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BIOLOGICAL DIVERSITY MONITORING INDICATORS WITHIN A NATURAL RESOURCES MANAGEMENT FRAMEWORK FOR SUB-SAHARAN AFRICA

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LIST OF ABBREVIATIONS

USAID	U.S. Agency For International Development
APE	Action Program For the Environment project
AWF	African Wildlife Foundation
COBRA	Conservation of Biodiverse Resource Areas project
GOK	Government of Kenya
GOU	Government of Uganda
ICDP	Integrated conservation and development project
KWS	Kenya Wildlife Service
NEAP	National Environmental Action Plan
NRM	Natural resources management
RMS	Rwenzori Mountaineering Service
WCI	Wildlife Conservation International (a division of the New York Zoological Society)
WWF	World Wildlife Fund

Executive Summary

BIOLOGICAL DIVERSITY MONITORING INDICATORS WITHIN A NATURAL RESOURCES MANAGEMENT FRAMEWORK FOR SUB-SAHARAN AFRICA

The U.S. Agency For International Development's (USAID) Africa Bureau developed a five-level natural resources management (NRM) framework in 1988 to better understand the relationships between program inputs and people-level outcomes. The framework is designed to organize proxy impact indicators in a hierarchial order and to identify lessons learned during the implementation of field projects and nation-wide programs. It is presently being tested world-wide within field project monitoring and evaluation systems.

Biological diversity (abbreviated as biodiversity) refers to the genetic material, biological species and ecosystems which make up the world's biosphere. Management of national parks and protected areas is commonly associated with biodiversity programs. Biodiversity has been identified as a priority natural resource management activity by the Africa Bureau.

The hypothesis of this study is that while difficulties have been encountered by development planners in the past, indicators can be developed for biodiversity projects using the framework. The study provides an analysis of case studies and recommendations for the selection of biodiversity indicators.

Illustrative case studies were developed based on data collected in the field for three biodiversity projects:

(1) Tsavo West National Park in Kenya;

(2) Kibale Forest Reserve in Uganda; and

(3) Rwenzori National Park in Uganda.

Proxy framework indicators were developed for the three projects based on interviews, field observations and the review of project documents. Information regarding the monitoring and evaluation components of the case studies were also obtained and analyzed, as indicators should be seen as only one facet of an ongoing comprehensive monitoring and evaluation program.

The results of this study demonstrate that impact indicators can be developed for biodiversity projects using the framework. Biodiversity activities should be monitored and evaluated with the same criteria and rigor as other development activities using the framework. Only in this way can biodiversity activities be integrated into the rural development process and the link between conservation and development examined empirically. Another benefit of using the framework for monitoring biodiversity activities is that it will encourage the use of consistent field methodologies for data collection--locally and regionally.

USAID has selected biodiversity and tropical forestry impact indicators for planning purposes. Results of this study, however, suggest that selection of indicators should be conducted as part of a process within the context of each project. Only after obtaining lessons learned over time from the assessment of program impacts should a standard set of framework indicators be considered at the Bureau level.

Project monitoring and evaluation has often been seen as a threat and a burden by project implementors. It appears that many project implementors now concede the potential benefits of ongoing monitoring and evaluation as a management tool for effective project implementation. Many of the project implementors interviewed expressed enthusiasm for the idea of collecting social and biological project impact data as an ongoing activity. Only when impact monitoring and comparative evaluation activities are integrated into projects can their impacts be assessed, lessons be learned and linkages be determined.

CHAPTER 1
INTRODUCTION

1.1 Background and Rationale For This Study

In 1988, the U.S. Agency For International Development's (USAID) Africa Bureau developed a focused strategy for the conservation of biological diversity activities in Africa. Biological diversity (abbreviated as biodiversity) refers to the genetic material, biological species and ecosystems which make up the world's biosphere. The management of national parks and other protected areas is commonly associated with biodiversity programs.

Biodiversity conservation has been identified as a priority natural resource management activity by the Africa Bureau. The biodiversity strategy was based on Bureau's Plan For Supporting Natural Resources Management in Sub-Saharan Africa (1987). Consistent with the biodiversity strategy, the Africa Bureau has strived to integrate the management of biodiversity within the Agency's development goals. The Africa Bureau believes that biodiversity can and must be a part of the Agency's economic development process (USAID, 1989).

Beginning in 1988, the Africa Bureau collaborated with private voluntary organzations and non-governmental organizations to implement field activities in Africa under the biodiversity strategy. Initially, the implementing organizations received financial support from the Africa Bureau's Washington, D.C. office in the form of small grants. These small grant activities were essentially pilot projects designed, in some instances, to demonstrate the relationship between biodiversity conservation and rural development.

At the same time that its biodiversity activities were being approved and implemented, the Africa Bureau was in the process of adopting a new system for reporting its progress to the U.S. Congress. The system, called the Development Fund For Africa, places an emphasis on reporting people-level impacts in addition to funding obligations (USAID, 1993).

The focus on reporting of program impacts under the DFA presented challenges to the Africa Bureau. One challenge was to develop a system to demonstrate that its programmatic actions are contributing to people-level impacts. In order to track incremental change over time, the Africa Bureau developed a system to validate its experience with cause and effect relationships associated with its field interventions and policies.

To better understand the relationships between program inputs and people-level outcomes, the technical office of the Africa Bureau developed a five-level hierarchial framework in early 1988 to organize proxy impact indicators (henceforth referred to as indicators). According to Weber (1991a), an indicator is defined as follows:

> An indicator means key actions, functions, elements, or objects which, by virtue of their physical, biological, economic or organizational attributes, are so closely associated with the system in which they are found as to be indicative of the state or trends (improvement or deterioration) of the system.

The framework identifies lessons learned during the implementation of field projects and overall nation-wide programs. It is presently being considered for use within the Agency's monitoring and evaluation systems.

1.2 Study Hypothesis

The recognition of biodiversity conservation as an important development objective has been enhanced as biodiversity activities have come to address both the conservation of wildland areas and the provision of resource users with sustainable economic alternatives. However, indicators for biodiversity conservation have not been adequately developed within the context of the Africa Bureau's biodiversity program and framework.

USAID originally developed the framework by examining activities in the Sahel region of West Africa. As the application of the framework has extended accross Africa, development planners have encountered difficulties in integrating biodiversity activities into the framework (Forestry Support Program, 1993).

The hypothesis of this study is that while difficulties have been encountered by development planners in the past, indicators can be developed for biodiversity projects using the framework. The study provides an analysis of case studies and recommendations for the selection of biodiversity indicators.

1.3 Study Objectives

In the process of addressing the stated hypothesis, this study will contribute to greater efficiency in the application of the Africa Bureau's framework by improving the methodology by which indicators are developed for biodiversity projects. The specific objectives associated with addressing the hypothesis are indicated below.

-- Describe the key tenets of the Africa Bureau framework and the integrated conservation and development project (ICDP) approach. Discuss the use of indicators for the design of ICDP activities, particularly in association with monitoring and evaluation systems.

-- Identify key issues and questions regarding the development of biodiversity indicators within the context of the Africa Bureau's framework and monitoring and evaluation theory. Evaluate present biodiversity indicators which are being used by the Africa Bureau.

-- Analyze indicators for impacts which extend beyond the life of projects and the "framework within framework" phenomena associated with biodiversity activities.

-- Develop case studies based on biodiversity projects in Kenya and Uganda.

-- Make recommendations for improving the integration of biodiversity conservation into the Africa Bureau's framework and impact monitoring program.

CHAPTER 2
LITERATURE REVIEW

1.1 Biodiversity in Sub-Saharan Africa

The continent of Africa is endowed with a unique and diverse array of wildlife, vegetation and associated habitats. Its singular beauty has spurred the imaginations of writers, artists and film makers for many years.

For many people, Africa represents the ultimate in wildlife and adventure--and to a large extent it still is the ultimate. Africa and its associated islands contain approximately 1,570 animal species. Over the span of geologic time, Africa has changed less biologically and physically than the other continents. Animal life has developed during a period of several hundred million years with few changes apart from those of a purely regional nature (Haltenorth and Diller, 1977).

Africans have utilized their wildlife resources for centuries. Even in modern times, wildlife resources are still a source of food for many people in both rural and urban environments. For example, today eighty percent of the rural and urban populations' food protein in Ghana is obtained from wildlife meat (Freeman, 1987).

Many African countries have capitalized on Africa's wildland resources through the development of nature tourism and sport hunting. Tourism now represents one of the primary sources of foreign currency for a number of African countries (e.g., Kenya, Zimbabwe). Tourism and sport hunting have the potential to become sustainable sources of income for both big business and rural communities.

Africa contains 426 protected areas, covering about eighty-eight million hectares, or 4.4 percent of the total land area (MacKinnon and MacKinnon, 1986). Africa was the first continent in the developing world to establish game reserves. The initial reserves were established in 1895 in South Africa and Kenya. The first nature reserve was established in Madagascar in 1927 (Kiss, 1990).

However, Africa's wildlife population has reduced from pre-colonial times. Of the continent's original wildland areas, sixty-five percent has been converted to other land uses (World Resources Institute, 1990). As a result, many of Africa's most notable wildlife species are being threatened in some areas.

The numbers of African elephant and other "keystone" species can be used as a rough indicator of the effectiveness of protected-area management. For example, there are approximately 700,000 elephants in Africa today, as compared to about ten million elephants five hundred years ago. In Tanzania alone, there was a fifty-percent reduction in the African elephant population between 1980 and 1990 (The African Elephant Conservation Coordinating Group, 1991). While elephant population trends vary according to region and local management methods, Tanzania's alarming elephant decline appears to be the pattern in some parts of Africa.

There are a number of reasons for the decline in Africa's wildlife and associated habitats. The high rate of human population growth in Africa is certainly one major reason. Africa's average annual population growth rate of three percent is higher than any other region in the world; the population on the continent in 1990 was 647.5 million (World Resources Institute, 1990).

Other population-associated reasons for the decline in Africa's wildlife include the expansion of agriculture (particularly shifting agriculture), subsistence hunting, and resource burning (Freeman, 1987). In certain regions of Africa (e.g., southwestern Cameroon), logging is also destroying important tropical forests and associated wildlife habitat at an alarming rate (Scott, 1992). Africa's rapid population growth has also undoubtedly impeded the continent's overall rate of economic development and created a relatively low standard of living for most of its inhabitants. For example, the per capita Gross National Product in Africa in 1987 was $610 U.S.--less than half of the level in Asia or Latin America (Hannah, 1992).

In his 1992 publication <u>African Parks, African People: An Evaluation of Development Initiatives as a Means of Improving Protected Area Conservation in Africa</u>, Hannah summarizes the overall problem of managing protected areas in Africa:

The general picture of population increase and poverty has raised serious concerns for the future of African protected areas. Since most of the continent's population relies on agriculture for livelihood, increasing population leads directly to increasing pressure on land and the need to expand to marginal and unexploited areas. While protected areas cannot satisfy the human needs generated by Africa's population growth, the sheer need for new land may result in conversion of protected areas unless compelling economic and social motivation exists for their continued protection.

Most of Africa's protected areas were established without much consideration of the surrounding rural communities. The people in these local communities are typically very poor and receive few benefits from the protected area. Conventional approaches to protected area management have generally not been sympathetic to the needs of rural communities. These approaches have relied heavily upon guard patrols and poaching penalties, both of which serve to exclude local people.

Solutions must be found to provide Africa's people with economic and social incentives to sustainably manage their protected areas. Fortunately, conservation and development planners are beginning to implement a potential solution: developing alternative land and wildlife uses which generate food and income for rural communities (Kiss, 1990).

2.2 Integrated Conservation and Development

The term biodiveristy refers to the genetic, species and ecosystems which make of earth's biosphere. Biodiversity is an important component of the Africa Bureau's natural resources management program. Over $21.5 million dollars were spent by the Africa Bureau on biodiversity activities in FY 1991--more than by any other regional Bureau (USAID, 1992).

Biodiversity activities which address both biodiversity and rural development concerns are often referred to as integrated conservation and development projects (ICDP). ICDP activities have become an important component for the Africa Bureau, as they provide a means for the Africa Bureau to address biodiversity conservation within the context of USAID's overall development goals.

According to Wells and Brandon (1992):

> ICDPs attempt to ensure the conservation of biodiversity by reconciling the management of protected areas with the social and economic needs of local people. The smaller ICDPs include biosphere reserves, multiple-use areas, and a variety of initiatives on the boundaries of protected areas, including buffer zones. Larger projects include the implementation of regional land use plans with protected area components, as well as large-scale development projects with links to nearby protected areas.

The ICDP approach attempts to address the needs of nearby communities by emphasizing local participation and by combining conservation with development. There is now wide recognition that successful long-term management of protected areas depends on the cooperation and support of local people. Reflecting these concerns, the IVth Congress on National Parks and Protected Areas held in February, 1992 reached the following conclusions regarding people and protected areas:

> Human communities in and around protected areas often have special relationships with these areas and their resources. Parks cannot co-exist with communities that are hostile to them. There is an urgent need to achieve community participation and equality in decision-making processes.

The assumption is often made that if rural communities adjacent to a protected area are "better off" as a result of a development project, they will refrain from illegal exploitation of that protected area. According to Brandon and Wells (1992), however, such expectations appear to be naive and an invalid assumption. Efforts to strengthen guard patrols and to impose penalties for illegal activities may, in some cases, be justified. Enforcement activities are not inconsistent with the ICDP concept when they are integrated into the overall project.

2.3 Monitoring and Evaluation

A monitoring and evaluation system should provide a set of systematic, uniform and formal procedures for collecting, analyzing and interpreting data. Monitoring and evaluation systems can be an effective tool for project managers if it is integrated into the project design and implementation process. An effective monitoring and evaluation system can help project managers to establish priorities among program objectives, to evaluate program performance, and to communicate how the resulting information will be used (Wholey, 1985).

It is especially important that research designs, measurement procedures, and instrumentation be standardized to establish some basis of comparison. The chief merit of standardization is that it facilitates the accumulation of knowledge over a series of implementations at different sites (Streff and Underwood, date). The standardization of monitoring and evaluation results for different projects could be particularly useful for comparing the progress of ICDP projects within a geographical region.

In their 1983 publication Evaluating With Sense--The Theory-Driven Approach, Chen and Rossi indicate that defensible models of how programs can be expected to work are needed. They indicate that too much attention has been given to project outputs and not enough attention has been given to the process of implementation. Due to the absence of effective implementation monitoring, it is not usually clear whether the recorded failures of programs are due to the fact that:

(1) the programs were built on poor conceptual foundations, usually preposterous sets of "causal mechanisms";

(2) treatments were set at such low dosage levels that they could not conceivably affect any outcomes; or

(3) the programs were poorly implemented.

ICDP activities are a case in point. According to Brandon and Wells (1992), in virtually all of the ICDP projects examined worldwide, the critical linkage between development and conservation is either missing or obscure. The establishment of effective monitoring and evaluation systems can assist project managers to develop effective ICDP models which demonstrate the linkage.

ICDPs often provide benefits (e.g., income, employment, agricultural technology, health services, education) to rural people who live adjacent to a protected area. In order for an ICDP to be successful, however, it must ultimately establish a link between the social and economic benefits for people living **outside** of the protected area and the behavioral response it seeks to achieve from those people to reduce pressure **inside** the protected area.

In order to be effective, a project should contain a comprehensive monitoring and evaluation system. Such a system includes an initial formative analysis during the project's design. The system also includes the monitoring of implementation activities and an assessment of the project's utility (Freeman and Rossi,1989).

An important feature of a formative monitoring and evaluation system for a natural resources management project is the collection of information regarding the conditions necessary for the stakeholders to adopt interventions. Armed with this information, project implementors are better able to make effective implementation adjustments and increase their opportunity for success (USAID, 1992).

The process of continuously adjusting implementation based on the collection of information is often referred to as "adaptive management" (Brown and Wyckoff-Baird, 1992). The process of implementation is complex and multi-staged. At each stage, it involves somewhat different activities and problems of learning, and different actors dominate. For example, in the early stages of implementation, problems are likely to be technical, procedural and political. Subsequent problems tend to be defined primarily as development issues: How can practices be refined? (McLaughlin, 1985). A well designed monitoring and evaluation system can provide project managers with the necessary information for adaptive management to be effective.

The Africa Bureau has developed a five-level framework to identify lessons learned during the implementation of field projects. A simplified version of the framework as described by Hildebrand (1992) is provided below (Figure 1 provides a more detailed description of the framework.).

Level V. Overall Goal

Level IV. Maintenance/Improvement of Natural Resources Base

Level III. Adoption of Practices

Level II. Conditions (that lead to Level III adoptions)

Level I. Activities (that promote changes in Level II)

In order to illustrate a cause and effect relationship between project activities and impacts, a "framework within a framework" can be developed for a project. This is accomplished by identifying specific project actions, conditions and consequences within each of the five framework levels.

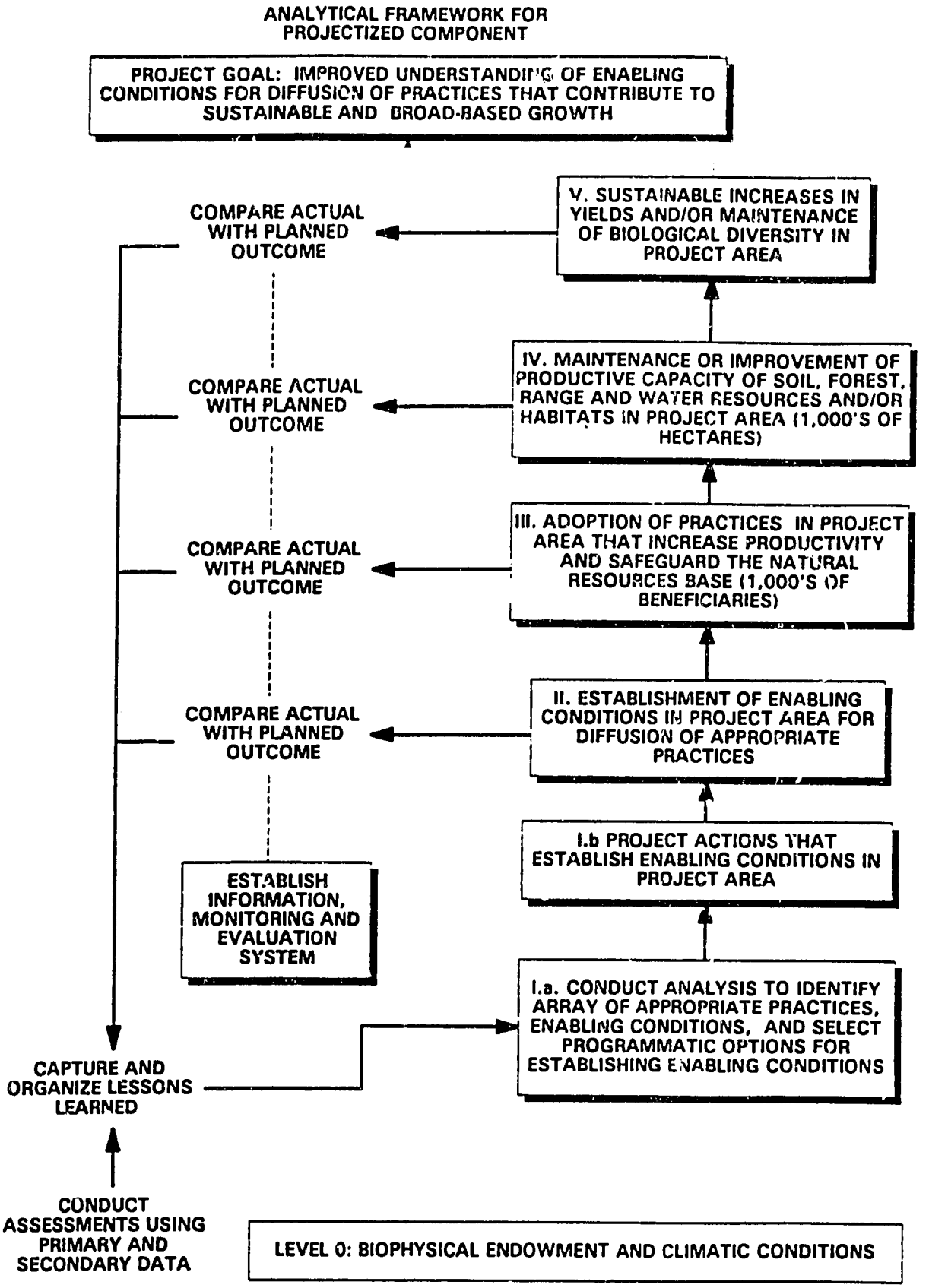

Figure 1. Natural Resources Management Framework Flow Chart

In her 1992 publication Applications of the Africa Bureau NRM Analytical Framework: An Analysis Based on Four Case Studies, Hildebrand discusses the problems and opportunities associated with the framework when applied to four ICDP projects in eastern and southern Africa. She found that the framework was applicable to the biodiversity projects studied. However, she also discovered that the framework does not accommodate feedback or iterative improvements between levels. Using the Campfire program case study in Zimbabwe as an example, Hildebrand states:

> Continually improving organizational structures and functions, improving attitudes and decision-making capabilities, improving wildlife management, and increasing income, were all incrementally strengthened and encouraged each other. For the purposes of planning, being cognizant of the way small changes and successes on different levels can interact to generate larger ones could be valuable.

A relatively new class of monitoring and evaluation models have emerged which may be applicatable to ICDP activities. Commonly called "responsive" or "participatory," these models take as their point of focus not objectives, decisions, effects, or similar organizers but rather the "claims, concerns, and issues" put forth by members of a variety of "stakeholding audiences." These audiences are in some sense involved with the evaluation (the entity being evaluated) and, hence, are put at risk by the evaluation. As part of the participatory evaluation process, the evaluator does not make judgments. Instead, he or she acts as a mediator in a negotiation process (Guba and Lincoln, 1986).

There is now extensive literature on the importance of taking indigenous technical knowledge as a starting point in rural development, and on the need for farmer participatory research as a basis for designing appropriate interventions. A number of development organizations have designed their monitoring and evaluation programs based on the participatory approach. For example, the Food and Agriculture Organization of the United Nations published a Community Forestry Field Manual in 1990 The Community's Toolbox: The Idea, Methods and Tools For Participatory Assessment, Monitoring and Evaluation in Community Forestry. The manual provides information for development workers to conduct participatory assessments, baseline surveys, monitoring and evaluation.

2.4 Development of Impact Indicators For Biodiversity--A Process Approach

A process can be used to develop biodiversity indicators within the context of the Africa Bureau's framework and current evaluation theory. Information obtained from the use of indicators can be used to alter and improve implementation throughout project life and to determine project impact (Brown and Wyckoff-Baird, 1992).

An effective ICDP should establish an impact-monitoring system based on clearly identified measurable indicators for success. The very nature of ICDP projects requires an analysis of three distinct areas. According to Brandon and Wells (1992), the monitoring program should be designed to:

(1) assess the effects of the ICDP activities on people outside protected area boundaries (e.g., provision of economic alternatives to unsustainable activities);

(2) assess the status of plants and animals inside the protected area, and changes in their status since the ICDP began; and

(3) identify causal links between changes in conditions inside the protected area with project activities outside the protected area.

It is useful to group proposed indicators into categories. According to the National Research Council (1989), there are four categories of criteria for evaluating biodiversity activities: biological criteria, social and economic criteria, institutional criteria and linkage criteria.

But what is the best method to select indicators for the measurement of project impacts? The selection of indicators should be done as part of a process within the context of a specific project. The Africa Bureau has selected a number of suggested biodiversity indicators (Figure 2 contains a list of suggested biodiversity indicators). However, indicators will be most effective and appropriate if they are tailored to meet the needs of each project. According to Noss (1989), there are ten proposed steps for the development of biological indicators and monitoring systems:

(1) determine what and why you are monitoring;

(2) gather and integrate existing data;

(3) establish "baseline conditions";

(4) identify "hot spots" and ecosystems at high risk;

(5) formulate specific questions to be answered by monitoring;

(6) select indicators;

(7) identify control areas and treatments;

(8) design and implement a sampling scheme;

(9) validate relationships between indicators and sub-end points; and

(10) analyze trends and recommend management actions.

Table 1 provides information on the three case studies regarding the completion of the ten steps indicated above.

1. Number and type of land users (farmers by gender, logging companies, etc., as appropriate) adopting management practices which increase the quantity and/or qualify of vegetation cover.

2. Percentage and total number of hectares under management practices which increase the quantity and/or quality of vegetative cover.

3. Percentage of remaining natural forest brought under improved management practices.

4. Number and type of land users (farmers by gender, logging companies, etc., as appropriate) participating in active management practices in support of the conservation of biodiversity.

Figure 2. USAID PRISM Biodiversity and Tropical Forestry Indicators.

Source: U.S. Agency For International Development. 1992. Performance Measurement For Strategic Management: Suggested Indicators For PRISM Clusters and Sub-Clusters. Washington, D.C. (46 pp.).

Table 1. Analysis of Case Study Monitoring Activities Using Ten Key Questions

The answers to these questions pertain to the period of the initial grant activity and the present activities now being conducted under the new USAID bilateral projects. (Symbol key: Y= yes; N= no; P= planned; and N/A= non-applicable).

Project Components

Kibale				Rwenzori			Tsavo		
1	2	3	4	1	2	3	1	2	
Y	Y	Y	Y	Y	Y	Y	Y	Y	1. Determined what and why you are monitoring?
Y	Y	-	Y	Y	Y	Y	Y	P	2. Gathered and integrated existing data?
Y	-	-	Y	-	-	Y	Y	P	3. Established "baseline conditions"?
-	-	-	-	-	-	-	Y	N/A	4. Identified "hot spots" and ecosystems at high risk?
Y	Y	Y	Y	Y	-	Y	Y	Y	5. Formulated specific questions to be answered by monitoring?
-	-	-	-	-	-	-	Y	P	6. Selected indicators?
-	-	Y*	-	-	-	-	N/A	N/A	7. Identified control areas and treatments?
Y	Y	Y	Y	Y	-	Y	N	N/A	8. Designed and implemented a sampling scheme?
-	-	-	-	-	-	-	N	P	9. Validated relationships between indicators and sub-end points?
Y	Y	Y	Y	Y	Y	Y	Y	Y	10. Analyzed trends and recommended management actions?

* Agriculture on-farm research activity only.

<u>Key to Project Components</u>

Kibale Forest Reserve	Rwenzori N.P.	Tsavo N.P.
1) Training & research	1) Tourism development	1) Conflict resolution
2) Tourism development	2) Forest conservation	2) Community extension training
3) Community outreach	3) Community development	
4) Forest management		

Below are some suggestions for the selection of indicators.

-- They should be grounded in both accepted practice and substantive theory; they strike a balance between what can be measured and what should be measured.

-- They should be specific and sensitive enough to reveal those changes in the activity being measured that can be attributed to USAID.

-- They should permit verification of measurement accuracy, reliability and thoroughness. The indicators allow, at least in principle, for others to replicate the process used to develop them in order to check on measurement quality.

-- They should promote timely measurement of project and program accomplishments.

-- Wherever possible and appropriate, measurement should focus on people-level impacts. Indicators of project process and outcome are also essential; they tell us what was done to achieve a strategic objective. Valid indicators of people impact tell us how the project affected the lives of those people it was intended to benefit.

-- They have significance for a wide range of audiences, including local managers and external evaluators.

-- Where feasible, local people should be able to assist in data collection. Therefore, they should focus on practical aspects, be straightforward and deal with issues meaningful to rural people.

-- They enable cost-effective measurement, preferably using data in the USAID Mission project or program monitoring and evaluation systems or secondary data collected regularly by a host government or donor agency (Weber, 1990)(VanSant, 1992).

McGahuey (1991) identified five lessons learned regarding the identification of indicators for sustainable agriculture which are applicable to biodiversity:

(1) monitoring progress requires an analytical process that judiciously selects reliable measures of change from among an array of options;

(2) the analytical process needs to account for both spatial and temporal variables;

(3) in view of the temporal dimension, the process needs to identify both intermediate indicators (steps in the implementation process) and impact indicators;

(4) the analytical process needs to take into account the expense of tracking change; and

(5) the monitoring process should capture lessons learned as well as track progress--programming decisions should be informed by past experiences.

The selection of indicators should include the measurement of progress made towards the sustainability of project activities beyond the life of the project. The process of sustainability often requires African governments to provide an appropriate political and economic environment. For example, African governments can establish policies which support the sustainable practices encouraged by the project (e.g., revenue sharing, land tenure reform, legal framework development). They can also institutionalize project activities through training and institutional re-organization.

The overseas USAID Missions are required to develop indicators for programs which they have choosen as strategic objectives under the DFA. While natural resources management is not a strategic objective for USAID/Kenya it is a strategic objective for USAID/Uganda. The biodiversity indicators developed by USAID/Uganda prior to this study are contained in Figure 5.

There are some differences between USAID/Uganda's indicators and the indicators presented in this study. These differences are indicated below.

-- This study presents indicators within the framework as part of a cause and effect development process.

-- USAID/Uganda's indicators are designed to track changes in biological conservation nation-wide associated with the overall APE bilateral project. The indicators presented in the study focus on measuring changes associated with individual projects within the context of the APE bilateral project.

-- USAID/Uganda's indicators measure outputs of the APE bilateral project and associated activities. This study presents indicators within the context of individual project monitoring and evaluation systems.

Stabilize Biodiversity in Target Areas

Indicator: Maintenance of flora and fauna diversity in protected areas

Indicator: Income of women in buffer zones.

Indicator: Income of men in buffer zones.

Indicator: Completion and Government of Uganda endorsement of the National Environmental Action Plan.

Indicator: Legal status of target parks and reserves changed to ensure protection.

Indicator: Bwindi, Rwenzori, and Mgahina forests made national parks.

Indicator: Kibale forest raised to nature reserve status.

Indicator: Policies adopted permitting local retention.

Improved Park/Reserve Operations and Practices

Indicator: Tourist visits--Bwindi, Mgahina, Rwenzori, Kibale and Lake Mburo.

Indicator: Road access to Rwenzori, Lake Mburo, Kibale, Bwindi and Ishasha.

Indicator: Annual park/reserve collection of tourist and other user fees--Bwindi.

Indicator: Annual park/reserve collection of tourist and other user fees--Rwenzori and Kibale.

Strengthen Incentives For Women and Men in Buffer Zone Areas to Adopt Improved Natural Resource Practices

Indicator: Tested practices extended to farmers in buffer zone areas through community extension programs by non-government organizations, relevant agencies and schools.

Indicator: Men employed in parks and reserves--Bwindi, Rwenzori, Kibale, Lake Mburo.

Indicator: Women employed in parks and reserves--Bwindi, Rwenzori, Kibale, Lake Mburo.

Promote Ugandan Tourism Through Private Institutions

Indicator: Private licenses to nature tour operators.

Indicator: International tour operators.

Indicator: Quality of private tour operators.

Indicator: Indigenous organizations providing tourist services.

Figure 3. USAID/Uganda Biodiversity Conservation Indicators

Ideally, a national donor project would develop standardized indicators to address both the national and field project level impacts. The standardization of indicators at the both levels would encourage the development of standardized field methods (e.g., biological and community surveys, training, policy reform) and would facilitate the communication of lessons learned on a national and regional basis.

Alternatively, the information obtained from using both types of indicators could be evaluated using "meta-analysis." Meta-analysis involves the pooling of the results of many impact evaluations. The advocates of meta-analysis believe that pooling results from many existing impact assessments makes it possible to arrive at an estimate of net effects (Freeman and Rossi, 1989). The findings using this method can be particularly useful at the program design stage to summarize existing knowledge concerning already implemented programs that are similar to the program being designed.

CHAPTER 3
CASE STUDY

3.1 Case Study Methodology

A case study is a method for understanding a complex situation through analysis and description of that situation taken as a whole and within its context (U.S. General Accounting Office, 1990). The goal of a case study is to obtain as complete a picture as possible of what is going on in a situation and why. The illustrative case study provides real life sources of information from which to answer key questions related to the thesis topic.

Illustrative case studies have been developed for this study based on data collected in the field for three ICDP projects:

(1) Tsavo West National Park in Kenya;

(2) Kibale Forest Reserve in Uganda; and

(3) Rwenzori National Park.

Information regarding the case studies were obtained from interviews with all relevant persons, participant observation and project documents. Three key questions were answered for each of the case studies. These questions are indicated below.

1. What is the political and institutional context of the case study? What are the essential features of the case study?

2. Can a cause and effect linkage be identified between the case study activities and the conservation of the protected areas using the framework? What are the suggested indicators to monitor this process?

3. Who, what and how is data collected?

Answers to the above questions address the present ongoing case study activities. In addition, the answers reflect how these case study activities interact with the new USAID bilateral projects (USAID/Kenya's Conservation of Biodiverse Resource Areas, and USAID/Uganda's Action Program For The Environment).

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3.2 Answers to Case Study Questions

1. What is the political and institutional context of the case study? What are the essential features of the case study?

Case Study 1: Tsavo West National Park, Kenya

Political and Institutional Context

Since 1990, when the Government of Kenya established the Kenya Wildlife Service (KWS) to replace the increasingly ineffective Wildlife Conservation and Management Department, the KWS has undergone a major restructuring in an effort to radically improve its management capacity. The KWS has already made significant progress in combatting poaching and improving Kenya's protected area management and infrastructure.

Wildlife and coastal-based tourism has become Kenya's primary foreign exchange earner and the fastest growing sector in the country. Gross tourism receipts grew from U.S. $116 million in 1977 to $418 million in 1989. Tourism is a major source of employment and government revenues and serves as a market for other economic sectors of the Kenyan economy. Total direct employment is estimated to be 110,000, of which approximately sixty-percent is associated with accomodation establishments and twenty-percent associated with tour operators and travel agents (USAID, 1991).

The international community has developed a multi-donor natural resources project: "Protected Areas and Wildlife Service Project" (PAWS). PAWS is being financed by both bilateral donors (forty-six percent) and the International Development Association (fifty-four percent). The project was designed to further strengthen the KWS's management capacity. Private sector development initiatives under the project include incentives to promote private game ranches, tourism facilities outside protected areas, and wildlife-related enterprises.

USAID/Kenya Conservation of Biodiverse Resource Areas Project

The Tsavo West National Park case study is one of several activities being implemented as part of the new USAID/Kenya Mission bilateral project: "Conservation of Biodiverse Resource Areas" (COBRA) (615-0247). COBRA is a six year project (FY 1991-1996) which is being implemented within the context of the PAWS project.

The COBRA project began this year to assist KWS to implement its new community conservation approach. This approach will attempt to demonstrate that it is in the people's financial and social interest to protect and sustainably manage wildlife resources. The goal of the COBRA project is to promote socio-economic development through conservation and sustainable management of Kenya's natural resources (USAID, 1991a).

COBRA is designed to increase the socio-economic benefits to communities living adjacent to Kenya's parks and reserves through the conservation and sustainable management of wildlife and natural resources. The COBRA project approach is based on the assumption that if communities receive direct benefits from the presence of wildlife, that they will perceive wildlife as a necessary and important resource which offers greater benefits than costs.

The benefits to communities from wildlife management will be obtained from:

(1) wildlife generated or wildlife related enterprises; and

(2) shared revenue generated by wildlife-based tourism.

During the term of the five year project, USAID financing will assist the KWS to conduct the activities indicated below.

-- Establish a functioning Community Wildlife Service (CWS) with qualified and capable staff at headquarters and in the field. The CWS will carry out, coordinate, supervise and monitor the community conservation program.

-- Design and implement mechanisms for sharing revenue with communities from protected area gate receipts.

-- Administer a Community and Enterprise Development (CED) Fund. The CED Fund will support technical assistance for communities to organize to obtain shared revenue, to develop wildlife related enterprise proposals, and to develop community development efforts to be financed by shared revenues.

-- Support non-governmental organizations in wildlife management, training and community development activities in four geographic areas (the Tsavo West National Park is one of the areas).

-- Further define key policy issues in wildlife-related management.

The COBRA project will produce outputs in four primary subject areas:

(1) Kenya Wildlife Service support;

(2) human resource development;

(3) the establishment of a Community and Enterprise Development Fund; and

(4) studies, research and policy analysis for the Kenya Wildlife Service.

Tsavo West National Park Project

The Tsavo West National Park case study is one of the activities being implemented under the USAID/Kenya COBRA project described above. USAID originally supported the Tsavo West National Park project through a USAID grant to the African Wildlife Foundation (AWF) in 1988. The USAID/Kenya COBRA bilateral project is now supporting the Tsavo West National Park activities.

The Park is located in southeastern Kenya and borders Tanzania. It is important as a stronghold for a few remaining rhinos and a large elephant population. Incursions by local pastoralists into the Park to graze cattle threaten wildlife habitat and have caused a conflict between Park authorities and communities surrounding the Park. This situation is exacerbated by the increase in agriculture near the Park boundaries which is resulting in increased grazing pressures for both domestic cattle and wildlife, with wildlife increasingly causing damage to crops (African Wildlife Foundation, 1987).

Patterns of land tenure around the Park are following the same trends as elsewhere in Kenya. Land is being adjudicated to private owners in the form of long-term leases for commercial ranches. These private owners are virtually free to decide how wildlife is to be managed on their land. For example, land owners can erect fences and modify habitat by clearing brush and trees.

The Maasai cattle grazers are aware of the livestock potential within Tsavo West National Park. As wildlife densities within and outside to the west of the Park are the same, it is important to maintain the goodwill of the Maasai towards wildlife on their land adjacent to the Park. It is also important for Park authorities to show how protected areas are relevant to the well-being of local people. This is difficult as very few Maasai receive any financial benefits from the revenue generated from wildlife tourism. Parks and associated wildlife are often perceived by the Maasai, quite correctly, to be a financial burden.

The political and institutional context of the Tsavo West National Park area is somewhat complex. Both pastoral and non-pastoral groups from a number of different areas are using the Park illegally:

(1) Maasai group cattle ranches on the west side of the Park;

(2) Wataveta agriculturalists on the south side of the Park; and

(3) poachers from the Mkomasi Game Reserve and the Kilimanjaro National Park areas in Tanzania.

In addition, project activities and agreements which are effective in one area may not be effective in another area. For example, a buffer zone was established on the Maasai group ranch land in the Taita/Taveta District. Cattle grazing is allowed in the buffer zone only during the dry season. However, cattle grazing is not allowed in the nearby Kajiado District according to the Chief's Act. In order to get around the Chief's Act, the Kajiado District cattle grazers arrange for the Maasai to graze their cattle in the buffer zone.

The project is faced with some additional challenging political problems. For example, both the Kajiado District and the Taita/Taveta District have requested priority consideration for revenue-sharing associated with tourism in the Park. Each has a viable claim: the Taita/Taveta District has foregone land as a buffer zone, but the Park is located within in the Kajiado District boundary.

There is also the matter of determining at which administrative level in the community that revenue-sharing funds should be managed. Both Districts have requested that the revenue-sharing funds be managed at the District level instead of the resource user level. However, some people believe that the resource users should be provided with assistance to manage the funds themselves.

Essential Features of the Tsavo West National Park Case Study

With financial support from USAID since 1988, AWF has been in the process of establishing an extension program for Tsavo West National Park. The project is establishing a process for the development of financial partnerships among the resource users, the Park authorities and the private sector (African Wildlife Foundation, 1992).

The primary focus of the project has been to establish a process to resolve stakeholder conflicts associated with land use in and around the Tsavo West National Park. In order to achieve this, the project staff are in the process of:

(1) improving communications among the resource users, the KWS and the GOK; and

(2) providing wildlife extension training and logistical support to the Community Wildlife Service field and headquarters staff.

The project is composed of two component activities which are described below.

1. Field Dialogue and Conflict Resolution

The Tsavo West Park project is conducting field dialogue and conflict resolution activities which have resulted in agreements among all parties regarding land use activities in and around the Park (e.g., creation of a multi-purpose buffer-zone, limited cattle grazing in Park during the dry season). As a result of these negotiations, the project staff have also begun to provide rural development incentives to the resource users. For example, the project is said to provide Maasai cattle grazers with benefits which include:

(1) disease prevention cattle dips; and

(2) improved access to a cattle market by the provision of an auctioneer near to the Park area.

Final negotiations are now being undertaken between the Maasai group ranches and the private sector for tourism development activities under the project (Lembuya, 1993 personal communication). The planned implementation activities within the buffer zone include bird hunting, safari walking tours and camping. Negotiations are also underway to establish village cultural centers ("demonstration villages") for tourism activities. A future source of sustainable

funding for rural development activities will be generated through KWS revenue-sharing.

As part of the new COBRA bilateral project, the AWF and KWS staff have recently begun to conduct community surveys (knowledge, attitude and practices surveys) of villages in the area. The information will assist both the Park and COBRA project managers to better understand the resource users and to tailor project interventions to the needs of these people. The surveys will also assist project managers to determine the impact of project activities.

2. Community Extension Training For KWS's Community Wildlife Service Division

In the past, the KWS placed enforcement activities over cooperation with local resource users. The KWS recently established a Community Wildlife Service division which will implement community extension services to communities living adjacent to Kenya's protected areas. The COBRA project will provide community extension training to the division staff for the purpose of institutionalizing this activity.

Case Study 2: Kibale Forest Reserve

Political and Institutional Context

The management of protected areas and adjacent rural communities is greatly influenced by legal, policy, and institutional constraints. The recent restructuring of the Government of Uganda's (GOU) ministries will go a long way towards providing a policy environment conducive to sustainable management of its protected areas. For example, the Uganda National Parks (UNP) and National Forest Service are now both under the Ministry of Water, Energy and Environment Protection--previously they were in two different ministries (Isaac Aluba 1993, personal communication).

Uganda's natural resources can provide a unique economic opportunity for nature based tourism. During the 1960's, tourism was the third largest foreign exchange earner, after coffee and cotton. In 1971, for example, there were 88,630 tourists who spent 20 million dollars in Uganda. While tourism demand dropped during Uganda's period of civil unrest, tourism has been increasing since 1987. The Department of Immigration reported 44,000 visitors to Uganda in 1989 and 50,000 in 1990 (USAID, 1993).

A priority concern in the natural resource sector is the initiation of national analysis and consensus building concerning environmental laws, policies, and institutional arrangements. At the same time, areas which serve as watersheds, conservation reserves, and potential tourist sites need to be effectively protected and managed. The GOU approach to its natural resource constraints and problems, while not articulated in one place, follows this strategy.

In July 1990, the GOU requested assistance from the World Bank to coordinate a National Environmental Action Plan in order to assess the status of natural resource management, to recommend needed changes to the environmental legislation and institutions, and to prepare a strategy and long-term program. The GOU is prepared to open a national debate on the state and future of Uganda's natural resources.

USAID/Uganda Action Program For The Environment (APE) (617-0124)

USAID/Uganda is implementing a $30 million six-year natural resources management project. The project was authorized in August, 1991 began this year. The project will assist Uganda's public and private sector to more effectively manage its natural resources base. This will be achieved through two project components--a policy component, and a rehabilitation and resource conservation component.

1. Policy Component

The USAID policy component will support the development of the World Bank initiated National Environmental Action Plan (NEAP). The NEAP will develop a comprehensive national strategy to address legislative, policy, and institutional issues related to the environment. The policy component activities will result in the development of the NEAP, the implementation of policy and legislative reforms which are recommended by the NEAP, and the upgrading of three forest reserves (Bwindi, Mjahinga, and Rwenzori) to National Park status.

2. Rehabilitation and Resource Conservation Component

This component will provide grants to private voluntary organizations and non-government orgainzations for projects which support sustainable resource, rehabilitation of protected areas, a natural resource information system, and environmental impact assessments. The results from these activities will include an increase in revenues from tourism and a reduction in deforestation in protected areas.

Kibale Forest Reserve Case Study

USAID/Washington originally supported the Kibale Forest Reserve project through a grant in 1989 to the Wildlife Conservation Society (WCS) (a division of the New York Zoological Society). Plans are for the USAID/Uganda APE bilateral project to support the Kibale Forest Reserve activities.

The New York Zoological Society has been implementing a project to protect and manage the reserve for over twenty years. The purpose of the present project is to assist the Government of Uganda to fulfill its mandate to conserve and manage forest resources. As part of this effort, the project is monitoring the impacts of human disturbance on the forest reserve and providing rural communities with alternatives to unsustainable management practices (Isabirye-Basuta and Johns, 1993).

Deforestation has become an acute problem for Uganda. More than two percent of the country's forests are converted to other land uses annually. Its natural forests have been reduced to three percent of the country's area. Located in southwest Uganda, the Kibale Forest Reserve represents one of the country's last remnants of mid-elevation forest.

The Kibale Forest Reserve has one of the most biologically diverse forests in Uganda. It contains the highest primate population density known anywhere in the world. In addition, the Kibale Forest Reserve maintains populations of African elephants, chimpanzees and rare bird life (Wildlife Conservation Society, 1992).

The Kibale forest is an ideal area within which to monitor the impacts of human disturbances and field-test alternative management practices. The forest is divided into compartments with different management histories. Some forest areas have remained essentially unaltered and support an intact forest ecosystem. Other forest areas have been disturbed by various types of human activities:
forest logging, agricultural encroachment, and the planting of exotic tree plantations.

Essential Features of the Kibale Forest Reserve Case Study

The present project is composed of four component activities which are described below. Figure 4 provides a description of the Kibale Forest Reserve implementation activities.

1. Research and Training

Forest research is being conducted by the Makerere University field station under the present project. Conservation biology and the use of forest resources by rural communities are the primary research subject areas. The objectives of the field station are:

(1) the provision of environmental science training for Ugandans;

(2) the development of research and monitoring programs; and

(3) the provision of assistance to the Ugandan Forest Department.

Table 2. Present Kibale Forest Reserve Implementation Activities

	Financial Year 1	2	3	4	5
Makerere University Research					
Forest regeneration studies	----------	----------	----------	----------	----------
Forest rehabilitation studies	----------	----------	----------	----------	----------
Illegal use monitoring	----------	----------	----------	----------	----------
Wild coffee research	----------	----------			
Other non-timber forest products study	----------	----------			
Misc. wildlife monitoring	----------	----------			
Construction	----------	----------			
Outreach Program					
Community education activities	----------	----------	----------	----------	----------
Agforestry evaluation	-------				
Crop trails	----------	----------			
Wildlife/crop studies	----------	----------			
Sociological research	----------	----------	----------	----------	----------
Tourism Development Program					
Construction of tented camp		-------			
Laying out camp ground	-----				
Establish nature trails	----------				
Establish trail system	----------	----------			
Habituation of chimpanzees	----------	----------	----------		
Forest Park Management Program					
Management Plans	--				
Replanting of encroached areas	----------	----------	----------	----------	----------
Boundary maintenance	----------	----------	----------	----------	----------
Training of new staff	----------	----------	----------		
Other					
Project evaluation		--			--

2. Applied Forest Management

Activities conducted under this component are promoting sustainable uses of the forest by rural communities. For example, the project is examining the feasibility of local harvest of wild coffee varieties, medicinal plants, tree poles and timber from the forest reserve. The project is also examining opportunities and constraints associated with tourism development in the area.

3. Outreach to Local Communities

This component is designed to create greater environmental awareness throughout communities located adjacent to the reserve. A wide range of educational activities are being conducted which include the promotion of tree planting and agroforestry.

On-farm agricultural research is also being conducted by the project to test alternative food crops which are inedible to the nearby forest reserve primates (e.g., sunflowers, tobacco, coffee, bananas for brewing). The agricultural research is encouraging intercropping of these crops with traditional crops (e.g., cassava, potatoes, beans, bananas) (USAID, 1991b). It is hoped that research results will provide farmers with alternative food and cash crops which will reduce the conflict between the farmers and the forest reserve primates.

4. Tourism Development

A tourism management plan was developed by the project in 1990. The plan was developed collaborately with the Ugandan Forest Department. A tourism component was developed for the forest reserve based on the plan. Frontier, a British NGO, is participating in the tourism activities and intends to take over the management of this project component.

The goal of the tourism component is to povide a facility to enable tourists to visit Kibale Forest Reserve in an organized manner. Tourist are an important potential source of revenue for the forest reserve and the local community. In 1992, 1,300 tourists visited the Kibale Forest Reserve. All tourism revenue is maintained by the project. Tourism revenue sharing with the local resource users is planned for this year (Isabirye-Basuta and Johns, 1993).

The tourism component activities include the establishment of:

(1) camp grounds (tent areas, brick fire places and shelters);

(2) individual tented camp sites with concrete foundations and roofs;

(3) a trail system within the forest reserve;

(4) a training program for forest guides (guide training provided by Makerere University Field Station); and

(5) a chimpanzee habituation program.

Case Study 3: Rwenzori National Park

Rwenzori National Park Case Study

The Rwenzori National Park (also known as the "mountains of the moon") is located in western Uganda. The Park contains diverse flora which remains essentially undisturbed. Eighty percent of the Rwenzori mountain range is in Uganda, the other twenty-percent is shared with Zaire to the west. The mountains above 2,100 meters have been classified as a Forest Reserve in 1941. In 1991, the Forest Reserve obtained National Park status. The forest protects a large watershed which provides a source of potable water, irrigation water and hydro-electric power for over one million people in the lower elevations (USAID, 1991b).

A significant increase in the human population near the National Park is creating stress on the area's natural resources. In 1990, population density was over 400 people per square kilometer in many areas adjacent to the reserve. Soil erosion and loss of vegetation are resulting from unsustainable agricultural practices on steep slopes. However, the economic recovery now taking place in Uganda is likely to provide employment opportunities in the lowlands for many resource users now residing in the park area (1991b).

Human settlement is not permitted within the National Park. As a Forest Reserve, the harvesting of forest products by rural communities was permitted under controlled conditions (e.g., food, building materials, fuel wood and fiber). Whether local communities will be permitted to harvest forest products in the National Park is now being discussed (World Wildlife Fund, 1990).

Essential Features of the Rwenzori National Park Case Study

USAID is providing financial support to two organizations who are conducting activities in the Park area: the Rwenzori Mountaineering Service, and the World Wildlife Fund. The RMS is an non-governmental organization which was created in 1987. The goal of the RMS is to promote income generating tourism activities, and to use the income for socio-economic development in the Rwenzori National Park area. USAID has been funding the RMS to develop tourism in the Rwenzori National since 1988. It contributed 376,92,000 Uganda shillings during the period of 1988 through 1991 (USAID, 1991). The funds expended by the RMS to date have resulted in:

(1) establshment of seven mountain camps sites with associated water and sanitary facilities;

(2) construction of a bridge over the Mubuku river, a planked path over the Bigo Bog, numerous buildings, and a High School;

(3) provision of mountaineering equipment; and

(4) improvement of roads and trails.

The RMS project is composed of three component activities which are described below (Rwenzori Mountaineering Service, 1993).

1. Tourism Development

The RMS has constructed and maintained tourism related structures which include camping ground huts, road maintenance, bridges, trails and trail signs, latrines and trash pits and water pumps. Tourism in the park has been increasing significantly over the past few years. For example, the park received 500 visitors in 1989 compared with 689 visitors in 1990. This represented a 35 percent increase in visitors to the Park. A total of 1,068 tourists visited the park in 1992 (USAID, 1991a).

The Ugandan Misistry of Tourism, Wildlife and Antiquities has granted the RMS an exclusinve license to operate tourist facilities in the park. The RMS is not obligated to share tourism revenues with the Ugandan government (Hildebrand, 1992).

2. Conservation

The RMS provides training for tourism guides, porters and construction workers. Educational opportunities are also being provided to resource users in the area through the construction and improvement of secondary schools. The RMS's contribution to employment opportunities and education may provide an alternative to unsustainable use of the park by local resource users.

3. Community Development

Rural development activities implemented using the RMS tourism revenues include:

(1) construction of a dispensary, maternity ward and schools (primary and secondary school);

(2) providing dispensary cost-sharing benefits for local resource users;

(3) road improvement; and

(4) provision of markets for the local community's produce.

The WWF was awarded a U.S. 600,000. grant from USAID/Uganda February, 1990. While the original grant ended in March, 1993, WWF has requested a grant amendment. The purpose of the activity is to identify and provide sustainable resource management alternatives to local resource users living adjacent to the Park. The WWF completed a socio-economic baseline survey of local resource users in early 1993 (WWF has requested an amendment to the present contract). The information obtained from the survey will be used to design and implement rural development activities for resource users living near the park.

2. Can a cause and effect linkage be identified between the case study activities and the conservation of the protected areas using the framework? What are the suggested indicators to monitor this process?

Case Study 1: Tsavo West National Park

The Tsavo West National Park project has relied primarily on conflict resolution to change resource user behavior. The approach is resulting in:

(1) agreements between all parties regarding land use activities in and around the Park (e.g., creation of multi-purpose buffer-zone, authorized limited cattle grazing in Park during the dry season); and

(2) institutionalizing a partnership approach between the resource users and the KWS.

However, the project is focused on rural communities associated with the Park--not necessarily on the biological conservation of the Park. The initial Tsavo West National Park grant activity was not designed to monitor the impact of its community activities on the biological conservation of the Park.

The COBRA project staff have indicated that they may choose to rely on appropriate KWS staff to monitor the impact of the Tsavo West National Park community interventions on the biological conservation of the Park. All parties concerned understand that a cause and effect relationship between community interventions and Park conservation can be determined only if data is collected on changes in both community behavior and biological Park resources over time.

The Tsavo West National Park project fits well into the framework, as it is attempting to establish a partnership (establish favorable conditions) among resource users and the KWS for the sustainable management of the Park. The adoption of sustainable practices by the resource users relies on their upholding established agreements. This partnership process is maintained by appropriate KWS budget levels, human resources development and policy climate. The framework tracks the project's progress in reducing use of the Park by the local community, managing the Park cooperatively with resource users, maintaining the Park's biophysical resources, and contributing to socio-economic development.

The Appendix contains suggested indicators for the Tsavo West National Park project using the framework. It should be stressed that the framework is a continuous process. Indicators from one level should be linked to indicators in another level. The Tsavo West National Park project field dialogue and conflict resolution component can be used as an example. The number and type of meetings held by the CWS

(framework level II indicator) is linked to the grantee proposal activities which provide communities with sustainable alternatives as a result of the CWS partnership process (framework level III indicator).

Some of the most important project indicators are at framework level II (actions which establish conditions necessary for the adoption of sustainable practices). In the Tsavo West National Park case study, framework level II indicators measure progress in:

(1) the negotiation and implementation of agreements between resource users and the KWS (e.g., number of agreements on specific subjects made between project participants during meetings, percent increase in target community income);

(2) maintenance of sustainable budget levels and human resources by KWS (e.g., number of trained community extension officers deployed in park before and after project completion); and

(3) providing park managers with skills and policy climate necessary for effective management (e.g., number of negative to positive responses by communities regarding extension officer techniques and attitudes as indicated by surveys).

Natural resources management indicators were not developed by USAID/Kenya prior to this study, as natural resources management was identified as a target of opportunity, not a strategic objective. However, the Mission staff expressed interest in integrating impact monitoring activities into the COBRA project as appropriate.

Case Study 2: Kibale Forest Reserve

The Kibale Forest Reserve project is probably better equipped to integrate impact monitoring than any other project in the highlands of central East Africa. The Kibale Forest Reserve staff have been conducting forest research for over twenty-years. The project staff are presently conducting forest research on forest regeneration, forest rehabilitation, wild coffee, non-timber forest products and wildlife management. The project's tourism development component is also relatively well established.

In order for a project to establish a link between conservation and development activities, there must be some kind of experimental or quasi-experimental comparison groups/areas and controls (both within and outside the forest). Of the two case studies examined, only the Kibale forest on-farm agricultural research component has experimental treatments and controls. The research is testing alternative food crops which are inedible to the nearby invading forest reserve primates. However, the on-farm agricultural research component is not designed to determine the impact of its agricultural interventions on the forest ecosystem.

The Kibale Forest Reserve project also fits well into the framework, as it to is attempting to establish a partnership (establish favorable conditions) among resource users and the GOU for the sustainable management of the Park. Similar to the Tsavo West National Park case study, this partnership process is maintained by appropriate government budget levels, human resources development and policy climate.

The Appendix contains suggested indicators for the Kibale Forest Reserve project using the framework. Again, while the framework is a continuous process, some of the most important project indicators are at framework level II (actions which establish conditions necessary for the adoption of sustainable practices). In the Kibale Forest Reserve case study, framework level II indicators measure progress in:

(1) providing resource users with an alternative source of income from community development or tourism (e.g., percent increased agricultural productivity, number of students who obtain alternative employment outside of the project).

(2) providing resource users with an alternative source of non-timber products from forest (e.g., number of tree nurseries);

(3) maintenance of sustainable budget levels and human resources by GOU (e.g., number of trained staff deployed in and around forest before and after project completion); and

(4) providing forest reserve managers with skills and policy climate necessary for effective management (e.g., number of negative to positive responses by communities regarding extension officer techniques and attitudes as indicated by surveys).

Case Study 3: Rwenzori National Park

Similar to the other two case studies, the Rwenzori National Park project fits well into the framework, as it to is attempting to establish a partnership (establish favorable conditions) among resource users and the GOU for the sustainable management of the Park. Also similar to the other case studies, this partnership process is maintained by appropriate government budget levels, human resources development and policy climate.

Neither the Rwenzori National Park WWF or RMS project activities have established experimental or quasi-experimental comparison groups/areas and controls (both within and outside the forest). As indicated earlier, some kind of comparison groups must be established in order for a project to determine whether or not there is a link between its conservation and development activities.

Appendix 1 contains suggested indicators for the Rwenzori National Park project using the framework. Again, while the framework is a continuous process, some of the most important project indicators are at framework level II (actions which establish conditions necessary for the adoption of sustainable practices). For the Rwenzori National Park project, framework level II indicators measure progress in:

(1) providing tourists with facilities for the sustainable use of the Park (e.g., percent of well designed and well placed camp sites and facilities, percent of fuelwood and water for tourists which is obtained from sustainable sources);

(2) providing resource users with an alternative source of income from community development or tourism (e.g., percent increased agricultural productivity, number of students who obtain alternative employment outside of the project, amount of income saved by resource users due to dispensary and maternal ward cost-sharing policy);

(3) maintenance of sustainable budget levels and human resources by GOU (e.g., number of trained staff deployed in and around forest before and after project completion);

(4) providing forest reserve managers with skills and policy climate necessary for effective management (e.g., number of negative to positive responses by communities regarding extension officer techniques and attitudes as indicated by surveys);

3. Who, what and how is data collected?

Case Study 1: Tsavo West National Park

Under the original Tsavo West National Park project grant agreement, the AWF was only required to provide periodic progress reports to USAID. The project staff have been tracking all major project activities implemented under the original grant agreement as part of the new COBRA project. Information is recorded regarding the number of meeting participants, summaries of discussions, and follow-up needed to implement agreements. The lessons learned are used to develop a process of effective negotiation between resource users and the GOK.

Under the new COBRA project, the AWF and KWS staff have developed what appears to be a sound strategy for conducting baseline and on going community surveys (knowledge, attitude and practices surveys) for the Tsavo West National Park. If implemented as planned, the information obtained from the Tsavo West National Park project surveys should assist the staff to design and evaluate projects using adaptive management.

The AWF and KWS staff are now conducting initial village surveys in the Tsavo West National Park area under the COBRA project. Beginning this year, the COBRA and KWS staff will use three different types of community surveys:

(1) rapid and low-cost periodic baseline surveys for numerous communities;

(2) more intensive village profiles in areas receiving planned enterprise development interventions under the COBRA project; and

(3) continued tracking of individual extension/dialogue events during the implementation process (e.g., village meetings and associated agreements, workshops).

The rapid and repeated low-cost baseline surveys will be used to conduct a comparative analysis of communities who received interventions with those that did not receive interventions. It is anticipated that the results will provide project managers with lessons learned regarding the process of community development and conflict resolution.

Figure 3 contains answers to ten questions developed by Noss (1989) to assess the status and trends of biodiversity as part of monitoring and evaluation programs. According to Richardson (1992), these ten questions can potentially be applied to socio-economic conditions and community participation activities. For example, the World Bank is using these questions to develop guidelines for monitoring and evaluating its biodiversity projects.

The information in Figure 3 provides an indication of what information is being collected by the Tsavo West National Park project. When using the ten questions to analyze the project, it appears that greater emphasis has been placed to data on the collection of field dialogue and conflict resolution information (component number 1) than on community extension training for KWS's community wildlife service (component number 2).

For example, of the seven questions which apply to the project (questions 1,2,3,5,6,9,10), the first component received six positive responses and the second component received three positive responses. The project's emphasis on component number one is consistent with the objectives under the original grant agreement. It is the author's understanding that greater emphasis will be placed on component number 2 activities under the new USAID/Kenya COBRA project.

Case Study 2: Kibale Forest Reserve

As with the Tsavo West National Park project, USAID only required the Kibale Forest Reserve project staff to provide periodic progress reports as part of the original grant agreement. The project staff have been tracking all major project activities as required.

There are a number of monitoring activities which are being conducted under the project. For example, the Makerere University students and field station staff are conducting research on biological and socio-economic topics associated with the Kibale Forest Reserve. The research results are published in professional journals and made available to the Forestry Department in the form of progress reports and official memoranda. The Kibale Forest Reserve tourism component staff are keeping detailed records of the number and type of tourists visiting the forest and the amount of income received.

The project staff are also maintaining computer data bases. For example, one computer data base contains information on environmental conditions in the Kibale Forest Reserve (e.g., rainfall, tree density, tree fruiting cycles, soil). The present project also began a study in 1992 to create a computer data base on land resources and socio-economic conditions in the buffer zone area adjacent to the Kibale Forest Reserve. The project staff plan to use a geographic information system to store and analyze project data.

As WCS and Makerere University have been conducting forest research for more than twenty years, one would expect the project's present biological monitoring system to be well developed. When using the ten questions in Figure 3 to analyze the project's monitoring activities, this appears to be the case. For example, for seven of the ten questions applicatable to the project (questions 1,2,3,5,7,8), positive responses were received regarding the biological monitoring activities. However, significantly fewer positive responses were received regarding the community outreach component (component number 3).

Case Study 3: Rwenzori National Forest

As with the Kibale Forest Reserve and Tsavo West National Park project, USAID only required the RMS and WWF Rwenzori National Park project staffs to provide periodic progress reports as part of the original grant agreement.

The project staffs have been tracking all major project activities as required. For example, the RMS staff are keeping detailed records of the number and type of tourists visiting the Park and the amount of income received. To date, the WWF has only completed a socio-economic baseline survey of local resource users.

When using the ten questions in Figure 3 to analyze the monitoring activities, it appears that the project has not addressed monitoring to the extent of the other case study projects. Of the ten questions applicatable to the project, questions 3,4,6,7,9 received negative responses. For example, a baseline survey has only recently been conducted in the park by the WWF, and this only addressed the socio-economic issues. In addition, very little has been done to verify cause and effect relationships between project activities, the resource user well-being and the conservation of park resources.

3.3 Comparative Analysis of Case Studies

The case study projects are similar in a number of respects. For example, all of the projects initially obtained USAID funding in the form of small grants and are now supported by USAID national bilateral projects. The bilateral projects are designed to provide a political and economic environment which is conducive to the sustainable management of protected areas.

For example, both of the bilateral projects are assisting the host country governments to establish policies which will stimulate private sector investments in tourism and wildlife utilization associated with protected areas. The bilateral projects will also identify opportunities for resource users to obtain income from sustainable protected area management through revenue sharing, private sector partnerships and direct employment. For this reason, all of the activities in the case study projects have the same two indicators in the Framework for level I. Framework level I and its associated indicators are provided below.

Framework Level I: Actions which establish level II conditions.

Indicator: Support provided to NGOs in the form of grants, technical assistance and training.

Indicator: Policies established which provide incentives for sustainable practices by local communities.

Another similarity between the case study projects is that they all have training and community extension components (Table 3 indicates the components of each case study project). These component activities are designed to improve the sustainability of protected area management by increasing the institutional capability of host country nationals and by resolving conflicts with local resource users who are living adjacent to the protected areas. The case study projects are varied in the amount of emphasis placed on training and community extension activities over time. (Table 3 identifies the case study project components.)

Table 3. Case Study Project Components

Projects	Community Activities	Protected Area Management	Training	Research	Tourism	Environmental Education
Tsavo West National Park	X		X			
Kibale Forest Reserve	X	X	X	X	X	X
Rwenzori National Park	X		X		X	

Both the RMS Rwenzori National Park project and the Kibale Forest Reserve are planning to improve the resoure users access to agricultural and handicraft markets associated with the protected areas. For example, Rwenzori National Park tourists presently obtain food and supplies for mountaineering treks from the nearby town of Kasese. The KWS is planning to

provide open a store at base camp which will purchase agricultural goods directly from the resource user (Stanley, 1993). Access to such a market would reduce resource user transportation costs.

There are some differences between the case study projects. For example, the Tsavo West National Park project places emphasis on field dialogue and conflict resolution; training has been a secondary activity. The Rwenzori National Park activities also place more emphasis on tourism and community development than on training. However, the training of host country nationals in forest research (in association with Makerere University) is emphasized in the Kibale Forest Reserve project.

The case studies are also different in their direct use of the protected areas during project implementation. For example, the Tsavo West National Park project is concerned with field dialogue, conflict resolution and training for project beneficiaries outside of the projected area. However, the two Uganda case study projects are conducting tourism development and other activities within the protected areas. The ethnobotany surveys and forest research which are being conducted within the Kibale Forest Reserve and its buffer zone will be used to provide resource users living adjacent to the protected area with alternatives to unsustainable forest utilization.

In order to determine the impact of project intervention scientifically, a project design must include comparison groups which demonstrates what happens with and without the intervention. Only the Kibale Forest Reserve on-farm agricultural research component presently has experimental treatments and controls. The Tsavo West National project is planning to conduct baseline community surveys under the COBRA bilateral project. The results of these surveys are expected to provide a comparative analysis of communities who received interventions with those that did not receive interventions.

None of the case study projects are designed to test the impact of their activities (positive or negative) on the protected areas. For example, appropriate biological or aerial photography surveys are not being conducted before,

during or after project implementation. Therefore, it will not be possible to measure the direct impact of the case study projects (as presently designed) on the protected areas. The measurement of direct impacts from project interventions on protected areas is at Framework level IV. The framework level and an example of an associated indicator are provided below.

> Framework Level IV: Maintenance or improvement of productive capacity of soil, forest, range and water resources and/or habitats in project area (1,000's of hectares).
>
> > Indicator: Percent or hectares of forest cover, forest density and composition over total area.

Both of the Uganda case studies are conducting community surveys. However, there was no evidence that the Rwenzori National Park and Kibale Forest Reserve project staffs are coordinating their efforts. For example, the Kibale Forest Reserve project staff are planning to conduct a socio-economic survey in an agricultural area adjacent to the forest reserve. However, the project staff did not appear to have knowledge of a community survey which was recently conducted by the World Wildlife Fund and its Ugandan counterparts outside of the Rwenzori National Park. Without using consistent methodology (as appropriate), the comparison of results and lessons learned will be difficult on a national and regional basis.

The Rwenzori National Park RMS activity is unique among the case studies in that it is providing health services to rural communities who are living adjacent to the protected area. The provision of health services have the potential of improving resource user health and increasing savings. Both of these benefits could contribute to changing resource user behavior by providing them with with alternative sources of income and an awareness of benefits associated with the protected area.

CHAPTER 4
RESULTS AND CONCLUSIONS

It has been the author's experience that donor agency professionals in the past have often not taken biodiversity activities as seriously as other natural resources management activities. This is understandable, since it has been only recently that biodiversity planners have attempted to seriously associate biodiversity within the economic development objectives of donor agencies.

Biodiversity activities were often seen by donor professionals as being outside of the main stream of economic development and were often not held to the same analytical rigor when designed. The continual focus of the U.S. Congress and non-governmental organizations on high-profile single species management (often for political and fund raising purposes) only accentuated this bias.

The results of this study demonstrate that indicators can be developed for biodiversity projects using the framework. Biodiversity activities should be monitored and evaluated with the same criteria and rigor as other development activities using the framework. Only in this way can the biodiversity activities be integrated into the economic development process and the link between conservation and development be examined empirically. In his 1991(b) publication NRM Indicator Catalogue For Use With The NRM Framework, Weber has the following comments regarding the evaluation of biodiversity activities:

> Biodiversity is promoted as a development issue whose basic aim is conservation. As commendable as these ideas are, once they have been implemented, questions immediately arise as to what real impacts these interventions are having. The systematic tracking that is necessary has to rely on some practical indicators.

The field projects examined under this study have the potential to conserve important protected areas, expand our knowledge of ecosystems, and improve the well being of local resource users. However, the projects vary in their ability to document their impacts. Further, none of the projects are

designed to determine if there is a link between rural development and the conservation of protected areas. (As indicated throughout this report, the case study projects were essentially pilot activities and were not designed to scientifically prove or disprove this linkage.)

This is not a reflection on the quality or appropriateness of the project activities. Rather, it is a reflection of the world-wide gap between the available impact monitoring methodology and the integration of impact monitoring into ongoing implementation activities.

Project monitoring and evaluation has often been seen as a threat and a burden by project managers. It appears that many project managers now concede the potential benefits of ongoing monitoring and evaluation as a management tool for effective project implementation. Many of the project implementors interviewed expressed enthusiasm for the idea of collecting social and biological project impact data as an ongoing activity. Only when impact monitoring and comparative evaluation activities are integrated into projects can their impacts be assessed, lessons be learned and linkages be determined.

CHAPTER 5
RECOMMENDATIONS

Below are recommendations for improving the Africa Bureau's biodiversity projects through the use of framework indicators.

-- Develop national monitoring and evaluation systems using framework indicators for bilateral projects.

USAID bilateral project staff should consider the development of national monitoring and evaluation systems using framework indicators. Information from the systems will facilitate the capture of lessons learned for adaptive management.

-- Use framework indicators to standardize field intervention methodologies--nationally and regionally.

The use of framework indicators to monitor biodiversity impacts should encourage project implementors to standardize data collection and field intervention methodologies (e.g., biological and community surveys, training, tourism development). Standardization of field methodologies will facilitate the sharing of lessons learned both nationally and regionally (e.g., within agro-ecological zones).

-- Integrate the use of framework indicators into ongoing project planning and implementation activities.

USAID should encourage project managers to integrate the use of framework indicators into ongoing project planning and implementation activities. USAID should take steps to prevent project managers from perceiving this activity as an additional workload burden. For example, the USAID/Kenya COBRA project staff are exploring opportunities to integrate framework indicators into the COBRA implementation plan and activities schedule.

-- Field test methods for measuring the impact of rural development interventions on protected area ecosystems.

There are field methods available for the collection of data on protected area ecosystems. However, there is a question as to the availability of proven and cost-effective methods for measuring the change in an ecosystem over time (positive or negative) resulting from rural development interventions outside of a protected area ecosystem. USAID should consider identifying and field testing methods for this purpose.

The identification of cost-effective field survey methods for biodiversity project monitoring systems was beyond the scope of this study. However, the availability of cost-effective data collection methods was considered during the selection of case study framework indicators. (An exception was the selection of indicators at framework level IV for measuring biological change in protected area ecosystems.)

-- Select and modify indicators as part of an ongoing process at the project level.

The selection of framework indicators should be conducted as an ongoing process. Framework indicators developed during this study were based on information available at the time. USAID has selected a number of biodiversity and tropical forestry impact indicators for planning purposes (Figure 2 contains a list of these indicators.)

However, the results of this study suggest that the selection of framework indicators should be conducted at the project and national levels as part of a long-term process. Feedback from implementation activities should be used to refine or re-design framework indicators as necessary. Only after obtaining lessons learned over time from the assessment of program impacts should a standard set of framework indicators be considered at the Bureau level.

LITERATURE CITED

Aluba, Issac. 1993. Personal Communication. Kampala, Uganda. U.S. Agency For International Development. February, 11, 1993.

African Wildlife Foundation. 1987. Protected Areas: Neighbors as Partners. A Wildlife Extension Team for Tsavo West National Park. Unsolicited Proposal. Washington, D.C. November 1, 1987. (13 pp.).

_____. 1992. Protected Areas: Neighbors as Partners. Community Conservation Around Tsavo West National Park--Phase II. Annual Report, July, 1991 - June, 1992. Washington, D.C. July, 1992. (32 pp.).

Brandon, Katrina and Michael Wells. 1992. People and Parks--Linking Protected Area Management With Local Communities. Washington, D.C.:International Bank For Reconstruction. (99 pp.).

Brown, Michael and Barbara Wyckoff-Baird. 1992. Designing Integrated Conservation and Development Projects. Maryland:World Wildlife Fund Publications. (63 pp.).

Chen, Huey-Tsyn and Peter Rossi. 1983. Evaluating With Sense--The Theory-Driven Approach. Evaluation Review 7 (June): 283-302.

Freeman, Howard and Peter Rossi. 1989. Evaluation--A Systematic Approach. Newbury Park:SAGE Publications. (495 pp.).

Freeman, Peter. 1987. Natural Resources in Sub-Saharan Africa--Review of Problems and Management Needs (Unpublished). Washington, D.C.:U.S. Agency For International Development. (215 pp.).

Food and Agriculture Organization of the United Nations. 1990. The Community's Toolbox: The Idea, Methods and Tools For Participatory Assessment, Monitoring and Evaluation in Community Forestry. Rome:Food and Agriculture Organization Regional Wood Energy Development. (146 pp.).

Forestry Support Program. 1993. Scope of Services For Analysis of Biodiversity Indicators in the NRM Framework. Washington, D.C. U.S. Forest Service. December, 1992. (4 pp.).

Guba, Egon and Yvonna Lincoln. 1986. The Countenances of Fourth-Generation Evaluation: Description, Judgement, and Negotiation. Evaluation Studies Review Annual 11, Newberry Park, CA:Sage. (70-88 pp.)

Haltenorth, Theodor. and Helmut Diller. 1977. A Field Guide to the Mammals of Africa. London:William Collins Sons & Co. Ltd. (399 pp.).

Hannah, Lee. 1992. African Parks, African People: An Evaluation of Development Initiatives as a Means of Improving Protected Area Conservation in Africa. Washington, D.C.:Conservation International. (76 pp.).

Hildebrand, Diane. 1992. Applications of the Africa Bureau NRM Analytical Framework--A Draft Analysis Based on Four Case Studies. Washington, D.C. U.S. Forest Service. January, 1992. (28 pp.).

Honadle, George and Jerry VanSant. 1985. Implementation For Sustainability--Lessons Learned From Integrated Rural Development. West Hartford:Kumarian Press. (128 pp.).

International Bank of Reconstruction. 1992. Guidelines For Monitoring and Evaluation of Global Environmental Facility Biodiversity Projects. Washington, D.C. (12 pp.).

Isabirye-Basuta, George and Andrew Johns. 1993. Makerere University Biological Field Station in Kibale Forest, 1992 Annual Report. Fort Portal, Uganda. January, 1993. (50 pp.).

Kiss, Agnes. 1990. Living With Wildlife: Wildlife Resource Management With Local Participation in Africa. Washington, D.C.:International Bank For Reconstruction. November, 1990. (217 pp.).

Lembuya, P. 1993. Personal communication. African Wildlife Foundation. February, 22, 1993.

McGahuey, Mike. 1991. A Process For Identifying Indicators For Sustainable Agriculture. Memorandum dated December 6, 1991. Washington, D.C. U.S. Agency For International Development. (4 pp.).

McLaughlin, Milbrey. 1985. Implementation Realities and Evaluation Design. See Milbrey McLaughlin "Implementation Realities and Evaluation Design," in R. Lance Shotland and Melvin Mark, eds., Social Science and Social Policy, pp. 96-120. 1985. Sage Publications, Inc.

National Research Council. 1989. Evaluation of Biodiversity Projects. Washington, D.C.:National Academy Press. (49 pp.).

Noss, Reed. 1989. Indicators For Monitoring Biodiversity: A Hierarchical Approach. Conservation Biology 4 (December): 355-364.

Richardson, K. 1992. Guidelines For Monitoring and Evaluation of Global Environmental Facility Biodiversity Projects (Unpublished). Washington, D.C.:International Bank For Reconstruction, Office of the Global Environmental Facility Operations. (18 pp.).

Rwenzori Mountaineering Service. 1993. General Report on Rwenzori Mountaineering Services Operations Since its Foundation. August 30, 1992. Fort Portal, Uganda. (11 pp.).

Stanley, M. 1993. Personal communication. Kasese, Uganda. U.S. Agency For International Development. February, 20, 1993.

Streff, Frank and Steven. Underwood. 1992. Avoiding Delay, Death and Dirty Air: Framework For Evaluation of Intelligent Vehicle-Highway Systems. In Proceedings of the IVHS America 1992 Annual Meeting. Vol. 2. Newport Beach, California. May 17-20, 1993.

The African Elephant Conservation Coordinating Group. 1991. The African Elephant Conservation Review. Oxford:Environment & Development Group. (66 pp.).

The Lottery. 1992. IVth World Congress on National Parks and Protected Areas. Caracas, Venezuela. February 10-22, 1992. (12 pp.).

U.S. Agency For International Development. 1987. Plan For Supporting Natural Resources Management in Sub-Saharan Africa. Washington, D.C. Africa Bureau, Food, Agricultural and Resource Analysis Division. (45 pp.)

_____. 1989. FY 1989 Biodiversity/Tropical Forests Activities and Strategy. Official cable (State 101683) dated April 1, 1989.

_____. 1991. Action Program For The Environment. Project Paper. Kampala, Uganda. (53 pp.)

_____. 1991a. Conservation of Biodiverse Resource Areas. Project Paper. Nairobi, Kenya. (104 pp.).

_____. 1991b. Buffer Zone Management in Africa: Report of the Workshop Held at Mweya Lodge Queen Elizabeth National Park, Uganda, October 5-11, 1990. Washington, D.C. (97 pp.).

_____. 1992. Performance Measurement For Strategic Management: Suggested Indicators For PRISM Clusters and Sub-Clusters. Washington, D.C. (46 pp.).

_____. 1992. Tropical Forests and Biodiversity: U.S. Agency For International Development Report to Congress 1990-1991. Washington, D.C. (56 pp.).

_____. 1993. Improved Natural Resources Management Under the Development Fund For Africa 1987 to 1993: Progress Report. Washington, D.C. Africa Bureau, Food, Agricultural and Resource Analysis Division. (59 pp.).

U.S. General Accounting Office. 1990. Case Study Evaluations. Washington, D.C. Transfer Paper 10.1.9, Program Evaluation and Methodology Division. (133 pp.).

Weber, Fred. 1990. Preliminary Indicators For Monitoring Changes in the Natural Resources Base. Washington, D.C. U.S. Agency For International Development Program Design Evaluation Methodology No. 14. (34 pp.).

_____. 1991(a). The Natural Resources Management Framework: What It Is, What It Does, and How It Works, With an Example From the Field. Washington, D.C.:World Resources Institute. (99 pp.).

_____. 1991(b). Indicator Catalogue For Use With The NRM Framework. Washington, D.C.:World Resources Institute. (74 pp.).

Wildlife Conservation International. 1992. Conservation and Management of the Kibale Forest in Uganda. Technical Proposal. Bronx, New York. (128 pp.).

Wholey, Joseph. 1985. Managing For High Performance--The Role of Evaluation. Evaluation News 6 (January): 40-50.

World Resources Institute. 1990. World Resources 1990-1991. Oxford:Oxford University Press. (383 pp.).

World Wildlife Fund. 1990. The Rwenzori Mountains Conservation and Development Project--Project Proposal. World Wildlife Fund. September, 1990. Nairobi, Kenya. (25 pp.).

World Wildlife Fund. 1992. Description of Innovative Research Grants. The Biodiversity Analysis For Africa Project. Washington, D.C. (8 pp.).

APPENDIX

Suggested Framework Indicators For Case Studies

<u>Tsavo West National Park Case Study</u>

Level V: Socio-economic development through conservation and sustainable management of Kenya's natural resources.

Level IV: Maintenance or Improvement of Productive Capacity of Soil, Forest, Range and Water Resources and/or Habitats in project Area (1,000's of hectares).

Indicator: Percent or hectares of vegetative cover, vegetation density and composition over total area.

Indicator: Surface area covered by wildlife habitat (by levels for different quality, if possible) (Weber, 1991).

Indicator 3 (Level IV):
Volume, growth and value of vegetation food, forage and other forest/tree products (Weber, 1991).

Indicator 4 (Level IV):
Number of permanent or migratory wildlife species (Weber, 1991).

Indicator 5 (Level IV):
Composition of wildlife species populations (age, sex, health, etc.) (Weber, 1991).

Level III: Adoption of Practices Producing Level IV Changes (1,000's of hectares).

Reduced distructive use of park by local communities

1. Reduction of distructive utilization of park by local communities.

   Indicator: Number of illegal encounters by KWS with resource users in park.

Indicator: Percent of total hectares under improved management practices which increase the the quantity and/or quality of vegetative cover.

Level II: Conditions Which Contribute to Adoption of Level III Practices.

Policy reform

1. GOK policy change that allows park-generated revenues to stay with the KWS.

   Indicator: Agreement signed.

2. Policy change in which KWS agrees to share revenue, benefits and to construct certain rual infrastructure for resource users (e.g., well, schools, clinics) in return for resource users agreeing to follow management plan.

   Indicator: Agreement signed.

3. Non-government entities are authorized to manage wildlife related enterprizes.

   Indicator: Agreement signed.

Community awareness

1. Resource users are aware of direct benefits of wildlife and park.

   Indicator: Field surveys.

Skills development

1. Resource users and NGOs have skills to manage wildlife related enterprizes.

   Indicator: Numbers of negotiated contracts between communities (or individuals) and clients.

   Indicator: Impact of enterprizes on environment.

   Indicator: Income and income distribution of enterprizes.

2. Park managers have relevant skills for effective community extension.

   Indicator: Number of negative to positive responses to surveys by communities regarding extension officer techniques and attitudes.

   Indicator: Percent of trainee self evaluations following workshops reflecting reorientation of attitudes toward community extension.

   Indicator: Number of community extension officers trained and working in area during and after project completion.

3. Contractor provides training to KWS for community extension.

   Indicator: Number of CWS staff participating and tested in each type of training.

Technical assistance

1. Timely and competent technical assistance from COBRA to resource users, NGOs and KWS staff for coordination of management plans and development of community enterprize activities.

   Indicator: Surveys of participants.

Community access to education

1. Resource users have access to schools to learn new trades.

   Indicator: Number of new and improved schools and trained teachers.

Sufficient budget and human resources

1. KWS has sufficient budget and human resources to implement community park activities.

   Indicator: Number of trained community extension officers employed in park.

   Indicator: Funding level sufficient for KWS implementation activities.

Indicator: Number of enforcement officers deployed in and around the park.

Indicator: Number of violations reported by enforcement officers.

Alternative sources of income and livelihood for resource users

1. Resource users have alternative sources of income and benefits.

   Indicator: Percent increase in target area income from tourism revenue sharing.

   Indicator: Number of jobs created in area.

   Indicator: Amount and distribution of income from partnerships associated with pivate enterprize development (e.g., duck hunting, concessions, walking safaris, village cultural centers).

   Indicator: Amount and distribution of income from livestock production activities (e.g., cattle dips).

2. Resource users have alternative livelihoods.

   Indicator: Number of people qualified for jobs outside of area.

Level I: Actions Which Establish Level II Conditions.

Studies conducted and results field tested

1. Studies conducted.
   A. Linkages between revenue management systems and community-based management of natural resources

   B. Identification of opporutunites for partnerships between communities, KWS and the private sector.

   C. Legal requirements for wildlife utilization.

   Indicator: Reports completed.

2. Working premises about financial policy and rural development activities at community level are field tested.

   Indicator: Survey results.

Kibale Forest Reserve Case Study

Level V: Socio-economic development through conservation and sustainable management of Kenya's natural resources.

Level IV: Maintenance or Improvement of Productive Capacity of Soil, Forest, Range and Water Resources and/or Habitats in project Area (1,000's of hectares).

Indicator: Percent or hectares of vegetative cover, vegetation density and composition over total area.

Indicator: Surface area covered by wildlife habitat (by levels for different quality, if possible) (Weber, 1991).

Indicator 3 (Level IV):
Volume, growth and value of vegetation food, forage and other forest/tree products (Weber, 1991).

Indicator 4 (Level IV):
Number of permanent or migratory wildlife species (Weber, 1991).

Indicator 5 (Level IV):
Composition of wildlife species populations (age, sex, health, etc.) (Weber, 1991).

Level III: Adoption of Practices Producing Level IV Changes (1,000's of hectares).

Reduced distructive use of park by local communities

1. Reduction of distructive utilization of park by local communities.

Indicator: Number of illegal encounters by GOU with resource users in park.

Indicator: Percent of total hectares under improved management practices which increase the the quantity and/or quality of vegetative cover.

Level II: Conditions Which Contribute to Adoption of Level III Practices.

Policy reform

1. Policy change in which GOU agrees to share revenue, benefits and to construct certain rual infrastructure for resource users (e.g., well, schools, clinics) in return for resource users agreeing to follow management plan.

   Indicator: Agreement signed.

2. Market demand exists for resource users produce and handicrafts.

   Indicator: Market survey.

3. Non-government entities are authorized to manage wildlife related enterprizes.

   Indicator: Agreement signed.

Community awareness

1. Resource users are aware of direct benefits of wildlife and park.

   Indicator: Field surveys.

Skills development

1. NGOs and resource users have skills to manage park related enterprizes sustainably (e.g., tourism, protection, wild coffee harvesting).

   Indicator: Numbers of negotiated contracts between communities (or individuals) and clients.

   Indicator: Impact of enterprizes on environment.

   Indicator: Income and income distribution of enterprizes.

   Indicator: Number of monthly tourist visits under or over the established carrying capacity of the forest.

Indicator: Percent of negative to positive responses by tourists.

Indicator: Percent increase or decrease in crop damage by wildlife.

2. GOU forest managers have relevant skills for effective management.

   Indicator: Number of negative to positive responses to surveys by communities regarding extension officer techniques and attitudes.

   Indicator: Percent of trainee self evaluations following workshops reflecting reorientation of attitudes toward community extension.

   Indicator: Number of community extension and forest management officers trained and working in area during and after project completion.

Technical assistance

1. Timely and competent technical assistance from APE and GOU staff for coordination of management plans, enterprizes, and forest management.

   Indicator: Number of appropriate biological and community surveys conducted.

   Indicator: Number of approved management plans and enterprizes.

   Indicator: Percent of APE research and field project survey information integrated into management plans and resource user activities.

2. APE project provides training to GOU community extension and forest management staff.

   Indicator: Number of GOU personnel participating and tested in each type of training.

Community access to education

1. Resource users have access to schools to learn new trades.

   Indicator: Number of new and improved schools and trained teachers.

Improvement of tourist facilities

1. NGOs and tourists are provided with facilities for sustainable use of forest resources.

   Indicator: Percent of well designed and well placed latrine pits, trails, cabins and camp sites in area.

   Indicator: Percent of fuelwood and water for tourists from sustainable sources.

   Indicator: Amount of litter/waste observed in park.

Sufficient budget and human resources

1. GOU has sufficient budget and human resources to implement community park activities.

   Indicator: Number of trained community extension officers employed in park.

   Indicator: Funding level sufficient for GOU and NGO implementation activities.

   Indicator: Number of enforcement officers deployed in and around the park.

   Indicator: Number of violations reported by enforcement officers.

Alternative sources of income and livelihood for resource users

1. Resource users have alternative sources of income and benefits.

   Indicator: Percent increase in target area income from tourism revenue sharing.

   Indicator: Amount and distribution of income from partnerships associated with pivate enterprizes.

Indicator: Number of farmers selling produce and handicrafts to tourists and project staff.

Indicator: Amount (e.g., kilograms, money) and type of produce bought by project staff and tourists.

2. Resource users have alternative livelihoods.

Indicator: Number of students who obtain direct employment benefits from project (e.g., construction, guides).

Indicator: Number of people qualified for jobs outside of area.

Level I: Actions Which Establish Level II Conditions.

NEAP conducted and results field tested and integrated into GOU institutions

1. APE assists GOU through National Environmental Action Plan (NEAP) process to make necessary changes in environmental infrastructure.

   Indicator: GOU approval of NEAP.

2. Working premises about financial policy and rural development activities are field tested at community level.

   Indicator: Survey results.

Rwenzori National Park Case Study

Level V: Socio-economic development through conservation and sustainable management of Kenya's natural resources.

Level IV: Maintenance or Improvement of Productive Capacity of Soil, Forest, Range and Water Resources and/or Habitats in project Area (1,000's of hectares).

Indicator: Percent or hectares of vegetative cover, vegetation density and composition over total area.

Indicator: Surface area covered by wildlife habitat (by levels for different quality, if possible) (Weber, 1991).

Indicator 3 (Level IV):
Volume, growth and value of vegetation food, forage and other forest/tree products (Weber, 1991).

Indicator 4 (Level IV):
Number of permanent or migratory wildlife species (Weber, 1991).

Indicator 5 (Level IV):
Composition of wildlife species populations (age, sex, health, etc.) (Weber, 1991).

Level III: Adoption of Practices Producing Level IV Changes (1,000's of hectares).

Reduced distructive use of park by local communities

1. Reduction of distructive utilization of park by local communities.

Indicator: Number of illegal encounters by GOU with resource users in park.

Indicator: Percent of total hectares under improved management practices.

Level II: Conditions Which Contribute to Adoption of Level III Practices.

Policy reform

1. Policy change in which GOU agrees to share revenue, benefits and to construct certain rual infrastructure for resource users (e.g., well, schools, clinics) in return for resource users agreeing to follow management plan.

   Indicator: Agreement signed.

2. Market demand exists for resource users produce and handicrafts.

   Indicator: Market survey.

3. Non-government entities are authorized to manage wildlife related enterprizes.

   Indicator: Agreement signed.

Community awareness

1. Resource users are aware of direct benefits of wildlife and park.

   Indicator: Field surveys.

Skills development

1. NGOs and resource users have skills to manage park related enterprizes sustainably (e.g., tourism, protection).

   Indicator: Numbers of negotiated contracts between communities (or individuals) and clients.

   Indicator: Impact of enterprizes on environment.

   Indicator: Income and income distribution of enterprizes.

   Indicator: Number of monthly tourist visits under or over the established carrying capacity of the forest.

Indicator: Percent of negative to positive responses by tourists.

2. GOU park managers have relevant skills for effective management.

   Indicator: Number of negative to positive responses to surveys by communities regarding extension officer techniques and attitudes.

   Indicator: Percent of trainee self evaluations following workshops reflecting reorientation of attitudes toward community extension.

   Indicator: Number of community extension and forest management officers trained and working in area during and after project completion.

Technical assistance

1. Timely and competent technical assistance from APE and GOU staff for coordination of management plans, enterprizes, and forest management.

   Indicator: Number of appropriate biological and community surveys conducted.

   Indicator: Number of approved management plans and enterprizes.

   Indicator: Percent of APE research and field project survey information integrated into management plans and resource user activities.

2. APE project provides training to GOU community extension and forest management staff.

   Indicator: Number of GOU personnel participating and tested in each type of training.

Community access to education

1. Resource users have access to schools to learn new trades.

   Indicator: Number of new and improved schools and trained teachers.

Improvement of tourist facilities

1. NGOs and tourists are provided with facilities for sustainable use of park resources.

   Indicator: Percent of well designed and well placed latrine pits, trails, cabins and camp sites in area.

   Indicator: Percent of fuelwood and water for tourists from sustainable sources.

   Indicator: Amount of litter/waste observed in park.

Access to dispensary and maternal ward

1. Resource users have access to dispensary and maternal ward.

   Indicator: Number of patients treated.

   Indicator: Amount of income saved by resource users due to dispensary and maternal ward cost-sharing policy.

Sufficient budget and human resources

1. GOU and NGOs have sufficient budget and human resources to implement enterprizes, forest management and protection activities.

   Indicator: Number of trained forest managers and technicians working in forest area.

   Indicator: Funding level sufficient for GOU and NGO implementation activities in long-term.

   Indicator: Number of enforcement officers deployed in and around the park.

   Indicator: Number of violations reported by enforcement officers.

Alternative sources of income and livelihood for resource users

1. Resource users have alternative sources of income and benefits.

   Indicator: Percent increase in target area income from tourism revenue sharing.

   Indicator: Amount and distribution of income from partnerships associated with pivate enterprize development.

   Indicator: Number of farmers selling produce and handicrafts to tourists and project staff.

   Indicator: Amount (e.g., kilograms, money) and type of produce bought by project staff and tourists.

   Indicator: Percent increase in target population income and improved health associated with health facilities.

2. Resource users have alternative livelihoods.

   Indicator: Number of students who obtain direct employment benefits from project (e.g., construction, guides, porters).

   Indicator: Number of people qualified for jobs outside of area.

Level I: Actions Which Establish Level II Conditions.

NEAP conducted and results field tested and integrated into GOU institutions

1. APE assists GOU through National Environmental Action Plan (NEAP) process to make necessary changes in environmental infrastructure.

   Indicator: GOU approval of NEAP.

2. Working premises about financial policy and rural development activities are field tested at community level.

   Indicator: Survey results.