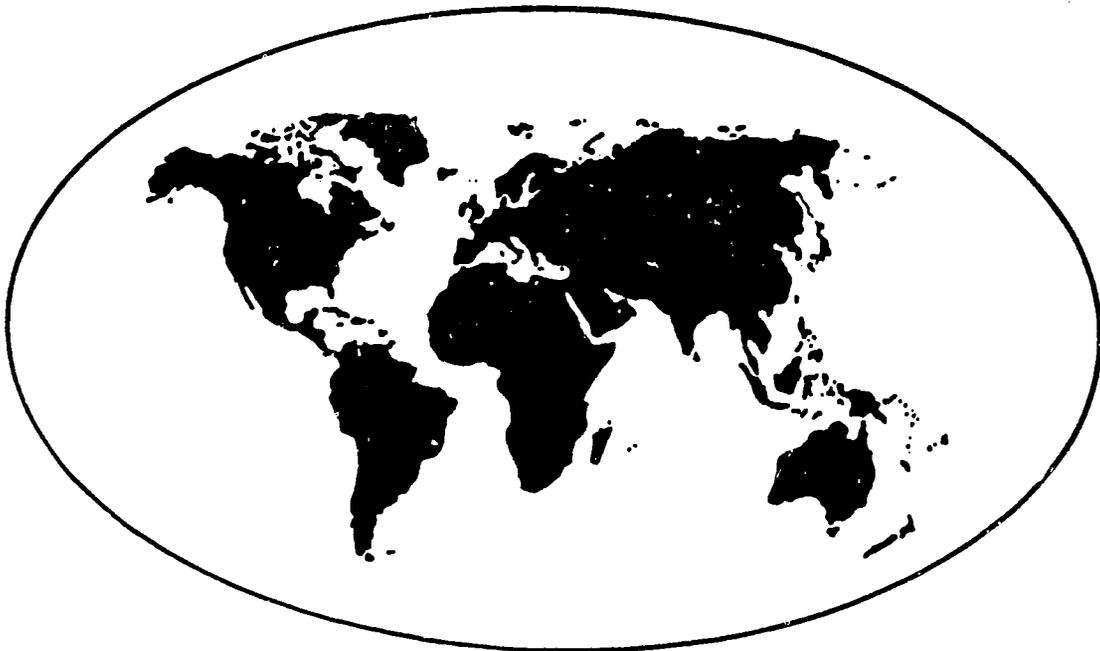


**INTERNATIONAL STATISTICAL PROGRAMS CENTER**

**AFRICA BUREAU  
EVALUATION REVIEW PROJECT**

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**VOLUME I**



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**U.S. Department of Commerce  
BUREAU OF THE CENSUS**

## FORWARD

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The project was sponsored by the Evaluation Office, Policy Planning, Evaluation and Economic Analysis Division, Office of Development Planning, Bureau for Africa, U.S. Agency for International Development, under the direction of Mr. Henry L. Miles.

The opinions expressed in this report are those of the authors and should not be attributed to the U.S. Bureau of the Census or the U.S. Agency for International Development.

The Africa Bureau established its evaluation unit almost five years ago with the appointment of Mr. Henry L. Miles to the position of Evaluation Officer. Since then the evaluation unit has explored the uses of evaluation information during a careful and systematic examination of the Bureau evaluation process and information needs of Bureau policymakers. As a result, improvements were initiated in a number of evaluation processes including:

- 1) changing the Africa Bureau Annual Evaluation Plan to provide information on the primary concerns of Africa Bureau field missions and the number of evaluations planned for the next year, by country;
- 2) engaging in attainable evaluation planning and emphasizing the importance of evaluations;
- 3) developing Evaluation Guidelines that reflect the information needs of senior officers at the Africa Bureau;
- 4) defining evaluation information needs based on inputs from senior Africa Bureau officers during a series of interviews, workshops and seminars;
- 5) initiating a summary appendix of five pages or less to evaluation reports for the convenience of senior officers;
- 6) utilizing qualified personnel, such as Dr. Thomas DeGregori, an expert on technology transfer and African economic development, and evaluation experts from the Bureau of the Census in defining and refining information requirements and suggesting improvements to the evaluation process;
- 7) improving the system for indexing and filing evaluation reports to facilitate retrieval by country and sector; and
- 8) replacing the ten page semi-annual evaluation activity monitoring report with a one page monthly report that shows the number of evaluation reports planned and the number completed, by mission.

Despite these steps all evaluation problems had not been defined and the evaluation process needs further development and refinement. The research described in this report was initiated by the Africa Bureau Evaluation Office to define the remaining evaluation problems and develop proposals for their resolution.

The findings resulting from this research are presented in this report along with recommendations for fulfilling the evaluation goals of the Africa Bureau. The implementation of the recommendations presented here will require a relatively modest commitment of resources.

The information system implied by the evaluation guidelines, promulgated by the Africa Bureau in 1982, is a major part of the evaluation process and the research described in this report. The 11 guideline questions are presented here to enhance the readers understanding of the main thrust of the evaluation process being developed by the Africa Bureau.

#### Africa Bureau Evaluation Guidelines

- I) What constraint did this project attempt to relieve?
- II) What technology did the project promote to relieve this constraint?
- III) What technology did the project attempt to replace?
- IV) Why did project planners believe that intended beneficiaries would adopt the proposed technology?
- V) What characteristics did the intended beneficiaries exhibit that had relevance to their adopting the proposed technology?
- VI) What adoption rate has this project achieved in transferring the proposed technology?
- VII) Has the project set forces in motion that will induce further exploration of the constraint and improvements to the technical package proposed to overcome it?
- VIII) Do private input suppliers or buyers have an incentive to examine the constraint addressed by the project and to come up with solutions?
- IX) What delivery system did the project employ to transfer technology to intended beneficiaries?
- X) What technology does the project intend to transfer to the delivery system and what techniques will the project use to make the transfer?
- XI) What effect did the transferred technology have on those impacted by it?

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## 1.0 INTRODUCTION

This project provides for a review of a sample of evaluation reports from the Africa Bureau's inventory as well as preparation of an executive summary for each report in accordance with the recently developed Africa Bureau evaluation guidelines. In addition, cost effective alternatives for obtaining the information required by the guidelines were to be recommended, along with a resource estimate required to operate and monitor the system.

In 1979, the Africa Bureau reestablished its evaluation unit and Mr. Henry Miles, the new evaluation officer soon observed that evaluation reports were seldom used by senior level officers in the Bureau. In response to his inquiries, most of these officers cited the lack of meaningful information as their reason for not using the reports. As a result, the staff of the Evaluation Office interviewed senior level officers to determine their evaluation information needs. The interests of the senior officers ranged from identifying constraints to development and the technology being transferred to relieve these constraints, to measuring actual adoption rates for these technologies and the effect of adoption on adopters. Moreover, their interests included the forces set in motion by the project which could work to sustain or improve the technology after project completion. In response to these interviews the Africa Bureau's evaluation officer developed guidelines for future evaluation work. The guidelines were developed in the form of 11 questions which synthesize the information needs expressed by AID's senior staff.

After reviews of the guidelines were conducted within the Africa Bureau, a prominent expert on technology transfer and Africa economic development, Dr. Thomas DeGregori, was consulted. His suggestions, which included placing more emphasis on information about private sector as a vehicle for diffusing technology, were incorporated into the guidelines. The guidelines, as issued in March of 1982, require evaluators to answer the 11 questions in a self-contained executive summary of five pages or less, to be attached to every evaluation report.

After taking steps to improve the information content of new evaluation reports by distributing the guidelines, the Africa Bureau evaluation unit set out to determine the informational value of approximately 200 evaluation reports already in its library. An amendment to the RSSA BuCen BST-2256-R-CA-2144-00, the inter-agency agreement between the Agency for International Development and the Bureau of the Census, provided authorization for the Bureau of the Census to undertake this research under Project number 936-2256.3 entitled: "Surveys and Evaluation Support LDA."

The scope of the Census Bureau's work as set forth in the amendment included the following:

- 1) review a randomly selected sample of 50 evaluation reports from the Africa Bureau's library,
- 2) prepare executive summaries for each project to the extent that the information is available from the evaluation reports,
- 3) prepare a report which recommends cost-effective alternatives for obtaining the information required by Africa Bureau Evaluation

guidelines, with a level of confidence adequate for making project design and policy decisions regarding such,

- 4) provide an estimate of the person-months required to operate the system, and
- 5) provide an estimate of person-months of various Census Bureau skills needed to monitor the system on a project-by-project basis to ensure the quality of the information produced.

Initial research on this project and experience with the guidelines led to some modifications in the scope of work as set forth below.

- 1) A workshop for AID staff members involved in evaluation explored ways of communicating the meaning of the guidelines to the missions and other users.
- 2) A seminar on technology transfer promulgated an enhanced understanding of this concept within the Africa Bureau and facilitated its communication to the missions.
- 3) An analysis of the results of the sample of reports identified unexpected information deficiencies, conceptual problems within the evaluation process, institutional problems or management problems in conducting evaluations, and determined if the evaluations met the information needs reflected in the guidelines.
- 4) An additional series of seminars familiarized officers with the new guidelines and discussed the concept of technology transfer, and its relationship to development and diffusion of innovations. Also, the seminars showed how technology transfer relates to project design, project implementation, and the effects and impacts of the projects, explained how the guidelines requested information on this process, and revealed additional information requirements. The seminars also collected user suggestions on improving the guidelines and the executive summaries of the evaluation reports.
- 5) These additional high priority activities made it necessary to place less emphasis on reviewing evaluation reports issued prior to the new guidelines and to reduce review and preparation of executive summaries to between 35 and 40.

The work required skills in evaluation, statistical analysis, data collection and processing, and information systems design which was provided by the Census Bureau. Expert assistance in technology transfer and African economic development was provided by Dr. Thomas R. DeGregori through a subcontract. Dr. DeGregori's work included conducting research, exchanging ideas with others, participating in workshops and seminars, and preparation of a report summarizing his research and other applicable work as well as providing recommendations related to it. His final report has been incorporated into this report as Appendix I, volume II.

In addition to Dr. DeGregori's report, this report contains six sections and three other appendices (II through V) in three volumes. Appendix V contains the executive summaries as a separate volume (volume III).

Section two of this volume contains conclusions and recommendations derived from this research. These include recommendations related to the problems defined by the conclusions.

Section three describes AID's evaluation information needs as embodied by the evaluation guidelines and the significance of technology transfer in economic development.

Section four analyzes the AID programming process in order to identify obstacles to evaluation and assess the capability of the evaluation guidelines for overcoming these obstacles.

Section five contains an analysis of the executive summaries of the evaluation reports. This analysis includes a content analysis based on criteria developed during this project. Examples are provided in section five to illustrate the kind of information currently being furnished in the evaluation reports and to identify the types of data needed to produce a good executive summary.

Cost-effective information alternatives are developed in section six. Section six also includes estimates of the skills and resources needed to produce the information required by the guidelines.

## 2.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Under this project, 36 evaluation reports produced prior to the issuance of the evaluation guidelines were reviewed and analyzed for information content, reliability, and relevance to the Africa Bureau's evaluation guidelines. Also, the evaluation guidelines were reviewed for their general compatibility with the AID programming process (see figure 4-1) and their effectiveness when used along with the logical framework. A series of workshops was held on technology transfer and Mr. H. Miles, Africa Bureau Evaluation Officer, explained the incorporation of these principles into the evaluation guidelines. Dr. Thomas R. DeGregori, our subcontractor, provided expert assistance in conducting the workshops, which were followed by seminars on technology transfer.

As a result of the workshops and seminars, subquestions were developed as a way of communicating the meaning of the evaluation guidelines to the missions. In a subsequent series of seminars on technology transfer and capturing information related to it using the guidelines, it was discovered that further clarification was needed to assure that other essential information would be collected and processed.

We discovered that to most participants the guidelines did not imply information requirements for cost-benefit analysis, or analysis of market conditions, costs and prices and the demand side of the economy. And many felt that this kind of information should be collected routinely to facilitate cost-benefit analysis and not only when indicated by the perceived constraints to development.

A statement of the obstacles to successful evaluation was then developed. The statement was based on a review of AID's programming process and evaluation information needs. Finally, an outline was developed of the information system implied by the evaluation guidelines and AID's programming process.

### 2.1 Conclusions

Evaluations performed prior to the issuance of the new Africa Bureau guidelines did not provide the information needed by senior officials in the Bureau. None of the 36 reports reviewed provided a reliable statement of the actual adoption rate achieved and none responded well to the guidelines on incentives for private sector participation. The other questions were fully answered in less than 20 percent of the reports (see section 4.0). It should be noted that the guideline on achieved adoption rate is of critical importance because without any information on the rate of adoption, other information has limited value.

The present evaluation guidelines were judged by senior officers present at the seminars to adequately incorporate their information needs and to embody the principles of technology transfer. Subquestions or instructions can be added to assure that necessary information is obtained on market conditions, the demand side of economy, costs and prices, risk, as well as other data appropriate for use in determining cost/benefit ratios.

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The evaluation guidelines constitute a cost effective adjunct to the broad, general scope of the logical framework described in AID's Handbooks (reference 4) and have the potential to reduce the amount of data which must be collected and processed. They do not, however, have the potential for relieving deterrents to evaluation such as lack of skilled evaluation personnel, a common failure to allocate resources for evaluation in time for collecting and processing baseline information and other resource allocation problems related to the evaluation process. The present programming process at AID does not require evaluation of specific projects - only that an evaluation plan be included in the Project Papers. Some studies have concluded that AID's current process of evaluation is inconsistent (see reference 7). Until resources are committed for evaluation prior to or during project design and evaluation plans are prepared and implemented by qualified evaluators the information needs reflected in the evaluation guidelines will not be fulfilled.

The evaluation reports reviewed under this project indicated that evaluations are now being planned and implemented by people who do not have essential skills in disciplines such as statistics, survey design, exploratory research, questionnaire design, data collection and processing systems design, sample design, cost benefit analysis and information systems design.

Many of the evaluations reviewed under this project noted the absence of baseline information. Without reliable baseline information, initial conditions are unknown and there is no reference for measuring change. Moreover, there is no information to assist in the selection of technological packages that are appropriate to relieve the constraints, or meet the needs of the beneficiaries. Judging the success or failure of any of the 36 projects examined based solely on the information contained in the evaluation reports could not be done.

The Africa Bureau has made progress over the last 5 years in improving the evaluation process. The remaining obstacles can be overcome with an additional commitment of funds for acquiring expert technical assistance in evaluation planning and implementation.

## 2.2 Recommendations

In order to produce meaningful evaluations, AID should initiate evaluation planning early in the project design phase. Preliminary project evaluation plans should be incorporated into the PID.

Evaluation information needs for all projects should be consolidated into the annual evaluation plan for each mission. Measurements of the goals or objectives and the actual transfer of technology for individual projects should be specified and incorporated into the mission annual evaluation plan and the individual project evaluation plans as appropriate. The plans should contain fully developed cost estimates and schedules of evaluation activities.

AID should require that evaluation plans be prepared by a person or persons having the skills and experience needed to prepare and implement them adequately. These plans should be reviewed by the evaluation office of the Africa Bureau and by the project committee. At least one member of the project committee should have evaluation qualifications and experience.

Technical assistance should be made available to the missions by Africa Bureau in evaluation planning and information system design and implementation for individual projects. This assistance could include as needed:

- assisting in establishing the information requirements for projects
- assembling and assessing existing data which will be used in evaluation
- preparing annual mission evaluation plans
- preparing project evaluation plans that incorporate cost estimates and implementation schedules
- preparing scopes of work for the collection of necessary data
- participating in project design
- participating in review of monitoring and evaluation plans
- designing appropriate information systems for projects selected for evaluation
- monitoring contractor performance and training the data collection contractors.

This technical assistance should be provided by an organization with experience in evaluation. Instructions should be prepared for project evaluations and incorporating the various suggestions made at the seminars.

This may include constructing subquestions or clarifications to the guidelines requesting information relevant to cost/benefit analysis, cash flows, costs, demand for the project output, market for project output and information on risks, prices, price rationing and labor cost.

The evaluation office should also develop methods for storing, classifying and using evaluation information, and develop new methods of collecting, processing and presenting evaluation information. As an example, a detailed questionnaire that clarifies and simplifies reporting of the information specified in the evaluation guidelines could be constructed and tested.

### 3.0 EVALUATING TECHNOLOGY TRANSFER

#### 3.1 Summary

This section reviews the importance of technology transfer throughout history and shows how the evaluation guidelines capture information on technology transfer and the other pillars of AID development programs - private enterprise, policy changes and institution building. The guidelines, because of their focus on issues affecting development, constitute a cost-effective adjunct to AID's logical framework of evaluation (reference 4). Implementation of the guidelines requires an understanding of technology transfer as well as a mix of evaluation skills. Parts 3.3, 3.4 and 3.5 focus on technology transfer and were written in part or totally by Dr. Thomas DeGregori.

#### 3.1 Forces Affecting the Course of History

"Throughout human history, technological diffusion has been a regular and important element in the evolution of a people's technology. The population of all cultures and places use a technology, although they or their ancestors originated only a small part of it. Technology borrowing incorporates the creativity of the rest of the world. The process of adoption in technological borrowing is itself a forum of inventive activity. Yet, little of the writing on technology transfer reflects any attempt to gain understanding from prior successes (and failures) in borrowing and using exotic technology."-Dr. Thomas R. DeGregori, 1983.

Historians have long sought to explain what forces determine the course of history. Various schools of thought have emerged such as those that believe that political forces or that economic forces are responsible. Others believe that technology is the primary cause. Whichever forces are responsible, one must acknowledge that the economic development of the world and especially industrialized nations has been hastened by technological change. For example, substantial gains in digital circuit technology have improved the efficiency and productivity of computers so dramatically that a desk top microcomputer today has capacity equivalent to rooms full of the second generation computers used during the 1960's on the U.S. space program. Complimentary technological changes in computer software including user friendly software facilitates the use of this equipment by smaller organizations and individuals. While the full impact of these innovations will not be known for some time, it is apparent that increased efficiency will accrue to both large and small organizations.

Technology transfer was very important in the development of the United States. Dr. John W. Oliver, a renowned historian and contributor to the Society for the History of Technology, wrote that the most precious physical possession that our Pilgrim fathers unloaded was the collection of 102 tools, implements and utensils, with which they were to start life in a new land. The Jamestown colony in Virginia had at first met with failure because it lacked appropriate technology for the Virginia setting, and the tools needed to implement it. The urgent need to survive in a hostile environment taxed the early settler's ingenuity but they eventually met the challenge with new technologies and new tools.

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The development of the printing press is credited with spurring the intellectual and cultural revolution of the middle ages in Europe. This development probably did more than any other to change the course of recent history because it improved and lowered the cost of communication and facilitated the rapid diffusion of technology. While the Chinese, Japanese, and Koreans used printing long before the fifteenth century, their process was slow and expensive and hampered by a language demanding thousands of complicated ideographs. In 1440 Johan Gutenberg invented a low-cost method of sand casting type and this, along with the strong market for books, the European alphabet of only 23 letters and other available technologies combined to yield a high relative advantage over technologies utilized prior to Gutenberg's invention. Gutenberg possessed skills essential for the successful development of movable types: metallurgy and engraving. He was able to develop an alloy of lead, tin, and antimony that would cast easily and yet be durable. He would engrave single letters on the hardened steel punches used to strike matrices for casting of type - a technique already in use for the manufacture of coins and medals.

### 3.2 Collecting Information on Technology Transfer

The interviews conducted by the Africa Bureau's evaluation office with senior staff of the Africa Bureau indicated that these senior officers are aware of the importance of the process of technology transfer. The 11 questions which make up the evaluation guidelines seek to capture information relevant to this process in its many forms. For example question III seeks information on the existing technological base. This information is important in assessing a country's ability to adopt a new technology.

Information on the proposed new technology is requested in question II. Question I seeks information on why the technology has not been already transferred. What has constrained the forces of technology and what constraints to economic development does the technology proposed by the project attempt to relieve? This kind of information is fundamental to the project design process and to decisions on project funding and policymaking.

### 3.3 The Nature of Technology Transfer

Technology transfer was briefly defined by Dr. DeGregori in his report and this definition is repeated here to enhance the continuity of this report. Technology transfer is the transfer of ideas or knowledge of a process.

The central unifying characteristic of technology is that it is a problem solving process. Technology involves tools, skills necessary to create and use these tools, and, most important, the ideas in the tool-maker's and tool-user's head that determine the motor functions to carryout the tool-creating and using activity. Because tools involve skills and skills are a form of behavior, one aspect of tool-using is always its societal or cultural context. Human tool-using is a process, and because it is a process, it is differentiated from tool-using by other animals. The human tool-using process is dynamic, combinational, and accelerates through time.

Given this broader definition of technology, for the purposes of the AID, it can be argued that technology transfer in its initial phases occurs when new improved ways of doing a task desired by the recipient are adopted and integrated into the ongoing economic and societal system. (1) These new ways could conceivably use all the existing technologies already in place and, therefore be in essence the movement of an idea from one place to another; (2) it could be a training program which would then be the diffusion of an organized set of ideas called knowledge; or (3) it could be these two in combination with actual physical products of modern science and technology, such as tools, machines, seeds, or another human artifact. For number three to take place, elements of one and two are a necessary concomitant.

Transferring an improved problem solving technique is only the initial characteristic of technology transfer. If this is the extent of the effort, it is, then, technique or tool transfer, and not technology transfer. Technology transfer only occurs when the new technique is integrated into the recipient culture and is simultaneously linked to the dynamics of the international technological system that brought it into being. For it is only with this linkage with other technologies that cross-fertilization and interaction can give rise to future dynamic accelerating development, which is an essential characteristic of technology and especially of successful technology transfer.

#### 3.4 Operating Principles of Technology

Our understanding of technology is further enhanced when we read Dr. DeGregori's 26 operational principles of technology provided as part of his report (see appendix 1, volume II). Some of Dr. DeGregori's important observations are highlighted here.

Dr. DeGregori contends that consistency with his operating principles is necessary for successful technology transfer and economic development. The principles are fundamental in planning and in implementing technology projects and as a set of criteria for evaluating completed projects. The principles most appropriate to our work are summarized below.

Technology or human tool using is primarily an ideational process. It is the use of ideas to transform the material and nonmaterial world.

Technology as ideas (or knowledge) and as material artifacts is transmitted through culture. Although analytically separable technology in use becomes part of the general belief system of those who use it. As such the dynamic nature of technology can come into conflict with restrictive institutional beliefs and practices.

Technology is cumulative and combinational. Once the process of technology transfer is underway, it gains momentum from our ability to modify, combine or recombine, and modify existing technology--all technologies come from previous technologies. The dynamics of the process comes from combining the ideas of the artifacts.

Technology is a problem solving process. Technology is technology in the context of its use. Its use in the wrong context does not deny its efficacy in appropriate circumstances. By definition, all technology, if it is truly technology, is appropriate to some problem solving endeavor. The selection of technology depends upon cultural, environmental and economic criteria that define a problem and the characteristics of its solution.

The free market place of ideas, democratic institutions of all kinds and free economic markets are all vital mechanisms in developing, transferring, and sustaining technology. The dynamic process of combining technology to create new technologies or borrowing technology is greatly facilitated by freedom of thought and freedom of action. Jacob Bronowski in, Science and Human Values, argues that the basic principles of scientific investigation as refined in the last few centuries are essentially the same principles of democracy--free and open inquiry are equally functional for science, for technology, and for democracy.

Note: A complete statement of these principles can be found in Dr. DeGregori's report, appendix 1.

The intent of the 11 evaluation questions is to capture information on the important forces tending to determine the course of economic development.

### 3.5 Capturing Technology Transfer in the Evaluation Guidelines

As part of his report on technology transfer and the new evaluation guidelines, Dr. DeGregori prepared the following paragraphs to explain how the guidelines attempt to capture information on technology transfer and related factors.

The guidelines were created in response to stated needs by the AID's Africa Bureau officers in Washington to obtain more effective data upon which to evaluate projects. There was a frequently articulated frustration that information coming from the field was not adequate for formulating policy or making funding decisions or otherwise supporting management functions in Washington.

The evaluation office interviewed senior officers of the Africa Bureau to determine their information needs. The evaluation guidelines are a compilation, integration, and organization of these results. More detailed sub-questions were added to the guidelines to assist evaluators in the field to respond more effectively and to make evaluations comprehensive. The evaluation guidelines were also structured to draw out a set of responses that made the project implementors more aware of the issues involved in technological transfer and change.

In addition to responding to stated needs of the Africa Bureau, the guidelines facilitated the achievement of broader agency goals. The four pillars of AID development programs are: technology transfer, private enterprise policy changes, and institution building.

By specifying the issues of technology transfer, the guidelines focus on the centrality of technology in the process of development. More important, the conceptual framework used as a basis of organizing these questions provides

the organizing principles for embodying these goals into particular development projects. The 25 principles of technology listed in appendix I recognize that technology is much more than mere hardware. Technology transfer means technology in use. Using technology involves both policy and institutional factors. Bad political and economic policies can not only limit the potential benefits of new technologies, but also are probably already limiting the utilization of existing technologies. Good policies can allow people to use existing technologies to their fullest capability and can facilitate the introduction of new technologies. Since technology-in-use requires knowledge, skills, habits of mind, and organizational structures, then what is called institutional building becomes a necessary component of technology transfer. Finally and more important, technology is dynamic. Successful technology transfer is much more than the diffusion of some techniques and hardware. Technology transfer is a process. If successful, it transfers the dynamics of technology such that the recipients are able to continue to borrow and adapt on their own. Institution building is one means of sustaining technological transfer and development. The private enterprise system, if aided and not restricted, can become the main vehicle for the ongoing, dynamic diffusion of ideas, techniques, and all other aspects of technology.

### 3.5.1 Constraints: Technology and Policy Changes

Questions I and II concern the identification of constraints. Frequently, the most significant constraints are government policies, particularly pricing policies. If policy constraints are restricting the use of existing technologies, then there is a strong probability that new technologies will not be used effectively. This evaluation guideline seeks to obtain information not only on the constraints to be removed but also on other constraints that would affect the project but had not previously been specified. Realistically, constraints, that involve policy decisions may not be changeable by an AID donor. However, having identified these policy constraints, the donor has options of: 1) seeking to modify the constraint by using the project as leverage; 2) designing the project to work around the policy constraint as well as technological constraints; and 3) not funding the project at all if (1) and (2) are not feasible.

By requiring the identification of all constraints in the evaluation, it is expected that this identification process will eventually be included in the preliminary stages of the project, allowing the options noted above.

Many constraints are not policy-related. Given the broad concept of technology being used, issues of institutional adjustments, lack of skills and knowledge, as well as environmental and cultural limitations to the use of technology become potential constraints to technology transfer. Providing the framework, the sub-questions or clarifications (appendix III) seek to identify these constraints and the way in which the project will overcome them. Essentially, these questions are seeking a statement concerning the larger technology, policy, and environmental system in which the technology transfer program will operate.

### 3.5.2 Institution Building and Responsive Indigenous Institutions

Question IX on the delivery systems and Question IV and V on the intended beneficiaries relate to the goal of institution building. A delivery system can become

part of the recipient country's institutional structure for the continued borrowing of technology. Building other institutions, such as research laboratories or training schools, provide in later phases delivery systems for technologies and for sustained technology transfer. If it is unlikely that AID will be funding research institutes in less developed countries to explore the basic structure of the cosmos (however important that inquiry may be), then it is likely that a successful research institution will turn out results supportive of the operating technologies of the country. Because technology transfer is seen as a process and not a one-time event, then the delivery system must in fact become part of the structure of sustained technology transfer. Throughout, the questions in the evaluation guidelines seek out evidence of the sustainability of the technology transfer.

Note: Questions IV and V provide information related to institution building including educational background, social participation, labor availability and compatibility with traditional values. These questions also provide information on factors related to diffusion of technology as well as data on other factors.

The intended beneficiaries are basic to what AID is presumably about, trying to help poorer people of a country to help themselves. The evaluation guidelines go into great detail in attempting to have the specification of both the target group and of the mechanism for achieving the stated results.

Not only do the recipients benefit, but this process requires their participation. An attempt is made to get at all of the issues of behavioral and cultural changes necessary to carry out the project and the types of resistances that might undermine it. These questions not only get to the ideational and behavioral aspects of technology but also more fundamentally get to the roots of the potential for technological change. Widely distributing the benefits of technology change gives more people a stake in its continuance. Wide distribution of benefits can be a basis for developing the kind of free institutions that we argue in principle so greatly facilitate the evolution of technology.

### 3.5.3 The Private Sector

In virtually every question category there are clarifying sub-questions that raise the issue of private sector involvement. The questions on constraints wish to know both why the private sector is currently unable to remove them and in what way it can be used in the project to overcome them. Of the many ways in which these questions seek to get at private sector involvement, one is possibly unique to the evaluation guidelines. Given the dynamic concept of technology, these questions are trying to focus on the creation of indigenous free market structures that will sustain the dynamism and serve as a vehicle for continued technology transfer. Technology transfer as a process involves the sustaining mechanism of the market.

Note: Information on the private sector is collected primarily under question VIII but question I seeks important information on why the private sector has not already addressed the issue, and question IV on factors affecting adoption by the private sector if

the intended beneficiaries can be so classified, and question IX looks at the reasons why indigenous delivery systems do not supply the inputs.

#### 3.5.4 Technology Transfer

Questions III, IV, and V attempt to treat all development projects as technology transfer (in the broadest sense of that term). Though all of the questions should be applicable to most projects, it is possible that occasionally a question or two will not be relevant to a particular project. The point is not whether all questions are applicable to all projects but whether for all projects these evaluation guidelines ask the critical questions.

Question III, in looking at the environmental context of technology, essentially stresses technology as problem solving and the necessity to adapt a technology to fit the nature of a problem. Question IV and V are concerned in part with the technology transfer from the perspective of the recipient. Perception of risk and benefit will influence adoption rates. If the skills or action involved in the use of a technology involve behavioral change, then again these are the choices of the recipient.

Note: Question VI seeks information on the rate of adoption. The measurement of the number of adopters of the project technology requires prior knowledge (or baseline data) on the environment and interrelates with other questions.

Questions VII and VIII are at the heart of the technology transfer issue, for they deal with the dynamics of technology transfer. Question III focuses on the private sector's role in sustaining continued technology transfer. Question VII seeks the totality of forces set in motion to create sustained technology transfer. Simply stated, too many projects purporting to be technology transfer are really technique transfer. These two questions, in differentiating between technique and technology, are defining the difference between helping people to achieve economic stagnation at a higher level or helping people help themselves in a sustained long-term development process.

#### 3.6 Relationship of Technology and the Factors of Production

Developing countries characteristically lack the factors of production needed to acquire and use new technologies. These factors of production consist of land, labor, capital and entrepreneurship. To an economist these factors of production have a broader meaning than to the layman. To the economist, "land" means such resources as arable land, forests, mineral and oil deposits and water resources (reference 3). "Capital," or deferred labor represented by money, refers to all manmade aids to production such as tools, machinery, equipment, facilities, and transportation used in producing goods and services and delivering them to the consumer.

"Labor" includes the physical and mental talents available for or employed in producing goods and services, with the exception of a special test of human talents - entrepreneurial ability. "Entrepreneurship" consists of the knowledge

or ability to select and combine factors of production, resources, and technologies efficiently in the production of goods and services. The entrepreneur is the driving force behind production and the agent that combines the other resources into a profitable venture.

In assessing the guidelines, most economists would answer that factors of production are interrelated to technology transfer. Adopting new technology requires the right mix of capital, labor, land, and entrepreneurship. Development projects are normally designed to either furnish these factors or foster their development. Alternative technologies can be evaluated using cost-benefit analysis and this process takes into consideration the availability of factors of production.

While it was intended that the guidelines include all of the information relevant and meaningful to project evaluation including information on factors of production and technology transfer, it is unlikely that sound evaluations will be conducted unless those preparing evaluation plans understand the concepts cited in this section. Evaluators must also understand the statistical processes essential to collecting data that will be transformed into the information needed by senior officers. In our analysis of the evaluation reports prepared prior to the new evaluation guidelines, we noted that this relevant information was seldom provided. Some of the evaluation reports noted the absence of this information which the reviewer usually attributed to the lack of baseline information.

### 3.7 Cost-Benefit Information

During the workshops conducted as a part of the research on this project, subquestions were developed as the most efficient way to communicate the meaning of the guidelines to evaluators. The subquestions (see appendix C) communicate the meaning of the guidelines more efficiently than separate instructions because they are easier to read and less subject to misinterpretation. However, the seminars produced comments indicating that the subquestions do not capture all of the information needed to evaluate cost/benefits. In a memorandum to Mr. Henry Miles, AFR/DR, dated May 16, 1983, on "Evaluation Strategies," Dr. Alan Rufus Waters suggests that question IV could capture more information on the demand side. He points out that marketing has emerged as a generic entity in the last two decades and stands with full respectability. Market conditions were intended to be included in the guidelines when appropriate under question IV on why project planners believed that intended beneficiaries would adopt and under question I on constraints when development was constrained by market conditions.

Dr. Waters points out that more emphasis is needed on collecting information on the demand side, on cash flows, risk, prices and work schedules. (See Appendix IV, Volume II for the full text of Dr. Water's memorandum.)

While, conceptually, the guidelines incorporate this information on projects where it is appropriate, as Dr. Waters points out the subquestions do not necessarily reflect it. Some revisions to the subquestions could assure the routine capture of this kind of information for all projects selected for evaluation.

### 3.8 Diffusion of Innovations

The interviews and discussions conducted by the staff of AFR's evaluation office with senior officers produced ideas and suggestions that led to the identification of variables for measuring adoption and the likelihood of adoption in addition to establishing their information needs. One valuable suggestion, made by Mr. Lane Holdcroft, AFR/TR, included the research done by Dr. Everett L. M. Rogers as reported in his book Diffusion of Innovations (Reference 2). Rogers has developed categories for adopters, identified key variables for forecasting adoption, identified characteristics of adopters and provided insight into measuring adoption rates.

Rogers' earlier (1962) edition of this book was based on 405 publications on diffusion of innovations. His 1983 edition reflected information from 3085 diffusion publications and 2297 empirical diffusion research reports. As Rogers states in the Preface to his 1983 edition: "I think there is almost no other field of behavioral science research that represents more effort by more scholars in more nations."

Most of Rogers' early work was based on diffusion studies in the United States and Europe. During the sixties, an explosion occurred in the number of diffusion investigations in the developing nations of Latin America, Africa and Asia. As Rogers points out, it was realized that the classical diffusion model could be usefully applied to the process of economic development. In fact, the diffusion approach was a natural framework in which to evaluate the impact of development programs in agriculture, family planning, public health, and nutrition. As a result of the inputs from developing nations, the classical diffusion model was modified into the diffusion paradigm presented in his 1983 edition.

The evaluation guidelines reflect the work presented by Rogers in reference 2. Question IV of the evaluation guidelines asks the basis for believing that intended beneficiaries would adopt the proposed technology. Implied in this general question are the factors affecting adoption identified by Rogers such as risk factors, out of pocket costs, compatibility with traditional values, relative advantage, etc. Question V looks at the characteristics of adopters, identified by Rogers, such as education, family size, income or noteworthy degree of social participation, etc. And question VI looks at adoption rate and implies precise methods of measurement such as outlined by Rogers. Information on other indicators of diffusion identified by Rogers are sought in other parts of the guidelines and the guidelines generally incorporated the concepts developed by Rogers.

## 4.0 AN ANALYSIS OF THE AID EVALUATION PROCESS

### Summary

This section contains an analysis of the evaluation process described in AID's Handbooks (reference 4). The process was examined to determine if improvements provided by the guidelines would relieve the obstacles to planning and implementing evaluations. Developing cost-effective alternatives for obtaining the information required by AFR's evaluation guidelines with a level of confidence adequate for making project design and policy decisions requires an understanding of these obstacles.

### 4.1 The Logical Framework

The evaluation guidelines are an adjunct to the Logical Framework and program planning processes currently in use and described in the AID Handbooks. In fact, they are compatible with the process and utilize the process for implementation. The guidelines can be said to describe an information system (or more specifically a management information system tailored to AID/W information needs) within the overall system characterized as the Logical Framework.

The overall planning and information process is represented by the flow diagram shown in Figure 4-1. A close examination of the diagram shows evaluation data being fed back into the Management Information System (MIS), data banks, and into an evaluation function from the project implementation function and project completion. Provisions for gathering information and feeding it back into the project design stage for the Project Identification Document (PID) or Project Paper (PP) are not shown.

Provisions for collecting data normally are made during preparation of the Country Development Strategy Statement (CDSS) and usually require the use of Project Development and Support (PD&S) funds. The availability of these funds for data collection activities varies because the funds are not specifically appropriated for data collection alone. When these data collection efforts take place they are usually designed for the broader purposes of the CDSS and are not project specific.

Theoretically, PD&S funds could be used to finance evaluation planning and execution as well as collection of baseline data for specific projects, but in practice PD&S funds are usually in short supply. A more serious problem is a lack of evaluation planning resources to specify information needs and develop the necessary data collection systems during project design. Without these planning resources, additional funding in and of itself will not improve the situation.

### 4.2 Information on Technology Transfer

None of the evaluation reports reviewed under this project contained reliable information for measuring technology transfer. In most cases, technology transfer for the purpose of the project was not defined, adoption was not measured, the variables needed for monitoring adoption were not identified and the degree to which the technology existed prior to project implementation had not yet

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been measured. Some reports noted the absence of baseline information and the futility of attempting to measure adoption after the fact without it.

Some data should be collected prior to the start of the project for the purpose of assessing the probability of success of the project under existing conditions as well as the need for redesign. If adoption of a technology is to be evaluated it cannot be assumed that the technology was not in use at all prior to the project.

#### 4.3 Suggested Allocation of Resources for Evaluation

While the guidelines are conceived to provide essential information, it is not reasonable to assume that evaluation will occur without any resources being allocated for it. The evaluation office of the Africa Bureau currently has very limited resources. The evaluation office formulates policies, procedures, instructions and guidelines and reviews evaluation plans and reports. The evaluation guidelines, while providing for improved efficiency and information content of reports cannot solve the existing problems of: (1) lack of baseline data, (2) lack of technical capability and other resources in the missions for planning and implementing evaluations, (3) lack of detailed implementation plans for each evaluation, (4) lack of cost estimates for planned evaluations to facilitate the allocation and designation of project and other funds for evaluation, and (5) the lack of technical capability at the missions for selecting and training competent evaluation contractors.

The guidelines provide enlightenment on information needs including the need for baseline data but provisions should be made in the programming process, illustrated in figure 4-1, to assure that resources are allocated when needed for collecting and processing essential information.

Some of the steps listed below illustrate how increased resources could be utilized to assure fulfillment of the evaluation guidelines.

1. Select projects for evaluation prior to or during the PID stage.
2. Provide assistance for preparation of a detailed annual mission evaluation plan including cost estimates that integrate the evaluation needs for all projects selected for evaluation.
3. Provide assistance for the preparation of individual project evaluation plans including cost estimates, for each selected project.
4. Provide competent technical resources to each mission for evaluation planning and implementation at appropriate times.
5. Provide assistance to the missions and project committees in assessing and selecting evaluation contractors.
6. Provide resources to missions for monitoring implementation of evaluation plans.
7. Provide advice and assistance in Washington and the missions in processing and analyzing evaluation data.



8. Provide additional technical resources to the Africa Bureau evaluation office to assist in reviewing evaluation plans, writing critiques of evaluation reports, processing evaluation information, presenting evaluation information to senior level officers in the Bureau, and developing criteria, policies and procedures for assuring proper implementation of the evaluation guidelines.
9. Modify the evaluation guidelines and other procedures to reflect evaluation results and changing information needs.

The question arises: "How much should be spent on evaluation?" Some guidance on this subject was published by the World Bank (reference 6). Seventy-five percent of the projects financed by the World Bank make provisions for monitoring and evaluation and about 3 percent of total project costs have been spent on evaluation. Over fiscal years 1976-78, the IBRD spent \$150 million on monitoring and evaluation. If the World Bank's experience is used as a guide, the Africa Bureau with a development assistance budget for FY84 of \$350 million, should devote at least \$10.5 million to evaluation.

AID as a whole reportedly spends \$12 million annually on evaluation of its total program portfolio (7) which contains new obligations of over \$3 billion. Using the World Bank standards the AID should be devoting about \$90 million to evaluation of projects and programs.

#### 4.4 Schedule for Initiating Evaluations

An effective way to conduct evaluation is to identify the projects that need to be evaluated during the pre-PID stage and begin considering information needs for project design. The annual evaluation plan for the mission should be expanded to include a detailed implementation plan and cost estimate. The plan should integrate data needs of all projects selected for evaluation to reduce duplication and provide information for project design. For example, many of the constraints to economic development can probably be determined for all projects in a country collectively. Varying the technology does not necessarily change the constraint and even if it does it may be more efficient to collect this kind of data on several technologies at once.

Preparing an evaluation plan which responds to the guidelines will ordinarily result in a minimum of data collection, but it will require skills which are typically not available in the missions. To be successful, an evaluation planner must understand the guidelines and the log frame process and know how to identify the variables for which data needs to be collected. Usually, a knowledge of sampling theory, questionnaire design and other statistical skills at some level is required.

The evaluation guidelines provide the framework of a cost effective evaluation information system but resources must be deliberately allocated to assure its success.

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#### 4.5 Qualifications of Evaluators

Evaluation can be a complex activity. It may involve information systems design, surveys including household surveys, economic surveys or business surveys; sample design, questionnaire design; data collection and processing; data analysis and related activities. Moreover, knowledge and experience in the areas of technology transfer, cost/benefit analysis and factors of production are usually needed.

The technical skills cited as necessary for conducting statistical surveys in a forthcoming working paper being issued by the Office of Management and Budget (reference 5) include:

- 1) Knowledge of development project objectives and specifications
- 2) Subject matter knowledge
- 3) Project cost and scheduling knowledge
- 4) Questionnaire design and testing
- 5) Sample design
- 6) Data collection, including followup procedures
- 7) Data processing, including coding, editing and file creation
- 8) Data analysis, including weighting estimation and hypothesis testing
- 9) Quality control
- 10) Report preparation

According to OMB the report these skills are needed for conducting statistical surveys.

Evaluations should address the information requirements of the mission, the host country and Washington. Knowledge of case studies, ethnographies, market surveys, sector analysis, and exploratory research previously conducted, technology transfer, cost benefit analysis and the factors of production, and how innovations are diffused may be needed to prepare an evaluation plan. Many evaluation plans do not reflect this knowledge.

Also, evaluation plans should be designed to minimize cost and should contain detailed estimates of costs and implementation schedules. In most cases no one individual can be expected to provide the variety of skills needed to conduct evaluations. Nor is it reasonable to expect the missions to have personnel on their staffs with these skills. An organization of evaluation specialists would be able to furnish these skills for each evaluation problem. The organization selected should not have a vested interest in the outcome of the project evaluation, should be objective and able to conduct unbiased assessments of contractor proposals, including budgets and schedules. Also, when in-country firms or institutions are used, appropriate training for these contractors should be provided based on an analysis of their capability.

#### 4.6 Evaluation Planning and Implementation

Both the mission annual evaluation plan and project specific evaluation plans should be prepared by qualified people and reviewed by the Africa Bureau evaluation office. The plans should integrate preliminary project design information requirements and include schedules, cost estimates and cite the

source of funds for the evaluation. Variables and indicators of goal attainment should be identified. In addition to preparing an evaluation plan, the evaluator should prepare a scope of work for the data collection contractors. During the selection process the evaluator should provide advice and assistance to AID in selecting the contractor.

Once the selection has been made, the evaluator should provide advice and training for the contractor if necessary and monitor the contractor's progress in implementing the evaluation plan. Finally, the evaluator should provide advice and assistance in preparing interim and final evaluation reports.

#### 4.7 Related Studies on the AID Evaluation Process

In a study (reference 7) undertaken for the AID, James T. McMahon assessed AID's program evaluation system as follows:

- 1) falling short of meeting many of the objectives it is intended to serve,
- 2) lacking a tie-in between evaluation practices and the program decision making processes,
- 3) needing major improvements in conducting regular project evaluation and in measuring the results being achieved.

According to McMahon's study, AID's expenditures for evaluation in FY 82 were:

AID direct hire	\$ 1,929,100 or 16 percent
Consultants/contractors and other agencies	<u>10,189,220 or 84 percent</u>
Total	\$12,118,300 or 100 percent

He observes that the missions control the evaluation process or the process of evaluating their own programs and therefore objectivity cannot be guaranteed.

Evaluation, he says is normally assigned as an additional responsibility and Mission evaluation officers typically do not have time, experience or technical knowledge to actually conduct evaluations.

McMahon could find no evidence that project evaluations serve any purpose at the Washington level and could not find anyone who could cite an evaluation that had an impact on any decision that they made.

McMahon's study places, more emphasis on subject matter qualifications of evaluation team than on the evaluation qualifications of team members. In our view, at least one member of the team should be a qualified survey statistician representing an organization with broad evaluation expertise and experience.

Other observations made by McMahon relevant to this study include the following.

- 1) AID's Annual Budget submitted for FY 1984 stated that there is a need to address the problem of utilization of evaluation results through greater involvement in PID/PP reviews and other means.
- 2) A 1980 AID evaluation task force concluded that major decisions were made about projects without reference to evaluation findings.
- 3) Agency procedures for policy formulation, program development, project identification, design, redesign and approval and other views and decisionmaking process do not require the use of evaluative information in either the documents prepared for decisionmakers or the resolution of issues that arise during the review process. No changes will ensure the use of evaluation information unless it is required by the Agency's procedures.
- 4) In the fall of 1981 the Agency conducted a one time review of all projects of \$1,000,000 or more and found no evidence that evaluations played any significant role.
- 5) The determination as to which projects are to be evaluated is made by the missions.
- 6) The audit process conducted by the Office of the Inspector General has teeth in it but evaluation, a related activity, does not.
- 7) In recent years there has been a tendency to include evaluation costs in newly approved projects. Over 1/3 of the total cost of AID's evaluation system is from project funds. In the cases of activities funded from Operating Expense (OE) funds and Program Development and Support (PD&S) funds, evaluation activities are in competition with alternative uses of those funds. Significant portions of OE and PD&S funds would have to be committed by missions and bureaus to satisfy AID's responsibilities for evaluation activities.

The General Accounting Office has expressed its views on evaluation. A memorandum from the Comptroller General of the United States (R161740) Washington, D.C. dated February 7, 1979, stated that the Congress, executive policymakers, and program administrators need some assurance that the evaluations they wish to use were properly planned and conducted and that results were reported clearly, completely and fairly. Over \$243 million was obligated by the executive branch for evaluation in 1977. Public pressure to reduce the growth of government programs and improve their effectiveness point to increased demands for evaluation in the future.

About 70 percent of the \$243 million was for evaluations done under contracts or grants. Major concerns are the inadequacies of methods for assuring that evaluators are held accountable for their activities and the lack of criteria

to ensure the quality of the evaluations. The evaluation criteria suggested are: (1) relevance, (2) significance, (3) validity, (4) reliability, (5) objectivity, and (6) timeliness. The essential elements of an evaluation plan according to the memorandum are:

- 1) a clear statement of the problem,
- 2) a careful listing of constraints and assumptions,
- 3) the evaluation approach,
- 4) a specification of the resources to be committed including identification of key staff members, and
- 5) timeframe for major components of the study.

## 5.0 REVIEW OF EVALUATION REPORTS

### Summary

In this section the approach utilized in reviewing the evaluation reports and the criteria for analyzing the reports are described. The analysis of the reports and the findings resulting from the analysis are presented. Hypotheses developed during the course of this research to explain the information deficiencies are then presented. Finally, examples are cited from the reports which illustrate various evaluation problems.

### 5.1 Approach Utilized for Reviewing Evaluation Reports

The evaluation reports selected from the files of the evaluation office of the Africa Bureau were first rewritten in the format specified in the evaluation guidelines. Information provided by each report was relocated under the appropriate guideline. Criteria were developed for analyzing the reformatted reports. Information under each guideline of the rewritten reports was then compared with the criteria and graded.

The results of this process are presented in table 5-1. Additional detail on the development of the criteria can be found in section 5.2.

Originally it was intended that a random sample of the approximately 200 reports in the Evaluation Office files be taken. For several reasons this proved to be impractical. First, evaluation reports on sectors other than agriculture probably would not have been selected because of their small number. Second, the files did not contain many of reports listed. Some of these reports may have been checked out by others at the time they were scheduled for our review.

As a result of these problems, it was decided to select all reports from sectors other than agriculture and to take a convenience sample of the agriculture sector. Thus, it cannot be said that the findings are necessarily representative of all of the approximately 200 reports in the file.

In the interest of making the analysis of the contents of the reports as objective as possible, the criteria contained in appendix V, volume III were developed based on the information requirements implied by the evaluation guidelines and more precisely reflected in the subquestions (also in appendix V, volume III) which were developed during workshops in March 1983.

The first step in analyzing the contents of the evaluation reports was to review the reports and extract information relevant to each of the 11 evaluation questions. Preparations of an executive summary in the 11 question format ensued. The answers to each question in the summary was compared with the criteria and given a rating as follows: (1) fully satisfies the guidelines, (2) partially satisfies, and (3) inadequate.

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## 5.2 Conclusions on Content of Evaluation Reports

These comparisons resulted in the following conclusions.

- 1) Most evaluations performed prior to the new Africa Bureau Guidelines did not provide the information required by the criteria.
- 2) Questions (I), (III), (IV), (V), (VI), (VIII), and (XI), were fully answered less than 20 percent of the time.
- 3) Question (VI) on adoption was inadequately answered more than 70 percent of the time.
- 4) Question (VIII) on the private sector was inadequately answered more than 50 percent of the time.

These findings were concurrent with the views expressed by Mr. F.S. Ruddy, Assistant Administrator, Bureau for Africa, during his introductory remarks at the seminars on technology transfer, May 10-12, 1983. Additionally, Mr. Ruddy commented on the time required to read the evaluation reports. Our experience indicates that it takes between 2 and 6 hours to read most of these reports and this fact would render some of these reports virtually useless.

Table 5-1 tabulates the results of our analysis. Probably more important than the fact that the question on adoption was inadequately answered more than 70 percent of the time was the fact that none of the reports reviewed fully satisfy the information standards on adoption and adoption rate. The same results were obtained for question (VIII) on incentives for the private sector to address the constraints and question (XI) on the effects of the transferred technology upon those effected by it.

If the evaluations do not produce reliable measures of technology transfer, the other information collected is of limited value since it cannot be correlated with adoption rates. Moreover, the effects or impacts of the project cannot be attributed to the transfer of the project technology, if a reliable measurement of it does not exist.

None of the questions are answered adequately more than 34 percent of the time and eight of them are answered adequately less than 20 percent of the time.

Table 5.1 Number of Evaluation Reports Which Satisfy the Africa Bureau's Evaluation Guidelines

Level of Compliance	Evaluation Guidelines Question Number										
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Fully Satisfy	6	10	4	5	4	0	12	0	9	7	4
Partially Satisfy	27	24	19	26	15	9	16	16	22	19	20
Inadequate	3	2	13	5	17	27	8	20	5	10	12
Total	36	36	36	36	36	36	36	36	36	36	36

### 5.3 Reasons for Information Deficiencies

During the course of the research a number of comments were gathered and hypotheses were developed to explain the failure of the evaluation reports to provide relevant information and these are summarized below.

- 1) It is felt that evaluators did not have adequate background or experience to identify the variables and indicators needed to measure project performance. Nor did they generally understand the necessary statistical processes, data collection, data processing, data analysis, information systems design, survey design, experimental design, sample design, or the other related disciplines needed to prepare, implement, and supervise an evaluation. In addition, the new evaluation guidelines emphasize technology transfer and require an understanding of this concept so that indicators or variables can be identified for measuring it.
- 2) A problem frequently stated by participants at workshops and seminars was that evaluation teams frequently found that baseline information was either nonexistent or inadequate for conducting an evaluation and for measuring adoption rates of new technology.
- 3) Not enough emphasis is placed on evaluation of the demand side of the economy during the pre-PID phase of project development. Dr. Alan Rufus Waters, PPC/EA and Chief Economist for AID, suggested in his memorandum on evaluation strategies (see appendix IV) that it is desirable to know the earliest point at which rejection (of project technology) becomes inevitable and, therefore, the approach should be to discover first if there exists an identifiable demand for the final services or commodities which the proposal is intended to generate.
- 4) More information on the economic and cultural environment is needed prior to initiating project design. A sector assessment of some type should probably be a prerequisite to project design.

- 5) Evaluation as conducted now is usually a series of short (usually 1-4 weeks) episodes instead of a continuing process initiated with an appropriately designed monitoring and evaluation plan during project design.

#### 5.4 Examples of Evaluation Problems

In the evaluation report of the North Cameroon Pilot Community Development Project, Cameroon project number 631-0010, the constraints to development were not accurately identified. Had the constraints to development been identified as the lack of knowledge and ability to identify and resolve village problems the likelihood of project success would have been improved. Under this project a myriad of technologies were made available to villages which were thought to be appropriate to the planned resolutions of village problems. The evaluators felt that the complexities of the problems and solutions provided were beyond the capabilities of the villagers and that the solutions were actually formulated by the Private Volunteer Organization who served as change agent on the project.

Apparently, here is a case where comparing existing technology with project technology could have enhanced understanding of the constraints and design of a delivery system appropriate to the experience of the villagers.

The problems that can arise from not answering question three properly before PID preparation are shown by the Fish Culture Extension Project, Central African Republic project number 676-0004. One of the fish ponds had been neglected during the coffee harvest due to a shortage of labor. A proper answer to question three describing the work load and work schedules of workers including seasonal work would have enabled the project designers to anticipate this.

An example of an evaluation report that provides a lot of data but little management information is provided by the Central African Village Wells project, project number 676-0003. A complete description of the constraint to development which apparently was the lack of an adequate water supply, would have included a description of the varying geological conditions in the area. Then technologies could have been selected which were appropriate for each area.

Several problems are inherent in the evaluation report entitled Care-Assisted Village Water Development, Kenya project number 915-0166. The evaluators criticize the project designers for not properly defining the scope of the project and project completion status. Actually, if the technology being transferred had been described properly it is almost certain that the USAID part of this multi-donor integrated project would have been judged successful. Also, the evaluators note that the survey format and methodology are not professionally sound and do not provide information for evaluating project success. This problem is frequent and further emphasize the need for sound technical assistance in evaluation planning during the project design phase, the time when the scope of work for the evaluation contract should be prepared.

The evaluation team on the Lofa County Rural Health project, Liberia project number 669-0125, cites a lack of preliminary project design information as a reason for failure of family planning. If the information that would have been provided in question five on the characteristics of intended beneficiaries and question four on why project planners believed they would adopt project

technology had been answered during the design phase of this project, it would have provided project designers with a better understanding of the problem and improved the chances for success.

The Mali Rural Works project, Mali project number 688-0204, provides us with another good example of what can happen when the constraints to development and technologies to be transferred are not identified and clearly stated. The primary purpose of the project was to transfer management planning technology to villagers and assist them in resolving local problems, including provision of resources for implementing the solutions. The delivery system was geared to effectively implement planned solutions but did not provide much assistance in training villagers on solving their own problems. Again the importance of identifying and describing the constraints to development and collecting sufficient information prior to final project design can be seen here. The evaluators recommended project cancellation because the primary purpose of developing local planning capability was not being met. This was done in spite of the fact that the actual constraints to local development had been identified by the central government and even though technologies were being successfully transferred to relieve these constraints. Inadequate, incomplete information during project design coupled with a poorly designed evaluation obviously led to this conclusion.

Another example of an inadequate evaluation plan and ignorance of project technology can be seen in the Northern Nigeria Teacher Education Project, Nigeria project number 620-0710. The evaluators finally decided that the project was a success on balance without understanding the technology being transferred or identifying the variables for measuring it. From the report it appeared that appropriate technology (new capability for teacher training colleges) was successfully transferred to both the delivery system (teacher training colleges) and the beneficiaries (teachers).

This report on Lundzi-Mpuluzi Pig Production, Swaziland project number 645-0213, fails to describe the technology being transferred to the adopters or how the project would impart the technology to them. The technology described does not appear to match the constraint which is reported to be largely cultural - since women already raise pigs the logical thrust of the project would be to establish marketing channels which could be used by women to sell their pigs for cash. The evaluators did not provide information on adoption because this work was a pilot project. However, factors such as relative advantage, compatibility with traditional values, complexity, divisibility and communicability that correlate with adoption could have been assessed for the purpose of forecasting adoption rates.

The role of the private sector was not accessed. This should have been a major component of a pilot project since a lack of demand for pigs in the market places at a reasonable price would cause the project to fail.

The delivery system is not described in sufficient detail to determine if project success was feasible. The evaluators allude to a cooperative organization but no mention is made of their capability or what additional training or inputs are needed to make implementation feasible.

It is critically important to assess adoption and delivery systems on a pilot project. In fact, it may be more important to assess these components of a project than to develop the technology. This is true because if the technology cannot be delivered or is too complex or not compatible with market conditions then another technology should be considered.

On Upper Volta project number 698-0388.5, Income Producing Feasibility, lack of economic opportunities for women was the constraint to development. The existing technology was not assessed nor was the project technology described adequately; consequently, it was not possible to predict adoption. Factors correlating with adoption, characteristics of beneficiaries, the delivery system and technology needed were also not considered.

The Upper Volta project number 686-0215, Eastern ORD Rural Roads evaluation, cites the lack of project planning during design (PP stage) as a primary cause of failure. The design planning, of course, is only as good as the information upon which it is based.

Zaire project number 660-0059, North Shaba Rural Development, illustrates the need for evaluation experience. This evaluation was done by the mission and responds to the evaluation guidelines. While the evaluators attempted to address the questions they lacked the experience in evaluation and the background in technology transfer to respond properly to all 11 questions.

## 6.0 A COST EFFECTIVE ALTERNATIVE EVALUATION SYSTEM

This section proposes a cost effective alternative to the present system of evaluation used in the Africa Bureau. The evaluation guidelines, per se, constitute a cost effective adjunct to the logical framework described in AID's Handbooks (reference 4) in that they enable the evaluation to focus on specific information needs. The alternative proposed here is consistent with the guidelines and will concentrate on essential information needs. In addition to being cost-effective, the alternative should attempt to resolve existing evaluation problems. Before problems can be resolved they should be defined and understood. Based on the research the problem is defined below.

### 6.1 Definition of the Evaluation Information Problem

The existing Africa Bureau evaluation system has not produced essential evaluation information required by senior officers of the Africa Bureau, because:

- 1) skills essential for good evaluation planning and execution are typically not available in Washington or the missions,
- 2) the current program planning process does not require project planners to provide resources for evaluation or for gathering preliminary design or baseline information,
- 3) the existing program planning process provides only a broad direction on evaluation,
- 4) adequate baseline information for evaluating projects is seldom available.
- 5) Under the present system at AID all projects are not evaluated. The decision to evaluate a project is not usually made in time to collect baseline information which can be used to assess project feasibility.
- 6) Most evaluation plans do not contain an estimate of costs and in most cases project funds are not earmarked for evaluation. Currently, the collection of data often depends upon the availability of scarce PD and S funds.

### 6.2 Preliminary Design Information

The information system proposed in this section would utilize the evaluation guidelines to define basic information needs. As indicated in earlier sections of this report some clarification of the guidelines is required to collect (1) information on market conditions, (2) information needed for cost-benefit analysis and (3) other relevant information. Since the guidelines are compatible with the logical framework but are more specific, the amount of data needed to satisfy the information requirements should be substantially less than the data normally generated when planning is initiating under the "log frame" alone.

should be substantially less than the data normally generated when planning is initiated under the "log frame" alone.

The main elements of the information system proposed here are as follows:

- 1) the Africa Bureau evaluation guidelines
- 2) availability of technical assistance in evaluation to missions at their request
- 3) provision of technical assistance to the missions in evaluation planning and implementation
- 4) required estimation and allocation of resource requirements for evaluations prior to preparation of the PID
- 5) provision of technical assistance to the project committees on all aspects of evaluation
- 6) provision of technical assistance to the evaluation office.

#### 6.2.1 The Evaluation Guidelines

The Africa Bureau's evaluation guidelines were issued on June 28, 1982 (see Forward). During a series of workshops and seminars in 1983 clarifying statements were developed for these guidelines (appendix III).

The guidelines would establish the general information requirements for all projects. The emphasis on measuring technology transfer and its effect on constraints to economic development should provide information during the life of the project to confirm project design or to indicate the need for revision.

#### 6.2.2 Technical Assistance for Evaluation

A critical element of this proposed evaluation information system is the provision of technical assistance. The qualifications of the provider of such assistance for evaluation are set forth in section 4.5. Since it is unlikely that any individual will possess all of these skills, AID should seek the services of an organization that can provide the entire range of skills.

#### 6.2.3 Technical Assistance to the Missions

The technical agent will provide technical assistance to the missions consisting of the following:

- 1) technical assistance in preparing the Mission's annual evaluation plan including a cost estimate for each major element of the plan;
- 2) technical assistance in preparing scopes of work for all elements of the evaluation plan that require the services of a contractor;

- 3) technical assistance in evaluating contractor proposals;
- 4) technical assistance in preparing project evaluation plans for those projects selected for evaluation;

#### 6.2.4 Technical Assistance to Project Committees

This element of the proposed information system includes:

- 1) review of project evaluation plans;
- 2) advice to the committee on all matters related to evaluation;
- 3) advice to the committee on data collection and processing activities;
- 4) technical assistance in reviewing and criticizing evaluation reports.

#### 6.2.5 Technical Assistance to the Evaluation Office

Providing technical assistance in specifying and refining the information requirements as promulgated in the evaluation guidelines is an important element of this proposal and the framework of a Bureau-wide information system. The evaluation office should be provided with technical assistance in:

- (1) coding, storing, retrieving and analyzing evaluation information using the available microcomputer system.
- (2) developing methods for presenting evaluation information;
- (3) designing an experimental questionnaire that reflects the information needs of the Africa Bureau;
- (4) formulating recommendations for an AID evaluation policy on selection of projects for evaluation, on evaluation budgeting and allocation of funding.

#### 6.2.6 Funding for Technical Assistance and Evaluation

Funding availability is a critical element of this evaluation system. A key part of this system is the provision of funding for technical assistance both to the missions and to the Africa Bureau evaluation office. Under this system, the evaluation office would purchase a given number of person-months of technical assistance from an experienced evaluation organization. A small portion of this technical assistance would be provided to the evaluation office itself. The bulk of the technical assistance would be made available to missions, at their request. This technical assistance would be used primarily by the missions in developing their annual evaluation plans and in planning for specific project evaluations during project design. Through these planning efforts, estimates of resources needed for all phases of monitoring and evaluation, whether for specific projects or for the entire mission, would be developed. Having this type of information available at the appropriate times would allow for allocation of funding necessary for all evaluation activities from project budgets or from PD and S or other sources.

### 6.3 Cost of This Evaluation Proposal

The evaluation information system proposed here should provide AID senior level officers with the information which they have specified in time to be of use in designing projects and in redesigning projects when the data indicates a high chance of failure. The system could be tried initially on about 10-12 projects so that problems can be resolved and procedures developed for efficient implementation of the system.

The cost of providing technical support for ten projects, based on 51 total person-months of assistance would be approximately \$275,000 in FY 1984. The proposed system has the potential to resolve all of the known problems and will, if it produces information, useful to Africa/Washington as well as the missions, be much more cost-effective than the existing system. Moreover, if the system proves to be successful it will be possible to produce as many as 100 evaluations for approximately two million dollars plus the cost of data collection contractors.

For most projects, one or two person-months of technical assistance during project design may be sufficient to produce preliminary plans for project monitoring and evaluation. Further technical assistance would be needed for implementation, training of host-country counterparts, selection and monitoring of contractors, etc.

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