special Evaluation Report 1979

Rating: Not Satisfactory

PROFILE 13

TANZANIA
Agricultural Manpower Development Project #6210119
1973-1982
$7.1 million, Grant

Constraints the project attempts to overcome:

This project had three objectives: 1) to assist the Tanzanian government in developing its entire sub-professional and professional agricultural training programs; 2) to strengthen the Ministry of Agriculture's two existing diploma-certificate institutions by developing applied, practical training for junior and intermediate level staff involved in technical and management aspects of food crop/livestock production; and 3) to provide participant training for selected manpower need areas. Ministry resources and personnel had been too limited to train sufficient personnel, particularly for management level and parastatal responsibilities. Therefore, existing MOA training institutions needed upgrading.

Delivery System

Twelve Manpower Agricultural Training Institutes (MATIs) increased their training capability in the project through improved curriculum and expansion of their certificate-diploma and professional level training programs. The curriculum structure provided a balance between classroom, laboratory and field teaching, although in-service training for technical and administrative staff was too minimal for project needs. In-field practical training remained limited also. There were inefficiencies on the part of building contractors and a lack of building materials for constructing some classrooms. In-service technical and administration training courses for MOA staff in specific skills met with little interest or attendance. Assignment of returned U.S.-participant trainees to key positions in the government satisfactorily met targetted staffing needs in MATIs, but less the needs at Ministry administration levels. Manpower training outputs at MATIs showed satisfactory progress and the number of staff completing degrees reached anticipated targets. Lack of adequate government budget support for both recurrent and capital expenditure needs affected the preparation of training materials, the development of in-service training, and the maintenance of facilities and commodities. As a result, progress in curriculum development needed special emphasis towards the end of the project. Certain equipment was either inadequate, too sophisticated or was more abundant than was necessary.

Constraints developed during the course of the project:

Training Methods:

- the curriculum development process was not rapid or comprehensive enough;

- skill areas selected for training were not always appropriate for skills required;

- there was a lack of in-service training for new teachers;

- performance data on training centers and trainees was not available

for evaluation purposes;

- practicals were too theoretical or not relevant to field situations;

- there was a limited village outreach program as part of extension training;

- curriculum policy changes occurred after the project was designed causing disruption to the planned curriculum development process;

- the projected number of trainees was insufficient to meet project manpower needs;

- full-time teaching loads of training staff overtaxed their abilities to respond to curriculum development needs;

- management function and agriculture education skills are weak among the training staff;

- the budget limitations of the host country due to environmental factors, i.e. war;

- the delay in the timely recruitment of qualified expatriates and recruitment of less motivated personnel;

- contract technicians assume too much administrative duties over teaching and advisory responsibilities due to the lack of administrative and management personnel;

- contractor personnel problems: roles of technical staff, project manager or COP not sufficiently delineated; not communicating deadlines for personnel renewal or non-renewal of contract;

- contractor delegates teaching duties to less qualified, less trained junior staff.

Commodities:

- procured equipment is inadequate, too sophisticated, too abundant; inadequate facilities for agro-mechanics operations, improper sizing of equipment; inadequate procurement of spare parts;

- haste in purchasing inappropriate equipment because of the fiscal year deadline and without consultation with users;

- control and management of equipment causes conflicts between expatriate and local staff;

- inflexibility of stipulation to purchase U.S.-made equipment;

- inadequate office space and construction of houses.

Documents Available: Rating: Satisfactory

PP 1971, 1973, 1977
Project Appraisal Reports 1976, 1977
Project Evaluation Summary 1979
Special Evaluation Report 1978

PROFILE 14

TANZANIA
Seed Multiplication Project #6210092
1970-1982
$9.5 million, Grant

Constraints the project attempts to overcome:

This project aimed at aiding the Ministry of Agriculture to promulgate the seed act designed to regulate seed multiplication and distribution and to encourage crop diversification as well as to develop new and improved varieties of seeds for common crops. Tanzania required the seeds act regulation in order to insure that only genetically pure, disease/weed free seeds enter Tanzania. Seed farms and seed testing certification laboratories were needed in order to carry out seed multiplication programs. Training for specific technical needs was provided and the project had a strong operational plan for procuring the necessary technologies and equipment.

Technology used, delivery system and final output:

Heavier emphasis was laid on procuring technologies and establishing demonstration farms for research purposes than on technical training and extension. However, when village trials proved the least purposeful, the project shifted its emphasis in mid-stream to developing an expanded training program for Tanzanians. Steps were taken to shorten the time required to complete formal training and to expand the disciplines in which training was most needed, particularly in agro-mechanics and maintenance. The project trained 27 participants in the U.S. and assigned them to appropriate positions of which two were extension specialists at the M.Sc. and B.Sc. level. Others were trained to operate the seed certification system. The four U.S. contractor extension specialists originally provided in the PROP were deleted from the project and substituted by one production agronomist with extension duties in carrying out in-service training at the demonstration farms.

All training targets were successfully achieved and recommendations given during the project were implemented satisfactorily. The selection of appropriate participants for training was considered very good. Mid-project manpower needs called for strengthened in-service training of seed processing operators, seed analysts and inspectors.

Constraints developed during the course of the project:

Towards the end of the 1979 phase, evaluations still suggested the need for more training in research, extension and marketing skills. Other constraints were:

- an insufficient number of trained agro-mechanics and maintenance/repair personnel slowed progress in using the agricultural implements;

- the lack of trained field inspectors and seed analysts caused a lag in the seed certification program;

- the equipment requirements of the project were too large with not enough emphasis on supportive training and maintenance to care for the equipment;

- participant training at the B.Sc. level in U.S. universities offer less opportunities for personal contact and in-depth training in specialties than in graduate school;

- some courses at the B.Sc. level were not "relevant" to the needs of participants, yet basic degree requirements can only minimally be tailored to backgrounds;

- time to complete degrees was considered insufficient by the Ministry of Agriculture which refused to "certify" the degrees;

- in-country training needs to focus more specifically on the operations in which staff will be involved;

- inappropriateness of contractor-selected technicians created poor relations among team members and government officials;

- the lengthy procurement process of commodities and lack of proper cultivators delayed implementation phases of the project.

Documents Available:

PP 1969, 1975, 1977
Annual Report 1976
Project Appraisal Reports 1974, 1977
Project Evaluation Summaries 1978, 1980
Special Evaluation Reports 1975 - 1980
Audit Report 1980

Rating: Very Satisfactory

PROFILE 15

TANZANIA
Educational Materials & Advisory Services Project #6210065
1965-1975
$0.9 million, Grant

Constraints the project attempts to overcome:

This project provided advisory services, instructors, participant training, teacher education and educational materials to support the needs of the Ministry of National Education's program of "Education for Self-Reliance." New educational policies were directed more towards the rural and agricultural population with a focus on vocational training and basic skill training at primary, secondary and post-secondary school levels.

Technology used, delivery system and final output:

In order to improve the basic and vocational education in the country, this project developed the following programs:

- technical advisors improved agricultural education in secondary schools;

- an agriculture college was upgraded to a 4-year degree granting institution;

- participant trainees were trained in the U.S. to become instructors in agriculture colleges and vocational training institutions;

- in-service training for primary teachers was given;

- libraries were expanded.

Peace Corps Volunteers provided demonstrations in 30 upper primary schools in using limited resources in a variety of activities as educational needs changed and expanded.

Constraints developed during the course of the project:

(Documents Unavailable)

Rating: Insufficient Information

PROFILE 16

TANZANIA
Vocationalization of Primary Schools Project #6210139
1976-1980
$0.3 million, Grant

Description and Accomplishments

This project introduced vocational training at the primary school level in rural Tanzania. The program provided students with basic skills for community development supplemented with formal training in carpentry, masonry, and metalworking for grades 5 to 7. Teachers worked with the project director and skilled craftsmen of the local community to devise programs of instruction relating to village needs and resources. A teaching handbook was prepared with instruction on making and using handtools for the above three subject areas. Community participants identified specific village requirements for materials.

This pilot program sought to test the feasibility of training rural primary school students in vocational skills. The communities supplied building materials and supplies while the Tanzanian government contributed teachers and some construction costs. The contractor, Operation Bootstrap-Tanzania (OBT), provided supporting services.

While no evaluation documents are available on this project, the project represents one model for primary level school training in the African rural schools. Technical skills learned in this vocational training ultimately relate directly to the agricultural communities in equipping farms with appropriate and low-cost implements.

Documents Unavailable

Rating: Insufficient Information

PROFILE 17

UGANDA
Agriculture Extension Project #6170012
1963-1975
$2.3 million, Grant

Constraints the project attempts to overcome:

This project aimed at improving extension programs to make agricultural knowledge available to one community in each of Uganda's 106 counties. These efforts address the general lack of techniques and management practices among farmers and the social pressures working against the more progressive farmers. The project emphasizes training for extension agents, extension supervisors and farm institutes.

Technology used, delivery system and final output:

Two levels of training were provided: 1) participant training in the U.S. for subject specialists and future supervisors of extension programs; 2) training of extension agents and farmers in methods of instruction and experimental farming practices given at District Farm Institutes; 3) regional conferences and workshops in farm management planning. Two extension programs involved program planning at the county level with agricultural officers involved in the planning process, and an extension saturation project operating in Uganda's districts using intensive extension approaches to raise farmers' incentives to increase production. These included method demonstrations, particularly in planting and chemical weed control, and result demonstrations both using and not using fertilizer. Visual aids and instructional material were developed in all phases of the program.

The project successfully achieved its targets: 115 extension projects in 92 of the 106 counties; 1200 extension agents trained; and several thousand method demonstrations a year were given to improve farming practices, reaching some 102,000 people. Young Farmers clubs quadrupled, and farmers showed a noticeable increase in their use of newer methods. A favorable cost/benefit ratio of $2.00 per farm holding would have been incurred by the host government.

The project produced reservations about the effectiveness of the extension agents and their support of practices they were supposed to promote. Their effectiveness in duty was influenced by logistics, instructional materials available, and their promotion within the government.

Constraints developed during the course of the project:

Administrative Levels:

- supports from government, such as transportation and housing, for field staff were inadequate;

- shortage of qualified staff;

- extension plans of work for communities were behind schedule;

- weak collaboration of participants in planning content of program;

- lack of incentives or promotion pay for agricultural officers to carry out their duties efficiently.

Field Extension;

- too few agricultural assistants (AAs) in field operations full-time meant not reaching farmers with incentives or demonstrations;

- social and cultural impact of project difficult to measure;

- "give me" attitudes of farmers and their attitudes towards livestock ownership were considered to hold back progress of project;

- many extension staff do not demonstrate strong belief in their extension role;

- low economic returns of crops produced compared to labor and management efforts involved.

Available Documents:

PP 1968
Progress Report 1970
Project Appraisal Reports 1970 - 1972

Rating: Satisfactory

PROFILE 18

UGANDA
Agricultural Education Project #6170023
1964-1977
$2.3 million, Grant

Constraints the project attempts to overcome:

This project upgraded agricultural education programs at schools which train administrators and field workers for Uganda's agricultural extension program. The schools had lacked the capacity to train enough extension professionals in mechanized farming, animal husbandry and general agriculture. A long-term approach to improving the institutions became the principal strategy for operation. The project also addressed developing more involvement of women in agriculture training through home economics.

Technology used, delivery system and final output:

The AID contractor, West Virginia University, assisted in curriculum reform in three agricultural schools while participant trainees were trained in the U.S. The schools developed a 2-year certificate program and a 3-year diploma program for exceptional students. In-service extension training was developed for field staff and libraries and other information services were strengthened. Enrollment in the college increased substantially but caused understaffing of trainers. Six percent of diploma graduates were women. Curricula were improved in crop and animal production and management practices. The teaching staff of the college increased from 21 to 51 Ugandan instructors.

While the project trained a surplus of assistant agricultural officers, manpower studies indicated a need for lower-level agricultural assistants -- their training starting during the project. Some targets were determined only after a broad manpower study was completed during the project.

Constraints developed during the course of the project:

Many of the constraints referred to design issues in developing project targets:

- baseline manpower data needs were not available for planning project;

- the need for trained lower-level agricultural assistants (AAs) were discovered mid-way through the project;

- understaffing of trainers was due to unanticipated enrollment increases in colleges;

- the increasing demand for more agricultural officers in other activities is not addressed by the creation of more established positions in the Ministry budget estimates.

Other constraints were:

- selection of participant trainees by government was slow;

- the mediocre performance of the host government in planning and providing inputs slowed progress.

Available Documents:

PP 1968
Project Appraisal Reports 1969 - 1971
Final Report

Rating: Very Satisfactory

PROFILE 19

UGANDA
Graduate Agriculture Faculty Project #6170060
1971-1976
$1.1 million, Grant

Constraints the project attempts to overcome:

This project assisted in developing postgraduate programs in Agriculture at Makerere University, Kampala to serve the needs of East African countries. Major curriculum emphasis was on the fields of crop production and rural economy. Holders of advanced agricultural degrees would then be responsible for strengthening research and communication systems and extension linkages in those countries.

Technology used, delivery system and final output:

Participant trainees received Ph.D. degrees in agriculture from U.S. universities to return to staff the Makerere University postgraduate program. With the technical assistance of U.S. university contractors, the University provided M.Sc. and Ph.D. programs while developing and effecting a strong applied research network between the institution and other government agencies concerned with agriculture, livestock and marketing. A demonstration farm was established for this purpose, and in-residence training enabled students to have a close link between the academic and partial aspects of their programs. Other donors, such as the Rockefeller and Ford Foundations, provided scholarships, staff salaries and equipment to the project. Degrees awarded contain a mix of both research and academic work. Project targets were successfully met with approximately 80% of the faculty staff being Ugandan by 1978.

Constraints developed during the course of the project:

(Documents Unavailable)

Rating: Insufficient Information

Other examples of relatively successful projects in Asia and Latin America follow and exemplify methodologies in using radio, school gardens and nutrition education with primary school children and their families.

PROFILE A

Thailand Rural Education Project #4930162
1964-1977
$8.3 million, Grant

This project aimed at improving rural education at various levels from elementary to adult education. Significant developments were evident during the adult education component whereby 45 Mobile Trade Training Schools (MTTSs) were expanded accompanied by accelerated teacher training. This nonformal education approach addressed the need to upgrade skills of the rural artisan. The MTTSs trained 56,000 youth and adults in various trades (auto mechanics, dressmaking, radio repair, etc.) and offered a local alternative to the traditional apprenticeship system. The MTTSs were absorbed into other Lifelong Education Centers which annually enrolled 40-45,000 students.

The project showed several success factors: (1) short-term vocational training can positively effect rural development; (2) such nonformal education integrates and acts as a catalyst for developing broader development programs; and (3) although beneficiaries were not actual participants in the project design, the project had direct outreach and initiative for their participation.

PROFILE B

Honduras Nonformal Rural Education Project #5220108
1976-1979
$0.4 million, Grant

Description

Since the Ministry of Education was constrained by the lack of trained personnel able to plan and implement rural educational programs, this project focused on developing educational programs for primary schools and adult learner levels in agriculture, health and nutrition. The project developed Ministry skills in (a) conducting field need assessments within rural areas; (b) designing nonformal primary educational curricula tailored to local community needs; and (c) producing supplementary instructional materials for children and adults. Departments of adult education and primary education operated an agricultural instruction program. Other project activities included producing audio-visual materials to complement nonformal instruction. Two-year participant training was conducted in applied educational research in several Latin American countries on skill needs of children and adults. A cadre of teachers, promoters and instructors were trained for these above programs.

While the AID/Government of Honduras approach was geared to functional skills, they faced the UNICEF change of emphasis in a more traditional literacy approach.

A total of 27 learning programs were implemented to benefit 9,000 adults. They were conducted in 157 primary schools affecting 28,215 children. No data is available to indicate whether the beneficiaries actually increased their knowledge or skill levels. In-service training for preparing nonformal education project staff was, however, found to be effective. On-site in-service training was given to 657 rural primary school teachers in 157 schools. Results show that improvements were made in the use of "psycho-social methods" to encode messages in posters and other visual literacy materials. Problems were encountered in presenting soil erosion and chicken raising principles in unrealistically designed illustrations and in motivating learner groups with the literacy material.

PROFILE C

Paraguay Rural Radio Education Project #5260502
1976-1979
$0.6 million, Grant

This project developed radio programs designed for out-of-school children who have had only 3-4 years of primary schooling. It intended to save the Government of Paraguay construction costs and money for additional teachers' salaries. Radio instruction concentrated on Spanish, Social Studies, Mathematics, Health and Nutrition. Radio education specialists were trained for overall planning and design; instructional tapes and work books were developed for use by the government and private radio stations.

Evaluations wrote that the project implementation was delayed two years due to problems of timely contracting of technical advisors and the inclusion of a one-year pre-testing phase. Project accomplishments included a fully equipped radio station, technical and administrative personnel trained, and 1,080 radio programs with back-up material including over 10,000 private books. Evaluation instruments determined the degree of listener interest and learning. Participating students increased from 700 in 1978 to over 1,800 in 1980. However, the percentage of students who passed their final examinations declined to 54% (1979). Causes of decline were due possibly to a decline in materials quality, the recruitment of unprepared students, program expansion, or the monitors' loss of enthusiasm. Seventy learning centers had limited effectiveness due possibly to the slight supervision by monitors. Despite its successes, the project failed to achieve some of its goals of increasing access to primary education. Evaluators note the need to design the project paper jointly with host country counterparts with the paper translated in the host-country language.

PROFILE D

Chile School-Family Garden Cooperative Project #5130314
1970-1980
$0.2 million, Grant

This project expanded CARE's program to introduce low-cost intensive gardening techniques and to improve primary school children's nutritional habits in six regions of the country. One teacher from each of the 1,100 primary schools received special training in agriculture and nutrition from the Ministry of Education and Peace Corps volunteers. Additional on-the-job training was given in gardening and small animal breeding as well as methods to teach nutrition in the schools. Sixty thousand students in grades 3-8 established school gardens and were further provided seed fertilizer and foods to start their own house gardens. Inputs included beekeeping and rabbit production. Eight thousand house gardens were established with parent participation in health and nutrition classes. Cooking classes were also offered for students and adults. A National Institute provided more intensive training for those interested.

This project actually provided garden inputs to 70 more schools and affected more families than planned. The project's success appears hinged on the full support and inputs of the Chile government in organizing training and providing necessary funds.

PROFILE E

HAITI: Training Primary School Teachers in Nutrition Project #6210077
1975-1977
$0.1 million, Grant

This project attempted to improve the dietary practices and nutritional status of children by training 240 primary school teachers and by developing curricula for schools, implemented by nutritionists and agricultural extentionists. Nutritional profiles of children were determined through surveys with the objective of making long-term public sector approaches to improving dietary practices. Each school had a vegetable garden and hygiene program for parents and community involvement. Seventy three schools received PL 480 food and were compared in dietary effects on children to schools not receiving PL 480. The project evaluations found that nutrition education for teachers increases the child's awareness of nutrition. However, the effect on the nutritional status of children is negligible.

PROFILE F

Guatamala Primary School System Improvement Project #5200192
1968-1976
$8.4 million, Grant

This project developed pilot rural primary schools to instruct children, parents, and the wider community in agricultural demonstrations, health, nutrition, home economics and industrial arts. Low cost texts using newsprint booklet format were produced for students. The pilot school developed and tested curricula and teaching methods oriented to a rural setting with instruction conducted outside the conventional classroom setting. Teachers and school supervisors were given in-service training in instruction and supervision.

Attendance in the two project schools increased 40% over traditional rural schools. Evaluation results for the Guatamalan government reported that teachers in industrial arts and home economics were deficient.

A loan increased construction of schools to 125 rural primary schools and expanded teacher training programs with practical instruction in agriculture, health, nutrition, home economics, language and industrial arts. New regional schools were built to serve as centers for rural vocational education, adult education, and in-service teacher training, though only 55% of planned construction targets were carried out.

ANNEX III: Post-Secondary National Institutions in Sub-Saharan Africa Offering Formal Agricultural Education and Training Programs, by Country

ANNEX III: POST-SECONDARY NATIONAL INSTITUTIONS IN SUB-SAHARAN AFRICA OFFERING FORMAL AGRICULTURAL EDUCATION AND TRAINING PROGRAMS BY COUNTRY a/

(See Notes following for definitions)

Country	Certificate Programs	Diploma Programs	Degree Programs	Advanced Degree Programs	Total Number of Programs	Total Number of Institutions
Angola			3		3	3
Benin	1	2	1	1	5	4
Botswana	1	1	1		3	1
Burundi	1	1	1		3	3
Cameroon	7	8	2		17	12
Cape Verde					0	0
Central African Republic	1	2			3	3
Chad	1	3			4	4
Comoros					b/	b/
Congo-Brazzaville	2	1	1		4	3
Djibouti					0	0
Equatorial Guinea					0	0
Ethiopia	2	2	2		6	6
Gabon		1	1		2	2
Gambia	1				1	1
Ghana	10	3	3	2	18	13
Guinea	3	5	1		9	9
Guinea-Bissau					0	0
Ivory Coast	2	2	1		5	5
Kenya	4	1	3	2	10	8
Lesotho	1	1	1		3	1
Liberia	2	1	1		4	3
Madagascar	7		1		8	8
Malawi	1	2	2		5	4
Mali		2	1	1	4	2
Mauritania		1			1	1
Mauritius		1	1	2	4	2
Mozambique	1		2		3	3
Namibia		2			2	2
Niger	2	2	1		5	4
Nigeria	21	29	10	10	70	57
Rwanda		3	1		4	4
Sao Tome and Principe					0	0
Senegal	4	5	1	1	11	10
Seychelles					0	0
Sierra Leone	2		1		3	3
Somalia	1		1		2	2c/
Sudan	6	5	4		15	14
Swaziland	1	2	1		4	2
Tanzania	12	14	1		27	20
Togo	1	3	1		5	2
Uganda		4	2	6	12	6
Upper Volta		6	1		7	6
Zaire		3	2	2	7	5
Zambia	3	2	1		6	5
Zimbabwe	3	2	1	2	8	6
TOTAL	104	122	57	29	313	249

NOTES

Certificate Programs: Formal post-secondary vocational and technical training programs, generally for extension agents and other low-level technical support staff, which award a terminal certificate. (Graduates are not qualified to proceed directly into further programs of formal education in their fields.) Duration of the programs is generally 2 years, but training may vary from 1 to 3 years in length.

Diploma Programs: Formal post-secondary education programs, generally for intermediate-level technical staff, which award a diploma qualifying graduates to proceed directly into further programs of formal education in their fields. (Diplomas granted by universities are often equivalent to the A.A. degree granted by American junior colleges.) Duration of the programs is generally 3 years but varies from 2 to 3 years in length.

Degree Programs: Formal university programs, generally for intermediate and senior-level technical and managerial staff, which award a degree equivalent to the B.S. degree granted by American universities. The program of studies usually lasts 4 years, and graduates are qualified to proceed directly into advanced degree programs (see below).

Advanced Degree Programs: Formal university programs, generally for senior staff, which award M.S., M. Phil., or Ph.D. degrees which are equivalent to the M.S., M.A. and Ph.D. degrees granted by US Universities. Programs vary in length.

a/ Source: B.E. Swanson et al., International Directory of Agricultural Education Institutions, Volume I: Africa, July 1981, Bureau of Educational Research, College of Education, University of Illinois at Urbana - Champaign. Directory data are based on questionnaires completed in 1979 and 1980 and are incomplete for many countries. The programs summarized above prepare students in the fields of agriculture (i.e. all aspects of crops and livestock production systems), veterinary medicine, fisheries, forestry, home economics, and training for all the above disciplines. The listing does not include nonformal education centers for farmer training (e.g. the 32 regionalized farmer training centers in Kenya).

b/ The Agricultural Education Center in the capital city of Moroni, which closed due to financial difficulties in the early 1970s, is expected to reopen in 1983 or 1984.

c/ Does not include the Agricultural Secondary School in Afgoi.

ANNEX IV: The Nonformal Education Approach

NONFORMAL EDUCATION APPROACH

Growing awareness of nonformal education (NFE) and its contribution to development has led in recent years to increased interest in supporting NFE on a large scale. A number of LDC governments and international donors are attempting to develop massive nonformal education programs. Yet, the very characteristics which have made nonformal education attractive make large scale support of NFE activities quite difficult.

NFE programs enjoy varied sponsorship, from local community efforts to underwriting by international groups, both secular and religious. For instance, Lesotho has some 800 separate organizational units at work, usually with little awareness of one another's existence. Such programs tend to use existing facilities and buildings instead of requiring large fixed cost investments. The programs exist to satisfy immediate learning needs, and often disappear once their time is past. Administrative overhead costs are minor; small unit size allows flexibility and encourages innovation.

Alternatives to the schooling model in the poorer countries are needed if skills training and education is to reach the roughly 85% of the population not having access to the formal centralized educational structure. Traditionally, training in agricultural and other rural development skills has been neglected by the formal schools at primary and secondary levels. Schools are run by a bureaucracy, by an elite determined to maintain central control in development. Often, the energies of millions of rural people have not been brought into the planning and implementation activities of programs affecting rural communities due to this centralized control. As a result, the NFE movement sought to address the more humanistic and technical skill issues of development enabling rural peoples to assess, define and plan their own development strategies at micro-levels.

In this respect, nonformal types of training concentrating on agricultural reforms can focus on training and resource development, training men and women agriculturalists to transform their private sector industries. Formal institutions can participate in nonformal training through outreach programs which extends the service of the institution to the community. In turn, beneficiaries of services can be encouraged to redirect and help modify the training capacity of the institution. In this way, the nonformal training function offers two-way benefits within the community. Functions of NFE approaches could have the following results:

- low-cost construction of necessary facilities using local materials:
- localized adaptation and refinement of implements, tools, and other appropriate technologies related to agriculture;
- training in production-oriented uses of facilities, with products which favorably influence health and nutrition status;
- attitudinal development of change toward the environment and nutritional status;
- identification and integration of male and female roles in agricultural production;
- understanding and practice of improved food consumption and nutrition;

- awareness training for developing family-centered managerial and decision-making competencies affecting food production and use;
- ongoing instructional materials development reflecting viewpoints about rural realities.

Characteristics of NFE

Given these outcomes, the following characteristics of nonformal education that would make it linked to community and agricultural development as well as to formal education are worthy of discussion.

1. Institution-based training linkages between local centers for training youth and adults, the main learning clientele, and the family farm plot. Such grass roots linkages make agriculture more respected and more organized. Important basic incentives and rewards could develop through the continual upgrading of adults in specific skills. If community-based, such incentive-producing tactics could also set the tone for formal youth training in agricultural skills. With adult support and organized community groups, training of post-primary school youth would integrate them into their home plots as future motivators and producers.

2. Nonformal training in agriculture linked to general rural community development through the modular approach to learning. This approach will hopefully sustain the interest of youth and adults by: a) demanding direct application of tasks and immediate feedback of results, b) ensuring continual performance-related assessment of tasks by learners, and c) taking place both within institutional environs as well as family/community farm plots. The mix between modular learning in and out of school is meant to produce tangible kits of instruction. These will be transportable from one instructional environment to another as well as from learner groups to non-learner groups in the community. Modular learning approaches can provide interesting kinds of interventions using mass media with farmers, particularly radios and tape recorders provided other conditions are present. All these are meant to be interest-sustaining and motivational.

3. Networks of information , as well as activities, between training programs within the community and within institutions. Baseline surveys conducted by adult farmers along with youth trainees concerning technology needs, attitudinal difficulties, etc., will generate information for ministry use in developing planning and statistical competencies. Such information raises rural public awareness, for instance, the need for community funding of small projects. This networking can be translated into actual training activities which build furniture or buy educational supplies, contributing where the government is unable to meet burdensome financial goals. Training networks afford youth opportunities to apprentice with private entrepreneurs in order to build equipment for their farms and homes, again with the effect of sustaining motivational levels and participation of youth trainees. Related to informational links is the task of agriculture research to introduce and establish findings in small farms as well as in schools, thereby incorporating local farmers' discoveries. Students could then be used to extend improved practices and to improve upon technologies. Getting local farmers involved in this "horizontal" exchange of information and to apply what is known will offer significant rewards.

4. Nonformal training linked directly to employment. While in many countries, agriculture has represented something to escape from, NFE approaches at all levels of the educational system can make people "feel good" about their improved production and bring financial rewards. Job development strategies are considered crucial factors for the least educated youth while graduates of secondary level technical schools usually become trainers or extension workers. Hence, a strong link of "school" activities in agricultural training at primary levels to community needs will help to prepare youth for income-producing jobs on their farms.

In summary, linkages between agricultural training and community development can be understood to be:

- family- and community-centered;
- incentive-building;
- non-formal and adult education-oriented;
- interest-sustaining;
- translating information into activities; and
- employment-related.

Project goals for developing training for rural communities must therefore accomplish the following outcomes:

- establish learning modules which solicit application, evaluation and revision of innovative methodologies and tasks;
- develop economic and social incentives to integrate youth in all aspects of farm and rural family living;
- provide networks of information to sustain interest of farmers and ensure that aid reaches them;
- ensure employability of graduates and increase employability of those outside of training impact;
- make respectable the agricultural profession as a basis for citizen and family welfare through attitudinal change; and
- ensure that facilities construction will meet the relevant and low-cost criteria of a functional and accessible community center.

An example which encapsulates rather effectively the incredients of a NFE approach is the Basic Village Education Project (BVE) in Guatamala. This experimental program for subsistence farmers did not require literacy for participation. Radio was used alone and in combination with various other communications media to study the effectiveness and relative costs of selected media mixes potentially useful in development programs. Specific combinations included: 1) educational radio programming only; 2) radio programming reinforced by farmer meetings and other interpersonal activities conducted by a BVE "monitor" - a local person; 3) radio, monitor activity, and limited assistance from an extension-type agronomist; 4) monitor activity only.

Results of a rigorous evaluation of the BVE program indicated that measurable change does indeed take place over a two-year time span, the period of the experiment. It appeared from the findings, however, that there is no single most effective media combination for all situations. The potential effectiveness of the various media combinations varies. Reinforcement by agronomist and/or monitors are needed to maximize impact of radio as an information source, and to translate that information into positive behavior change within a two-year period. The analysis indicated that most BVE treatments have the potential to yield substantial economic returns to both the farmer and society as a whole.

Elements of the BVE educational program considered most crucial to achievement of the positive results reported above included:

- systematic, detailed, relevant planning prior to program initiation, including collection of good baseline information;
- an integrated educational programming system: message development, materials production, message delivery, feedback;
- a programming philosophy focused on the farm family;
- a continuing program of staff development and reinforcement.

These same elements are considered to be those with the most significant implications for programs in other sectors and/or settings.

Constraints to NFE Approach

1. Economic Level

- returns from project costs and investments only measurable over a longer period of time;
- baseline data on micro-economic levels of community production are often lacking or unable to be incorporated into predictive and comparative tools of conventional economic analysis.

2. Policy Level

- operational plans of governments' development plans often reflect weak commitments to funding smaller, scattered, rural-based programs where attendance may be random and unorganized;
- NFE is often viewed as a separate approach to formal education rather than as a strategy to be integrated into all types of educational programs;
- planning strategies not always as consistent as for formal education due to problems of accrediting a program's value, for instance, for entry into formal training programs.

3. Instructional Level

- relating literacy learning effectively to technical skill development and problem-solving skills requires careful instructional and materials design where trained manpower may be limited;
- maintaining learner motivation in flexible programs which may not have immediate tangible outcomes and rewards requires attention to incentives;
- designing materials to be replicable in other settings and conditions requires consideration of the different literacy levels of participants as well as different purposes;
- developing a balance between developing problem solving, group processing, and technical production-oriented skills means giving attention to delineating and defining local needs carefully.

More emphasis needs to be placed on the extension of the formal system into community outreach with higher level institutions setting the pace. Practical field training should be linked to school staff as a means of enhancing the effectiveness of outreach programs. Feedback from the field brought to the institution will then improve the relevancy of the institutions' instructional programs.

ANNEX V: A Review of CDSS Statements Regarding Agricultural Education and Training

A Review of Agricultural Education Policy Outlined in Individual CDSSs

Botswana (1983)

USAID/Botswana has outlined a strategy which will promote employment generation and solve workforce training constraints. The lack of skilled manpower and qualified personnel to staff positions in all sectors is identified as a major constraint to implementing projects which will create employment. USAID will assist the Government of Botswana (GOB) in conducting a survey on manpower requirements throught the year 2000. The workforce will be upgraded through: training Batswana government personnel in-country, in the U.S. and in third country institutions; training of personnel for teaching, training, and administration positions in primary, intermediate and certificate level institutions; expansion of vocational and nonformal education opportunities for adults and unemployed youths. The Applied Agricultural Research Project will improve utilization of inputs and effectiveness of extension services. Support will also be given to adaptive farming systems research and development of effective distribution systems of farm inputs. USAID will encourage the participation of women in Ministry of Agriculture extension activities through the Women's Extension Services.

Burundi (1983)

USAID/Burundi will focus on assistance which will expand on and improve network extension and delivery systems and assist the development of farming systems research. USAID will establish extension systems (at present, virtually non-existent) which will "maximize family-to-family contact, particularly through use of local demonstrators/teachers, with particular emphasis on women." AID will address the need for research in food crops through support of the Department of Agronomy, and the need for increasing the participation of women in extension services, through extension projects proposed to commence in FY 83.

Cameroon (1983)

USAID/Cameroon will focus its assistance on developing institutions which support present and future food productivity activities. Emphasis will be on institutional development, applied research and technical transfer, and human resource development. The major effort over the next decade will be directed towards improving the planning and statistical capability of the Ministry of Agriculture. Assistance for the improvement of the institutional, research, and development capabilities of the Institute of Agricultural Research, the Institute of Zootechnical Research and the Institute of Medical Research will be provided. Agricultural extension services, technology transfer, and participant training will be supported through improvement of mid-level agricultural schools, which train extension officers, and adoption of technology transfer packages. Curriculum will be developed for higher agricultural education institutions and primary education institutions which address the needs of smallholder farmers and the concerns of the rural population.

The Gambia (1984)

USAID/Banjul will emphasize programs and policies that will have the most direct impact on those responsible for agricultural productivity, the rural farmers and their families. This will be achieved by strengthening and increasing participation in farming centers and regional agricultural associations. Mass media will be used to promote education of rural populations in forestry conservation practices. The CLUSA Cooperative Development project aims at strengthening the ability and autonomy of rural villagers in decision-making in such areas as marketing strategies and purchasing and utilization of inputs. As there are a number of other donor agencies and development institutions which are active in formal education development initiatives, AID's contribution to the numeracy and literacy campaign will be achieved through support of the Non-Formal Education Center.

Ghana (1983)

USAID/Ghana has identified the increase of food crop production to be its most important objective. There is concern for the need to develop institutional mechanisms for transfer of inputs, technology, and extension services. MIDAS Phase II will improve performance of actual delivery of inputs and services. In the area of human resource development, AID assistance will concentrate on improving the administrative and management ability of planning and implementing agencies of the Government of Ghana (GOG). Additional assistance in this area is dependent on the success of the GOG in improving its economic stability. Women in Development (WID) projects will be discontinued as projects for small farmer agriculture and appropriate technology include active participation by women.

Guinea (1983)

USAID/Guinea's strategy objective is to increase access of small farmers to the benefits of agricultural research and extension. This will be achieved by developing the capability of agricultural institutions and by continuing assistance to agricultural research, training, and extension initiatives with increased emphasis on technical assistance and training. Baseline data for extension and research will be acquired through a farm-level survey of subjects including agricultural methods, yields, and labor productivity. AID is also supporting the agricultural research institute near Kindia.

Guinea-Bissau (1983)

USAID/Guinea-Bissau has identified the extreme shortage of trained personnel, on the ministry, extension and technician levels, to be one of the most critical constraints to increased agricultural production/productivity and attainment of food self-sufficiency. USAID has conducted a Manpower Training Needs Survey (FY 81) which ranks Guinea-Bissau's training requirements and has initiated manpower training through Phase II of the Africa Manpower Development Project (AMDP, #698-0384). USAID will train 15-20 Guineans per year during the period of FY 82 - FY 86 under this program. In addition to this broad manpower development project, AID/Guinea-Bissau agricultural extension training will be included in the Rice Production project to teach use of fertilizer and improved rice seed varieties. Also under the Rice Production project, women will be selected from the rural villages to become trained and employed as extension agent trainees. They will also be encouraged to participate in AID's special training program (AMDP, Phase II) for Portuguese-speaking Africa.

Kenya (1984)

USAID/Nairobi has identified its development objective as increasing overall economic growth, with promotion of an increase in smallholder farmer productivity in particular. This will be achieved through improved efficiency and effectiveness in appropriate technology transfer. Emphasis will be placed on relevant research, the effectiveness in conveying the knowledge to the farmers, and the ability of the research and institutional support entities to receive feedback and input from the farmers. AID's support of Egerton College, Harambee Institutes for Technology, and Village Polytechnics will be through development of curricula which will be relevant to skills needed by workers in the agricultural sectors. Although USAID has no plans in the immediate future to propose any new funding of formal education, it will continue to promote personnel training as an integral and important part of on-going projects. AID plans to promote reorientation of capabilities developed in such projects as "Agricultural Systems Support Project", "Rural Planning II", and "Dryland Cropping Systems" in order to encourage direct impact on the smallholder farmer.

Lesotho (1984)

USAID/Lesotho has identified that a need for "more systematic manpower recruitment and training is becoming increasingly apparent", specifically for higher level agricultural officials. Through the Manpower Development and Training Project, USAID will assist the Government of Lesotho (GOL) in its long-term assessment of manpower requirements and in establishing an education sector data center. Also through this project, higher level agricultural training will be developed at the Lesotho Agricultural College. Currently, AID is providing an agricultural curriculum development specialist to the National Teachers Training College. Support of nonformal education institutions is provided by Phase II of the Nonformal Education Resources Project and the Institute of Extra Mural Studies Project. Projects being considered for nonformal education assistance in 1984 may include radio education and vocational education, especially extending to reach rural populations. The Basic Extension Agricultural Services Project will reflect the orientation of the Ministry of Agriculture away from field specialists to training of "generalist" extension workers.

Liberia (1984)

USAID/Monrovia is dedicated towards an integrated plan to increase productivity in the agricultural sector including support of a mix of components such as analyses and planning, research and training, improvement of rural information systems, and development of credit systems. AID will support the Central Agricultural Research Institute (CARI) financially and managerially, in order to reestablish its long-term capability. Investment in medium and long-term human resource development and productivity will be encouraged. Plans are being laid to add activities which will "disseminate tested and proven technology packages" and "encourage wide-scale productivity through farmer associations and rural-based business institutes."

Malawi (1984)

USAID/Malawi's main emphasis is to increase and accelerate the rate of increase in productivity of the smallholder farmer. The smallholder farmer, viewed as having the most potential for immediate increased production capabilities, will be reached through agricultural extension services. AID's involvement in these extension services will include development of training in crop production and farming systems, in addition to training of teachers and specialists to supply the manpower needs of the extension services. The overall manpower development objective is to improve the quality and quantity of the Malawian institutional capacity. Priority will be placed on support of government entities that require personnel trained in agricultural sector skills.

Mali (1984)

USAID/Mali will encourage agricultural education and training programs that are consistent with GRM human resource development plans without compromising the ultimate goal of increased productivity. The main emphasis will be on providing in-country training in skills which will improve crop and livestock production. Functional literacy programs are viewed as valuable in aiding the non-French speaking population in acquiring improved agricultural technology information. AID will provide development administration skills to 60 Malian leaders and will monitor the placement of those receiving participant training in order to ensure they are returned to key project administration positions. All current training programs will be maintained at the present level.

Mauritania (1983)

USAID/Mauritania has conducted the Rural Assessment Manpower Survey (RAMS) which has identified the critical need for trained manpower in order to meet increased food production objectives. USAID has proposed a Human Resource Development Project for FY 82 which will strengthen the agricultural training school and agronomic research center through improved curriculum, staff capability, teaching methodologies, and necessary facilities. USAID plans to make maximum use of the Sahel Manpower Development Project (SMDP) in order to provide U.S. graduate and undergraduate training in agriculturally related subjects. In addition to these specific manpower initiatives, all the AID projects contain training components. The training needs of Mauritanian women will be given special consideration as projects are designed.

Niger (1983)

USAID/Niger's "human resource development efforts will be directed towards achieving training self-sufficiency at both the national and local levels in AID priority sectors." Training will be provided through components in such projects as Agricultural Production Support, Cereals Research, Rural Sector Human Resources, Niamey Department Development, and support to the Literacy Service projects. Phase II of the Niamey Department Development (NDD) will place more emphasis on the Couples Training Center as this extension service was found to be effective in increasing the trainees' crop yields. AID's experience has also proven the necessity for a training component as part of Niger livestock development programs, and plans to assist the Government of Niger (GON) during 1983-1987 in developing initiatives which will help organize and educate herders, specifically through cooperatives. An overall manpower survey will be conducted to identify future agricultural manpower needs.

Rwanda (1983)

USAID/Rwanda has identified the strenthening of agricultural extension services and the strengthening of the links between research and extension to be essential elements needed in Rwanda to increase productivity of the land. The current Government of Rwanda (GOR) Education Reform Policy is supported by USAID, and may prompt assistance towards the development of a network of post-primary technical and vocational institutions dealing with agriculture, health, nutrition, and technical or management skills. Current projects provide in-country personnel training at the level of field technician. U.S. and third-country training is also included to train host country counterparts. Attention will be given to training of personnel for cooperatives, which are seen as one essential mechanism in transmitting education and promoting rural development. USAID is prepared to follow up on assistance to Rwanda's Agricultural School for Women by promoting training of women at post-primary schools. USAID is also involved in developing curricula for rural education.

Senegal (1984)

USAID/Dakar has placed its emphasis on measures directed toward the Senegalese government's "policies and institutions that directly affect the rural producer today and over the next five years" and not toward the "formal school system." The Mission also has chosen to encourage productivity through emphasis on upgrading the extension services and improving research facilities as well as strengthening local producer groups and the private sector in rural areas. Until such time as the Government chooses to implement educational reforms, the Mission is stressing training over formal education. Four areas of training with which the Mission is concerned are: 1) training support for extension and service-oriented agencies; 2) assistance to community-based organizations; 3) support for national training institutions; and 4) regional training programs.

Sierra Leone (1983)

USAID/Sierra Leone will address the goal of increasing smallholder agricultural productivity through training and research in the Applied Research and Extension project (ACRE) and through seven major Integrated Agricultural Development projects (IADPs). ACRE will develop appropriate technology specifically for the smallholder farmer, and will approach its applied agricultural research, not in developing individual crop production methods, but in looking at overall farming systems and units. Part II of ACRE, which is targeted to begin in FY 84 will strengthen the link between research and extension, will increase the effectiveness of technological transfer, and will develop regular in-service training for extension workers. The IADPs are also aimed directly at increasing smallholder productivity through improved extension services. Additional USAID funding will be allocated to the Mange Agricultural Extension In-Service Training Center to improve staff capability and curriculum content.

Somalia (1984)

USAID/Somalia's human resource strategy will be to promote education that provides information, skills, and technology which are relevant to the needs of individuals in the agricultural sector. The strategy will include expansion of trained manpower in managerial positions of extension services; in improving information, data collection and statistical capabilities of Ministry of Agriculture personnel; and in upgrading the capability of agricultural extension

agents and specialists who pass on appropriate technology to the farmers. No direct inputs will be allocated to the formal education system (other donors and development institutions are highly active in this area), the major thrust being directed towards technical training and management improvement which will respond to immediate and medium-term needs of the productive sector.

Sudan (1984)

USAID/Sudan has identified the southern rainfed sub-sector of Sudan as the area with the highest near-term potential for increased productivity. With this in mind, AID will address the major constraints to increasing productivity, namely, the historical orientation of irrigation agricultural practices, the lack of relevant research oriented to solve production problems of the associated farmers, the lack of an efficient and effective technology transfer mechanism, in addition to the lack of adequately trained manpower to perform agricultural services in the outlying rural areas. USAID proposes to tackle these obstacles by providing short and long-term training to the Ministry of Agriculture, reorienting research to complement the needs of the farmer, providing technical assistance and training to regional governments, and expanding extension manpower training which was initiated under the Southern Manpower Development Project. USAID resources allocated to training will increase over the next five years as the infrastructure and the institutional capability improves.

Swaziland (1983)

USAID/Swaziland places emphasis on human resource development as a major component in achieving its overall development strategy. Through the Cropping Systems Research and Extension project, the quality of extension services will be improved, and constraints to on-farm earning and productive capability will be addressed. The Primary Curriculum Development and the Teacher Training projects will begin to restructure formal education to have more of an agricultural and vocational orientation. USAID will assist the Government of Swaziland (GOS) in improving its administrative, management, and technical capability through in-country participant training, as well as through assistance to the Ministry of Education.

Tanzania (1983)

USAID/Tanzania will shift its activities in human resource development from the building of formal educational institutions to support and funding of agricultural and research systems in an effort to increase productivity, incomes, and food self-sufficiency of smallholder farmers. Agricultural research and extension assistance will be focused towards addressing actual on-farm conditions and practices. The Ministry of Agriculture (MOA) will be supported in its manpower development initiatives through in-country training for rural development, the upgrading of the quality of in-country training institutes, and the support of programs which will provide advanced graduate and post-graduate training at U.S. universities. Other training efforts will include support of the MOA's training institute's (MATI's) Center for Continuing Education at the Faculty of Agriculture.

Togo (1983)

USAID/Togo will focus on increasing food productivity and concomitant income generation through improved extension services, training, and agricultural credit. Agricultural development projects will contain training and extension components which will improve methodologies in animal traction, agricultural credit, and small village-level initiatives. Degree and non-degree manpower needs must be met either through the African Manpower Development project or through future bilateral projects.

Uganda (1984)

USAID/Uganda has determined the increased productivity of the smallholder farmers to be its primary objective over the next five-year period. This will be achieved through the restructuring of the agricultural research system in order to develop and adapt appropriate technology for these individuals. AID assistance to increase adequately trained manpower will include support of Farmer Training Centers, Cooperative Wings of the Diploma Colleges, and Makerere University. Efforts will also be directed towards upgrading the managerial capabilities of the technical staff.

Upper Volta (1983)

USAID/Upper Volta is restructuring its development strategy away from a project-by-project approach towards developing a more comprehensive sectoral approach. The agricultural sector strategy has been given first priority and is currently undergoing major assessment and analysis. USAID plans to conduct a manpower survey, which will provide the basis for expanding education programs and for improving utilization of the Sahel Manpower Development funds. Currently existing activities in human resource development include agricultural, forestry, and environmental education at the secondary and university level.

Zambia (1983)

USAID/Zambia has identified both short-term and long-term objectives which will achieve economic and political stability through reduction of food imports and increased food production. The Agricultural Planning, Training, and Institutional Development Project (APTID) conducted an agricultural/rural sector assessment which identified key manpower and resource constraints. The results of this assessment, which USAID will support, point to the need for new approaches to on-farm research, extension of knowledge, use of local indigenous organizations and cooperatives, and use of private sector institutions. The Agricultural Research and Extension Project will develop small-farmer food production technologies and build extension capabilities to reach farmers. APTID will improve planning and policy and develop appropriate agricultural strategies to improve resource allocation and manpower development. USAID will also support the Government of Zaire in policy and planning capabilities.

Zimbabwe (1984)

USAID/Zimbabwe has outlined its strategy to address both the lack of adequately trained manpower in mid-level technical, administrative, and production positions and the thwarted effectiveness of extension services in conveying technology and improved farming practices because of the low literacy levels among the rural population. AID resources will be allocated towards redirecting research towards developing technological packages which meet the needs of the smallholder farmers. Extension programs will be analyzed to improve effectiveness in the transfer mechanisms of the developed technology. Major efforts will be directed towards increasing the quantity and quality of available personnel through improving the capability of agricultural training institutions.

Zaire The CDSS for Zaire was unavailable as a result of classification.

Other Countries CDSS's were not available.

ANNEX VI: The Economic Impact of Education and Training

The Economic Impact of Education and Training

The low standard of living in African societies emphasizes the clear need to stimulate development. It has long been assumed by many in the development community that education and training have a large and beneficial net impact on national economic development in Africa. Nonetheless, there has been some controversy as to whether this assumption is too simplistic in light of the total developmental environment. A review of the relevant literature seems to demonstrate a clear linkage between educational and economic development on the macro level, while also emphasizing the complexity of the existing relationships among educational, socio-cultural, political, and economic variables. Most studies of the economics of education were directed toward industrialized societies or were too generalized for practical interpretation of the results within a specific African context.

The economic importance of education has long been recognized. As one of many examples, Adam Smith in The Wealth of Nations, written in 1776 stressed that the costs associated with the education and training of workers would quickly be regained. In this case, he was referring to investment in "human capital", similar to today's concern with "human resource" development. Although classical economists recognized the importance of education, they did not think of it as a means for consciously stimulating economic growth.

Only in recent years, with the growing sophistication of techniques for data collection and analysis, has it become possible to investigate the economic impact of education in a systematic manner. Two general approaches are most commonly found: the "residual" approach (often combined with a determination of rate of return) and the "inter-country comparisons" approach.

The residual approach, as defined by Bowen in 1964, "consists of taking the total increase in economic output of a country over a given period of time, identifying as much of the total increase as possible with measurable inputs (capital and labor being the two measurables usually chosen), and then saying that the residual is attributable to the unspecified inputs." Beginning in the 1950s, studies began to show that there was a significant "residual" in economic growth that was not statistically explained by capital or labor. The initial analysis from these early studies suggested that the residual was due to technical change and technological progress. Any of a host of factors -- including education, health, and research and development -- were thought to be involved. It was Schultz in 1959 who first explicitly suggested that the major element explaining the residual could be attributed to education of one type or another. Later studies indicated that as much as 23 percent of the real national income growth rate and 70 percent of the labor income increase over time could be attributed to education and training. Although the residual approach brought education to the attention of economists, it was the inclusion of "rate of return" analysis that actually allowed researchers to measure quantitatively the benefits of education.

These studies attempted to estimate the profitability of investment in education from both the private and social viewpoints. Studies in the 1960s and 1970s indicated private returns ranging generally from 10 to 15 percent and social returns that were slightly lower. Compared with the typical interest rates of the time, these were favorable. The implication of these studies was that more could be invested in education and less in other sectors to the advantage of economic growth. Further study of the development of nations such as Japan and the Soviet Union suggested that the implication was correct. Thus, education was seen not only as a precondition for development, but also as a

major factor in economic growth. Nonetheless, this is not universally accepted, and some studies have provided contradictory evidence. Other economists have suggested that applying a cost-benefit analysis to the relationship between education and economics is too simplistic. They point out that some nations have increased both education and per capita GNP in a series of accumulations, while others have increased GNP prior to educational advances. An example of the latter might be a Near Eastern country with oil resources which allow for a rapid increase in per capita GNP long before the educational system shows significant growth.

Perhaps the most telling arguments against a simple education-economic relationship stem from the experience of many developing nations and much of the donor community. Some types of education, frequently in the social sciences, have simply not been found to be particularly cost-effective. Others have found that only primary education provides significant returns, since secondary, technical, and vocational education have much higher costs per student. Finally, the expansion of educational systems has not yet been proven to provide real economic benefits to many LDCs. On the contrary, unemployment has often followed expansion of the educational/training system, with all its attendant economic woes.

The World Bank has long employed the "manpower requirements" methodology to evaluate its lending in the education sector (which began in 1963). This approach, based on the number of skilled persons required in each sector to attain growth targets, is obviously biased in favor of technical/vocational and higher education. However, there is increasing emphasis on cost-benefit analysis, especially as more information on age-earning profiles and wages in the informal sectors of LDC economies becomes available. Two types of profitability measures are estimated:

* <u>private</u> - indicating the gains made by the educated individual, which serves to explain and predict the private demand for places in certain types of schools; and

* <u>social</u> - the full costs of education to the society, which is used to guide public investment in education.

Due to the difficulty involved in direct measurement of the marginal product of labor with different levels of education or of the opportunity cost of further education, earnings are employed as a proxy for productivity. A simple equation for the <u>private</u> rate of return to education at the secondary level would be:

$$r = \frac{\text{Mean annual post-tax earnings of secondary school graduates} - \text{Mean annual post-tax earnings of primary school graduates}}{\text{Number of years of study} \times \text{Mean annual post-tax earnings of primary school graduates} + \text{Mean annual private direct cost of study}}$$

This yields a permanent stream of benefits (the difference in earnings appearing in the numerator) over a lump sum cost of earnings plus direct outlays (appearing in the denominator). Neither the permanent benefits assumption nor the lumping together of costs appear critical to the results, since the latter

occurs within a short space of time while the former extends over several decades. Social rates of return can be calculated in the same way, substituting pretax earnings (as taxes are a transfer from the viewpoint of society at large) and including the full amount of resources committed per student. Distortions introduced by nonmarket wages rates (such as civil service salaries) are corrected by the use of shadow wage rates based on the private sector. The returns to society of farmers' education is measured in terms of increases in production.

While all World Bank education projects evaluated by cost-benefit analysis show rates of return exceeding the 10 percent criterion for accepting new investments, returns are highest for primary education and for general curricula. Increasing primary education coverage is associated with higher labor earnings, better nutrition, and lower fertility. Few cost-benefit analyses have been conducted for projects in African countries: two in-depth studies for Kenya indicate social rates of return to primary and secondary education of 22 and 19 percent, respectively (private returns for the same levels were on the order of 28 and 33 percent). Most African countries have much weaker statistical bases than does Kenya, and the World Bank has now begun to finance improved data collection through some of its education projects.

The other major approach, that of inter-country comparisons, has also been used to determine the economic impact of education. It investigates the relationships existing between educational and economic variables using cross-national data. A major attraction of this approach is that one can utilize cross-sectional data without requiring time-series data. The latter are particularly difficult to find with any accuracy for most LDCs. A number of significant positive correlations have been found using literacy rates, school enrollments, energy utilization, per capita income, and similar measures. Anderson and Bowman in 1963 suggested that a literacy rate of 40 percent was an effective threshold for economic development and further demonstrated that this had been true of the industrialized nations prior to their development.

Overall, the conclusions found by the inter-country studies have reinforced the implication that education is essential to economic development. However, there has been criticism of the inter-country approach as well. Simply put, a positive correlation does not automatically suggest causality. While one might argue that increased education causes economic development, it would be just as easy to argue that economic development causes increased levels of education. Further, although cross-sectional data is easier to obtain with confidence than time-series data, it logically provides only a "picture" of the situation at one point in time and does not reflect differences resulting over time. Nonetheless, this approach has been useful and, with growing statistical sophistication, many of the original problems noted have been dealt with successfully.

Although unanimity of opinion and research has clearly not been shown, the best information available appears to support the basic thesis that education significantly improves the likelihood of economic development. The controversy centers on the magnitude of economic benefit. Clearly, this results from: 1) the basic difficulty in dividing the consumption aspects of education from the investment aspects; 2) the fact that education is an intangible and thus difficult to measure; 3) the problem in detecting benefits of education, which are expected to be long term, and 4) the difficulty in separating out the indirect effects of education from the other factors in the complex process of economic growth. Despite these many difficulties, the evidence that exists does show economic impact accruing from education, however the magnitude may be difficult to quantify.

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