KENYA ACTION PROGRAM

Kjell A. Christophersen, Team Leader, E/DI
Thomas M. Catterson, Associates in Rural Development
Ernest D. Ables, Development Alternatives, Inc
Ratemo W. Michieka, University of Nairobi

June 1989

Natural Resource Management Support Project
(AID Project No. 698-0467)

Contract No. AFR-0467-C-00-8054-00

NRMS

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EXECUTIVE SUMMARY

This report presents the Action Program requirement for USAID/Kenya.

The team reviewed the natural resource base (water, soils, animal and plant) and prepared a NRM Action Program on the basis of priorities expressed by GOK officials, project people in the field, other donors and NGOs, and USAID/Kenya.

The team also reviewed international, national, local, economic, cultural, and institutional influences on natural resource management. "Bottlenecks" were highlighted, such as fragmentation of responsibilities among too many divisions of the GOK; a "brain drain" of talent from the public to the private sector; an inability to enforce specific NRM laws at a local level; the possibility of the GOK becoming overwhelmed by a rapid influx of fragmented natural resources aid; and the lack of means to carry out natural resource management tasks.

The team then developed specific strategies for four priority areas -- Tsavo West and Lake Nakuru National Parks, Masai Mara Wildlife Reserve, and the Tana River Primate Research Center -- which were identified as "niches" where USAID/Kenya could make significant contributions; i.e., where other donors, NGOs or GOK are relatively inactive. The activities proposed for these four areas encompass nearly all of the A.I.D. Bureau's Plan for Natural Resources Management (PNRM) priority concerns of forestry, agroforestry and soil conservation, wildlife and extension and training.

The Tsavo West National Park strategy included a strong emphasis on the restoration of the Park infrastructure and fleet of vehicles, training of additional assistant park wardens, extension to Masai herders adjacent to the park, and the provision of long term technical assistance to work with the Masai to foster tourism development outside the park for the economic benefit of the Masai. In the Masai Mara Wildlife Reserve, the emphasis was placed on extension and training of the Masai adjacent to the park with a view to reducing the wildlife/cattle grazing conflicts on the group ranches outside the reserve, to prevent further subdivision of the group ranches into smaller, fenced mini-ranches, and to teach how wildlife and tourism can economically benefit the Masai directly. The emphasis in the Lake Nakuru National Park was on promoting agroforestry and soil conservation practices in the watershed encircling the park through extension and training to prevent further siltation into Lake Nakuru -- an important and unique flamingo sanctuary. The Tana River Primate Research Center strategy emphasized institutional strengthening including long term training for Kenyan scientists, and other financial support of the institution.

Order-of-magnitude investment requirements were developed for each of the strategy components covering a 20-year period. The attainment of sustained management of the natural resource base is not instantaneous, but achievable only over a relatively long time period. The approach taken was to estimate the approximate costs of each strategy component and divide them between the three major investors -- the donor, the GOK and, for the Nakuru agroforestry strategy, the farmers. The donor "primes the pump" by making the initial investments which are then phased into GOK recurrent cost obligations. The farmers who will receive training and extension in agroforestry and improved farming techniques will be expected to invest their time cash on the proposed land improvement schemes.

The present value of the (order-of-magnitude) investment requirements were $2.3 and $1.3 million for the donor and GOK respectively for the Tsavo strategy. The major portion of the anticipated donor contribution in this strategy was for the renovation of the park infrastructure and the provision of a fleet of vehicles. The present values for the Lake Nakuru strategy was estimated at roughly $350,000 for the donor and nearly $200,000 for the GOK. The Marai Masa strategy will cost the donor nearly $900,000 and the GOK $360,000. The Tana River Primate Research Center will require funding of approximately $690,000 over a five year period. (The GOK investment requirement was not estimated).

1. INTRODUCTION

1.1 Background

This report responds to the requirements of USAID's (Africa Bureau) Plan for Natural Resources Management (PNRM) concerning the development of a NRM Action Program for USAID/Kenya. The report was prepared using information obtained from: 1) interviews conducted by the team, 2) information obtained during field trips, and 2) information obtained from the literature.

NRM Action Programs are mandated by the Africa Bureau's PNRM for Group 1 and 2 countries. The PNRM was developed to "...better articulate and coordinate A.I.D.'s approach to Sub-Saharan Africa's environmental problems -- desertification, soil degradation, loss of biological diversity -- with its strategic role of increased agricultural productivity..." The PNRM guides USAID's efforts to improve NRM by "...establishing priorities to facilitate the best use of limited resources." The Kenya Action Program was developed using the technical criteria of the PNRM and following the PNRM directive to develop natural resource strategies without regard to project Mission approved assistance or staffing levels.

At USAID/Kenya's request, this Action Program focuses on the kinds of activities and support that complement numerous other donor and NGO fincanced NRM activities in the country. As such, this Action Program defines "niches" available to USAID/Kenya rather than a focus on the natural resource base in its entirety. The team did not attempt to define how best to achieve sustainable natural resources management in agriculture, livestock, wildlife, and forests where these concerns were judged to be addressed adequately by other donors or NGOs. It is emphasized, therefore, that while the Action Program strategies presented in this report are good examples of several "niches" available to USAID/Kenya, they are not the only ones. The team identified and developed strategy components based on the NRM priorities expressed in interviews, during field trips (to areas selected by USAID/Kenya), through the literature, and the team's understanding of USAID/Kenya's program priorities. Undoubtedly, there are many other possible niches available to USAID/Kenya, particularly in the arid and semi-arid (ASAL) areas, that warrant consideration.

Several other ideas for USAID/Kenya's possible involvement are discussed elsewhere in this report and in the accompanying report -- "Alternatives for Natural Resources Programming: USAID/Kenya." Also recommended in this second report is which portions of the Action Program and other initiatives could be addressed by USAID/Kenya in the near and intermediate future and how they fit into USAID's current portfolio. This discussion includes, in addition to the major Action Program components, consideration of several proposals already submitted to USAID/Kenya for funding -- study on the economic value of wildlife, AFRENA buy-in and a Resource Conservation Trust proposal on easement purchases south of Nairobi Park.

The report contains four sections, plus an Executive Summary and four annexes. Section 1 states the purpose and objectives of the Action Program, describes USAID's PNRM, and discusses donor and the Government of Kenya (GOK) commitments to NRM. Section 2 presents a descriptive "state-of-the art" overview of Kenya's natural resources based on interviews, field observations and the literature. Section 3 defines the components of the Action Program including the team's prioritization of each component. The Action Program economics is presented in Section 4. The summary, conclusions and recommendations are given in the Executive Summary. Annex 1 provides a brief economic profile of Kenya including information pertinent to the Action Program. Annex 2 lists the persons contacted by the team during the April/May, 1989, TDY. A glossary of commonly used terms is provided in Annex 3. Annex 4 provides copies of the cable traffic requesting NRMS services.

The Action Program/Plan team consisted of:

- Kjell A. Christophersen, Natural Resource Economist and Team Leader;
- Thomas M. Catterson, Agroforestry and Forestry Specialist;
- Ernest D. Ables, Biodiversity and Wildlife Specialist
- Ratemo W. Michieka, Agronomist

Funding for the study team was provided through the Natural Resource Management Support Project (USAID 698-0467). The team carried out the study in Kenya over the period April 17 - May 2 1989.

1.2 Purpose and Objectives

The purpose of this report is to present an Action Program to USAID/Kenya. The objectives are as follows:

- To identify and recommend actions necessary to improve NRM in Kenya, and suggest how USAID/Kenya can best contribute. This will include analysis of government natural resources priorities and of USAID/Kenya capabilities and prospects.
- Promote support for income generating opportunities through sound NRM practices.
- Promote support for institutional changes necessary to encourage and support widespread adoption of available and extendable technical packages in the short, medium and long term.

1.3 Donor and NGO Commitment to NRM

Following are summary descriptions of major donor and NGO activities in NRM based on interviews conducted by the team. Because of time constraints, several organizations that may be active in NRM, but not visited by the team, are not included.

1.3.1 Donors

o USAID:

USAID is beginning to prepare a new five-year CDSS which will be presented in Jnauary, 1990. The current CDSS focuses on three primary areas: agricultural development, including substantial support for agricultural research; population programs aimed at addressing Kenya's fast demographic growth; and significant efforts to enhance the role of the private sector. In past projects (now completed), USAID addressed renewable energy (fuelwood and charcoal) development, agroforestry, and land use planning in the arid and semi-arid lands. At present, USAID/Kenya is not supporting any large scale bilateral efforts directly conserned with natural resources management. The PVO Co-Financing Project has earmarked an amount of one million dollars (out of a total LOP of $12 million) for natural resources and several proposals are currently being screened for funding under this project. Furthermore, a number of smaller-scale activities have been funded, to wit:

- Funds have been obligated to WWF for support of training for Kenyan veterinerians to assist with the rhino conservation projects. A total of $80,000 is obligated for one year. Another $40,000 was obligated in 1988 for rhino surveys and support of a sanctuary.

- Two grants of $68,500 and $71,500 each have been obligated to the Africa Wildlife Foundation over a two-year time frame. One project is to incorporate wildlife and conservation issues into adult literacy programs. The other is for extension work at Tsavo West to teach the Masai the benefits of the park.

- The AWF will be awarded $150,000 in 1989 to develop an indigeneous conservation organization of young professionals who will become advocates for conservation.

- The national Environment Secretariat (NES) has received $80 - 100,000 for extension work in the Tsavo area.

o European Economic Community:

The EEC has in the latter planning stages a project to promote conservation of all natural resources within the Masai Mara Reserve. Objectives are to strengthen management and infrastructure of the reserve, to maintain quality of visitor experiences, to establish cooperative management of the Serengeti-Mara ecosystem, to provide incentives to surrounding ranches for practicing conservation of the wildlife resource, and to provide conservation education for local peoples. Specific tasks include support for anti-poaching activities, road improvement, forest protection, research and environmental monitoring, regional meetings with Serengeti Park authorities and support for group ranch development.

Project duration will be for three years at a cost of ECU 2.2 million ($2.4 million). Project components supported by EEC include working with the group ranches, strengthening infrastructure within the Mara Reserve and developing regional coordination with Tanzania parks. Support for conservation education, extension, training and workshops is expected to come from other donors including USAID.

Success of this proposed project will depend in part on acceptance by the Masai of coordination by the Wildlife Conservation and Management Department, the ability to establish meaningful dialogue with Tanzania parks and coordination with other donor agencies for support of the educational component.

Other support by the EEC for wildlife conservation includes $500,000 for elephant protection in the Mara Reserve. Notably absent from the EEC Masai Mara initiatives is an emphasis on extension and training of the Masai herders on the group ranches outside the reserve.

o World Bank

The World Bank has provided substanial funding and assistance to the forestry sector in Kenya since shortly after independence. At present, a major project preparation exercise, involving the Bank, the Overseas Development Administration (U.K.), the Swiss Development Assistance Agency, and the UN/FAO is underway to design and appraise Forestry IV, the next major assistance program for the sector, expected to be approved in 1990. This joint activity by the Bank and the other donors reflects a growing conviction of the need for a more coordinated approach to forestry sector assistance in Kenya. There are currently countless numbers of forestry development activities being carried out with donor and NGO support in concert with the Forest Department of the Ministry of Environment and Natural Resources. While no doubt making local contributions toward sector development, there is too little sense of overall direction and attention to priorities-- to the point where the sector efforts have been characterized as being "atomized" by knowledgeable and concerned individuals.

The Forestry IV Project is being based to some extent on an earlier effort to assess the overall needs of the sector carried out by the World Bank and an array of interested donors and organizations (ODA/UK, CIDA, FINNIDA, FAO, CARE, GTZ, and the Netherlands) in 1986. A comprehensive report on this undertaking was subsequently published: Kenya Forestry Subsector Review, World Band, 1988. It outlines the need for action in five critical areas, as follows:

- preservation and management of Kenya's natural forests;

- expansion and improvement of tree growing on farms;

- meeting the anticipated doubling of the demand for woodfuels foreseen over the next 20 years as population continues to grow;

- intensified management of the industrial plantation estate;

- and, institutional changes and development programs necessary to carry out these priorities.

In light of these findings, and as a result of ongoing preparation efforts, the World Bank led Forestry IV Project is currently estimated to be valued at approximately US$ 40-50 million. Both local and international experts knowledgeable about Kenya's forestry sector development needs believe that this level of funding could be considerably higher but is constrained by the present absorptive capacity. The concerned government institutions must build up and make more efficient present staff capabilities and secure high level support for financing the recurrent costs associated with these programs.

Preliminary indications of the scope of Forestry IV endeavors suggest the the following major thrusts are likely to receive priority attention and funding:

o Inventory and management for the natural forest areas, continued strengthening of the Rural Afforestation Extension Service (RAES) to address farm and agroforestry;

o inventory and intensified management of plantation forests;

o strengthened sector planning capability including the initiation of an overall master plan for sector development;

o restructuring of GOK budget allocations in the sector to strike a better balance between personnel and investment costs;

o continued support to the development of forestry research capability; and

o a review of forestry education and training facilities.

Individual donors have already expressed interest in the majority of the above programs but it is too early in the project preparation process to record these as firm commitments. The World Bank has, however, indicated its firm intention to continue to press for a more concerted effort at the local level for coordination of the forestry projects. Given the wide-ranging interest in and needs of the sector, this coordination effort may constitute one of the most important facets of development for the next five years. USAID/KENYA is encouraged to participate in and take full advantage of this process to rationalize forestry sector development.

o SIDA

SIDA has a long track record in soil conservation in Kenya -- since 1974. Their efforts have led to the establishment of the Soil and Water Conservation Branch in the Ministry of Agriculture which now covers the entire country. SIDA's priorities include extension and in-service training in the high and medium potential farm land areas, revision of the school curriculum through the Kenya Institute of Education and sponsoring the soil conservation component at KARI. SIDA is not very active in the ASAL areas. Although there is room for additional work in soil conservation, the real constraint at present is the absorptive capacity of the Soil Conservation Branch.

SIDA has also funded a modest special project at ICRAF to pull together a detailed compendium of all Kenyan agroforestry experience. This work is being carried out on the basis of technological opportunities in each of the country's major agroecological zones. This work is an extension of the Agroforestry Systems Inventory project begun with funding from AID/S&T as part of an early cooperative agreement with ICRAF.

SIDA had considered taking over the Agroforestry Demonstration Centers established under the AID-funded Kenya Renewable Energy Development Project. Unfortunately, owing to institutional constraints, the Biomass Energy Division of the Ministry of Energy have severly weakened these centers and SIDA decided against the idea.

o NORAD

NORAD (Turkana Rural Development Project) has been involved in forestry and agroforestry in the Turkana District and the ASAL areas since the mid 1960's. The support is funneled through KEFRI under the Ministry of Science and Technology. The approach is holistic: to increase awareness of the value of trees in farming systems.

o JICA

The Japanese International Cooperation Agency (JICA) has recently completed a substanial project to construct and outfit the facilities of the Kenya Forestry Research Institute (KEFRI) at a new site at Muguba just outside Nairobi. An impressive complex of buildings have been built and will provide a considerably enhanced operational capability for KEFRI which previously utilized older and more limited facilities at the Kenya Agricultural Research Institute (KARI). In addition to the facilities for research, the JICA project has established a social forestry training center at the site intended to train extension forestry staff for the farm/agroforestry program of the Forest Department. There is some concern, shared by many individuals familiar with the sector, that the recent transfer of KEFRI from the Ministry of Environment and Natural Resources to the Ministry of Research and Science and Technology (KARI has similarly been transferred from the Ministry

of Agriculture) may blur the institutional linkages essential to field oriented training required for for the Forest Department personnel.

JICA is currently continuing its support to KEFRI for an additional three years in order to assist the institution to strengthen research capability and train the young staff that has been recruited to man the new facilities. JICA will also focus its support to continue to provide training and demonstration programs for social forestry extension, including a center at Kitui to address the needs and opportunities for farm and agroforestry in the arid and semi-arid areas of Kenya.

o ICRAF

ICRAF (The International Council for Research in Agroforestry) was established in 1977. The organization is supported by contributions from several multilateral and bilateral donors. ICRAF's mandate is to "...initiate, stimulate and support research leading to more sustainable and productive land use ..."

A new work program for the period 1986 - 1990 concentrates on three priority objectives: to continue to develop the agroforestry discipline (the science and methodology of agroforestry research and applications); to assist in building national institutional capability to design and implement relevant agroforestry research programs; and, to collaborate with national and other institutions (including the CGIAR system) in identifying and developing promising agroforestry technologies.

In Kenya, ICRAF has established a field research station at Machakos to carry out research and demonstrations of agroforestry species and crop combinations. ICRAF is also carrying out agroforestry research under the auspices of AFRENA. (USAID/Kenya has been invited to buy into AFRENA for approximately $300,000).

The major problem with agroforestry in Kenya (and elsewhere in Africa) is that it has no institutional base -- there is no agroforestry ministry. To cope with this issue, ICRAF has successfully sorted out and facilitated a working partnership between Kenya's Agricultural Research Institute (KARI) and its Forestry Research Institute (KEFRI) and has sought similar arrangements in other countries. ICRAF has helped sponsor the Second National Seminar of Agroforestry (November, 1988) which highlighted the promising achievements in agroforestry in Kenya and called for a concerted effort at national-level and field-level coordination to accelerate the pace of learning and diffusion of viable technical packages. ICRAF staff also indicated that they felt graduate level training in agroforestry was another basic necessity if these programs are to succeed in Kenya (and elsewhere)

1.3.2 NGOs

o African Wildlife Foundation (AWF)

AWF is based in Washington, D.C. with its African Field Office in Nairobi. Its primary objective is education and training of African citizens. Two technical training colleges are supported, one in Tanzania and one in Cameroon. Programs in Kenya include conservation education through youth hostels in national parks, education centers, wildlife clubs, purchase of equipment for parks and preserves and funding of anti-poaching efforts. An emphasis is on training for parks personnel to assist them in working with local communities in order to create a "Good Neighbors" attitude for the parks. There is also an emphasis on the importance of human dimensions in wildlife education. A new course entitled "Man and Wildlife" will be taught at Mweka for the first time soon.

o Wildlife Clubs of Kenya (WCK)

There are 1,700 affiliated clubs in Kenya from local school children to college students. Their main purposes are to interest and educate Kenya's youth about the environment and natural resources, to alert the public to the cultural, environmental aesthetic and economic values of natural resources; and to develop better understanding of the need to conserve wildlife and other natural resources. It has helped to educate 750,000 young Kenyans in its 20-year history. It sponsors National Students Seminars, National Teachers Workshops, Wildlife Awareness Week, and national competitions for conservation activities.

o East African Wildlife Society

The Society is composed of 16,000 members in Kenya, Tanzania, Uganda, other African countries and around the world. It publishes the popular conservation magazine "Swara" and the more specialized scientific "African Journal of Ecology". The Society supports five categories of activities: 1) wildlife policy formulation and facilitation, 2) funding and publication of relevant scientific research, 3) educational programs of the Wildlife Clubs of Kenya as well as educational programs in colleges and universities, 4) anti-poaching activities, and 5) sanctuaries for threatened and endangered species. More than one-half of its annual budget goes toward support for educational activities.

The Society also deals with conflict resolution and politics. Local people tend to be hostile to wildlife because they benefit little from tourism.

o African NGOs Environmental Network (ANEN)

ANEN, formed in 1982, is an African network of indigenous environmental and development NGOs and grassroots community groups throughout the region, supported by UNEP. Kenya has an exceptionally large number of such organizations. The major purpose of the organization is to incorporate environmental

concerns into development work and encourage participation by local people in order to protect the resource base. ANEN fosters coordination of efforts, transfer of information, communications among NGOs, and matching institutional programs with actual needs on the ground. Major areas of focus are desertification control, energy, genetic resource conservation and forestry. ANEN is currently participating in the UNDP Africa 2000 initiative. ANEN has been pressing the GOK to set up an umbrella program to facilitate the work of local NGOs.

o Wildlife Conservation International (WCI)

WCI (the wildlife conservation section the New York Zoological Society) recently completed a five-year plan focusing on conservation of biodiversity by using local solutions and training. The "key species" approach to ecosystem health is an important component of this strategy. Biological communities that will receive most attention are savannas. Species of special concern are elephants and rhinos. Human-wildlife conflicts and their resolution will form a major component.

Projects currently underway include development of water sources for livestock in the Amboseli area in return for non-encroachment into the park by Masai herdsmen, an assessment of the role of fire in Nairobi Park, and rhino conservation in Aberdares Park. There is a proposed project to estimate the impacts of vehicles on vegetation and impacts of harassment of wildlife by visitors and vehicles in the Mara reserve. WCI has a proposal in to USAID to conduct a visitor attitude survey in the Mara.

o World Wide Fund for Nature:

WWF in Kenya is emphasizing three main conservation issues: 1) threatened and endangered species, 2) protection of unique and important natural communities and habitats, and 3) incorporating the human element into conservation projects.

- Endangered and threatened species: The emphasis in the past has been on rhinos. Emergency actions seem to have stopped the decline in rhino populations and the emphasis has now shifted to elephants. Over the next five years, 28 million Swiss Francs have been dedicated to stop elephant poaching in the field and to regulate ivory trade. The captured bird industry is jeopardizing wild populations of Kori bustards and crowned cranes. Plans are under way to commence projects aimed at bird conservation.

- Protecting unique communities and habitats: Lake Nakuru is a very important habitat for the lesser flamingo population in the Rift Valley lake system. Lake Nakuru National Park contains the lake as well as a recently created rhino protection and restoration project supported by WWF. Lands in the Lake Nakuru watershed are being denuded of trees as well as being subdivided into small agricultural plots that are eroding severely. Silt loads from soil erosion are threatening the lake ecosystem and the flamingo habitat. WWF is supporting the Nakuru conservation

development project which is examining land use practices as they impact the national park and the lake ecosystem. USAID will be approached for support of an extension project to communicate to local farmers the need for soil and water conservation in an effort to conserve the basic soil resource as well as protect the lake ecosystem. (This initiative is one of the recommended strategy components presented in detail later in Sections 3 and 4 of this report).

o Friends of Conservation

This organization (formerly Friends of the Masai Mara) contributes $250,000 per year through WWF to conservation efforts in the Masai Mara reserve. Supported activities include vehicle maintenance, rhino protection, protection of wildlife from tourist vehicles by use of patrols, publication of educational pamphlets, and ecological monitoring of animals, vegetation and fires. Other projects in Kenya include a rhino capture and translocation unit and anti-poaching work on the borders of the Masai Mara reserve.

o KENGO

Kengo (the Kenya Energy Non-Governmental Organization) got its start working with woodfuels conservation and was very active in the past with improved stoves in part with funding from USAID through the Kenya Renewable Energy Development Program. The stove program, notably the now well-known Kenyan "Jiko" has been quite successful and is now largely in the hands of commercial producers who supply a burgeoning market demand for these fuel efficient stoves. Their activities in this area have shifted to other biomass-based fuels and to a regional wood energy conservation course. Participants sponsored by USAID missions in other countries took part in last year's course. Another course is planned for June 1989.

Kengo has now turned its public education, training and awareness focus to other program areas. These include: indigeneous tree species promotion, natural forest management, and genetic conservation of local tree and shrub germplasm. They have a small site at Jomo Kenyatta University which serves for research, demonstration and training. The organization has also been active in promoting policy change for natural resources management and is currently cooperating with the National Environmental Secretariat (NES) in preparing the groundwork for the sessional paper on environment to be presented to Kenya's Parliament.

1.4 GOK Commitment to NRM

The GOK five-year development plan (1989 - 1993) reflects a high level of commitment to improved NRM. The Plan reflects a thorough understanding of the environmental problems and mandates that certain definite actions be undertaken to address the problems.

Despite the commitment to improved NRM, the understanding of the problems and the proposed actions to undertake, however, the GOK lacks the means to achieve the level of development desired. By necessity, because of the high population growth rate (3.9 percent per year, the highest in the world), the Government must substantially increase food production on a fixed land base. The Plan lays out the several agriculture and development and natural resources targets for the 1989 - 1993 period. It is a most ambitious plan which probably cannot be achieved without substantial tradeoffs between the agriculture, forestry and wildlife sectors. Large scale increases in crop production are targeted to keep pace with population increases. GOK is counting heavily on increased use of fertilizer, improved drought resistant varieties, intensification of pest and disease control, and expansion of irrigated agriculture. The overall thrust of the agricultural policy is to achieve internal self sufficiency. The seven major commodities -- coffee, tea, maize, wheat, milk, meat and horticultural crops -- will be promoted.

The targeted crop production increases will be difficult, if not impossible, to attain unless further encroachment onto the marginal land areas (the ASAL pastoral areas) takes place. This will lead to further conflict between wildlife and cattle herding as the pressure for additional grazing land will escalate. In many ASAL areas, rainfed agriculture will be a dubious investment option, both for GOK and the small-scale subsistence farmers who are moving to these areas. The development of irrigated perimeters, even the low capital intensive, small-scale perimeters, is not a panacea. Irrigated agriculture is different from rainfed agriculture and will require considerable training and a relatively long time period before the full benefits can be realized. Moreover, the recurrent costs of irrigated perimeters (pump and infrastructure maintenance, etc.) are often prohibitive.

1.4.1 National Environmental Secretariat (NES)

The NES was established in 1974 after the Stockholm conference with the major task of serving as a liaison body between the GOK and UNEP. In 1979, after UNEP was well underway, the NES was transferred to form a full-fledged department within the Ministry of Environment and Natural Resources. Although it is tasked with the role of general oversight of environmental stability in the country, it currently has no statutory base from which to enforce compliance with environmental regulations. Several moves are afoot, however, to strengthen its role: the sessional paper on the environment will be the basis for an Act of Parliament to legally establish the NES; environmental impact analysis will be more thoroughly utilized before development activities and are approved; and environmental officers will be posted at the District level (and occassionally below) throughout the country.

The NES has two major divisions: a Natural Resources Management Division that proposes and advises on proper land use practices, and an Environmental Education and Information Division which works with schools and extension campaigns to alert and

educate the people about the importance of environmental protection. The NES received some USAID support through the now-completed Environmental Training and Management for Africa (ETMA) Project. They maintain an ongoing educational exchange program with Clark University.

1.4.2 Wildlife Conservation and Management Department (WCMD)

The WCMD is administratively housed within the Ministry of Tourism and Wildlife. It has responsibility for wildlife conservation and for management of Kenya's national parks. There are 22 national parks encompassing an area of approximately 26,000 km2 and an additional 27,000 km2 of National Reserves, Nature Reserves, Game Reserves, Sanctuaries, and Biosphere Reserves for which it has total or partial responsibility.

Management of many of the parks and preserves is in a crisis situation due to lack of administrative and financial support by the GOK. Poaching of rhino, elephants and smaller game species; encroachment by livestock and farmers; and cutting of forests within the protected areas are rapidly leading to deterioration and destruction of wildlife species and their habitats.

Tourism during 1987 and 1988 was Kenya's number one source of foreign exchange, bringing in more than $320 million per year. About one-half of this income is based on wildlife. The annual budget for WCMD in 1987 was approximately seven million dollars, or 4.4 percent of the amount derived from wildlife based tourism. It is estimated that for 100 percent protection of national parks in East Africa, $400 per km2 is required. Approximately $15 per km2 was spent on Amboseli and $12 per km2 on Tsavo in 1987. This lack of adequate financial support has led to serious deterioration of facilities, equipment maintenance, roads and employee morale. In Tsavo-West there is only one operational vehicle to patrol an area of 9,065 km2. (Support for Tsavo-West is one of the recommended strategy components presented in detail later in Sections 3 and 4 of this report).

1.4.3 Ministry of Local Government (County Councils)

Local governments, specifically the County Councils, have authority and responsibility for the management of National Reserves and Game Reserves. Some reserves are managed by WCMD at the request of local County Councils but the Councils retain final authority. An example is the Masai Mara National Reserve in Southwest Kenya which is managed by the Narok County Council with technical advice from the WCMD. The reserve is a area of 1,368 km2 that is a critical component of the migratory range of the Serengeti wildlife populations. It is the most important wildlife area in Kenya in terms of variety of big game species. It is one of Kenya's primary foreign exchange earners and in 1987 recorded 18 percent of all tourist visits to the country and earned eight percent of gross tourist revenues.

1.4.4 Colleges, Universities and Training Facilities

- Egerton University

Egerton University, the beneficiary of substantial USAID/Kenya support, has a department of Natural Resources as part of its College of Agriculture. The Department has three major sections: Range, Forestry and Wildlife. The Department offers a three-year Diploma course in Range Management only, however, since forestry and wildlife training is provided as elements of the basic curriculum, not as academic specialties. Forestry and wildlife training leading to diplomas is provided at Moi University. Plans to develop a more generalized B.Sc course in natural resources management to meet the needs of more broad-based individuals are being developed at Egerton. The intention is to offer specializations, probably in range, forestry and wildlife management. The staff feels there is also scope for adding degree programs in watershed management and fisheries. They have some capability in teaching agroforestry, including a nursery and limited multi-purpose tree species trials. The latter, established under the KREDP (Kenya Renewable Energy Development Project) intended as an agroforestry center for the Rift Valley, is no longer donor funded. Some of the more successful plantations are being maintained as part of practical training for students.

- Londiani Forest College

The Londiani Forest College has been training the middle cadres of the Forest Department to which it is officially attached, since 1957. It offers both a Diploma (three-year) program leading to the position of forester, and a Certificate (two-year) program for the position of Assistant Forester. All graduates are absorbed into the ranks of the Forest Department. In the past, forest guard training -- a six-month course -- was also done here, but this has discontinued. The present capacity is for 200 students and 24 teachers (drawn from the ranks of the Forest Department). Much of the training is focused on traditional forestry topics keyed to the strong role played by its graduates in plantation and industrial forestry, although this is changing with the addition of extension and agroforestry courses. The College has a 4,000-hectare school forest in the adjacent hills which is exploited commercially for local sawmill needs. The revenues, however, go to the National Treasury and are not used to support the facility. A large-scale GTZ funded technical assistance project is supporting the college and several buildings are being constructed. A second phase to that project is under negotiation. The Principal suggested that the College could be used for refresher training courses for Department staff although this has not happened to date. Staff training as well as additional funding is required as the Forest Department is unable to furnish the College with adequate resources from its own constrained budget.

o Moi University

Moi University, established in 1985 at the initiative of the President (also the Chancellor), has seen considerable growth in recent years. The university is intended to become predominantly an institution of science and technology. The Faculty of Forest Resources and Wildlife Management and students were transferred from the University of Nairobi. The university now has 2,100 students despite very limited student accommodations. A large GOK funded building program is underway. Only limited donor assistance is provided. There is a small ODA funded exchange program with Oxford University and the Forest Resources Department.

It is probable that Moi University will continue to evolve into the major educational institution in the natural resources sector. If it is to accomplish that goal, additional development support will be required. Support is needed with the building program, equipment and materials, graduate training to upgrade staff plus operational support. Two major constraints are the lack of a school forest and the fact that agriculture is not taught at Moi. The latter precludes any meaningful training in agroforestry and farm-forestry training which will be required for future Kenyan forestry staff. Moi University should be considered by USAID/Kenya for a large-scale bilateral assistance project targeted at its College of Forest Resources and Wildlife Management. This, however, will require careful project identification which was beyond the scope-of-work for the NRMS team. It will also require overall clarification regarding the entire gamut of institutions currently involved in forestry natural resources education and training in order to ensure that the future investment strategy is sound.

o Other

There is a wildlife retraining refresher course at Naivasha and a range management program at the University of Nairobi. Neither of these institutions were visited by the team.

Impressions are that the current output in qualified wildlife graduates from all Kenya institutions is woefully inadequate. The technical program at Mweka in Tanzania produces technicians but not professional level people with either BSc or graduate level degrees. An additional deficiency is the lack of qualified faculty to properly staff the existing institutions.

1.4.5 KEFRI

The Kenya Forestry Research Institute (KEFRI) located at Muguba outside Nairobi, has just experienced a major expansion and improvement of its facilities, largely through the assistance of JICA. Japanese assistance has also built the Social Forestry Training at the same site, intended to serve as an in-service base for training of large numbers of extension foresters who will man the rural Afforestation Extension Service (RAES). This JICA assistance will also continue aimed at upgrading capabilities of

the relatively young staff of research scientists. KEFRI has four major research programs: Tree Improvement, aimed at increasing the yields of plantation species, principally for industrial needs; Management of Dryland Forests, given the gradual shift towards the drier areas as agriculture expands in the higher potential areas; Farm Forestry, with an emphasis on the development of species and technologies for agroforestry; and, Wood Products Utilization, including a program to look at secondary forest products. KEFRI is, as mentioned above, partner with KARI and ICRAF to carry out its agroforestry research program. The institution has eight out-stations around the country. These, however, are not well equipped (with the exception of the Maseno-AFRENA site). KEFRI is in the process of preparing a blueprint of National Forestry Research Priorities which will be presented in conjunction with the World Bank Forestry IV Program. There is some concern that the recent transfer of KEFRI to the Ministry of Research and Science and Technology will blur its linkages with the Forest Department essential to ensure that it remains oriented to practical problems and that its results reach the field foresters who need them.

1.4.6 National Museum of Kenya

The National Museum of Kenya is a parastatal organization. It has the largest anthropological specimen collection in Africa. The Museum is moving toward applied work in addition to basic research. It provides a strong lobby for conservation legislation. Priorities include: ecological monitoring of endangered plants along the coast; Tana River Primate Research Station; tracing genetic history of several wildlife species; and, preservation and management of relic escarpment natural forests.

1.5 Approach

The Action Program is ideally a development strategy covering a 20-year time period. The ultimate goal of the Program is to achieve sustainable management of the natural resource base within a defined geographical area. It is based on replication of technical interventions known to work well in the field (i.e., interventions that have been enthusiastically accepted and adopted by local farmers, herders or local village associations on a limited scale), or any appropriate new or different interventions that have worked well elsewhere under similar climatic and/or socio-economic conditions. Accompanying the technical interventions are the conditions which have to exist or be created to allow the technical interventions to succeed. They may include training and extension packages and/or any necessary policy modifications.

The basic premise for the Action Program is that it must make financial sense at the farm or local level, or it will not happen. Technical intervention packages that will greatly increase crop or wood yields abound but few are captured locally because they are: a) far too costly, or b) far too time consuming.

There are three major "actors" in the Action Program: The farmers, herders (or local level institutions), the donors, and the host country government. All three are expected to make investments to implement the strategy. The farmer or herder will invest his time, and sometimes cash, on the technical interventions. Donors will "prime the pump" by investing in technical assistance, training and extension, infrastructure and materials. The host country will invest the recurrent costs of the strategy after the donor funding has phased out. The three levels of investments are additive and the total is weighed against the benefits of the technical interventions, i.e., increased crop yields or wood yields, or increased tourism, etc. The Action Program identifies the probable investment magnitudes at each level.

Unlike action programs undertaken by the NRMS project in several other countries, the USAID/Kenya Action Program identifies "niches" where USAID can make major contributions rather than a presnting comprehensive analyses of the natural resource base in its entirety. The niches include activities or priorities judged to be inadequately addressed by other donors or by GOK in priority geographical regions.

The Action Program economic analyses were based on a 20-year time horizon (Section 4) providing order-of-magnitude estimates of probable investment commitments by local people, donors and GOK. The analyses did not generate internal rates of return (IRRs) because benefit streams attributable to the proposed investments were not estimated. The nature of the proposed Action Program components (extension and training of Masai herders, environmental awareness education, etc.) precluded any estimation of the final impact on tourism revenues and other economic benefits during the short time available to the team.

2. NATURAL RESOURCES IN KENYA

2.1 Introduction

This section provides a summary overview of the natural resource base in Kenya, its present condition as judged from the literature, interviews and field observations. This brief overview allows a better focus on the gaps in the overall care-taking of the resource base and thus helps define the "niches" where donor assistance could be most helpful. The donor and GOK commitments to improved NRM, briefly discussed in Section 1 above, identified the several organizations involved in NRM. This section adds the team's judgment on the adequacy of donor and GOK efforts with respect to the management of the natural resource base in the areas visited by the team. The natural resources discussed include water, soils, forest and wildlife resources. Atmospheric resources and minerals and other geological resources are not discussed since they are not prioritized by PNRM nor by USAID/Kenya.

2.2 Water Resources

Approximately 75 percent of the land area of Kenya is classified as semi-arid. Precipitation comes mainly during two rainy seasons in October-December and March-May. Average annual rainfall is 567mm and varies from 400mm throughout the northern region to two meters along the coast and the Lake Victoria basin. Volumes of rainfall vary from 7.3 billion cubic meters in the Lake Victoria drainage basin, followed by the Tana River basin with 4.7 billion cubic meters, the Athi River with 1.39 billion cubic meters, the Rift Valley with 0.81 billion cubic meters and the Ewaso Nyiro River with 0.74 billion cubic meters. There are 400 km of Indian Ocean shoreline and 11,230 km2 of open waters of lakes, reservoirs and streams. Riverine systems and associated wetlands stretch for thousands of kilometers.

Water resources contribute significantly to Kenya's economy. Hydroelectric dams provide electrical energy and water for irrigation. Bore holes in semi-arid regions tap the ground water and provide water for livestock. In 1988 fish landings totaled 138,400 tons, most of which came from Lake Victoria. (Improved management of fisheries could result in large increases in protein production and employment).

Threats to aquatic systems include siltation from poor agricultural practices and forest destruction, pollution from agricultural and industrial activities, drainage of swamps and other wetlands, and invasion by introduced aquatic plants. Responsibility for management, development and maintenance of water resources is vested in the Ministry of Water Development.

2.3 Land Use Potential

Kenya's land use potential is a function of a fairly complex zonation based essentially on soils, rainfall and evapotranspiration, the latter a result of average temperatures

which are in turn affected by altitude. A full discussion of this subject is beyond the sope of this mission. However, a brief overview is essential to set the stage for an understanding of the challenge of natural resources management in the country. Seven agroclimatic zones (I - VII) are generally recognized; in each, agricultural potential is directly related to the climatic designation as shown in Table 2.1 below.

Table 2.1 Agroclimatic Zones

Zone	Rainfall Evaporation Ratio	Climatic Designation	Agricultural Potential
I	80 %	Very humid	Very high
II	65-80 %	Humid	High
III	50-65 %	Sub-humid	High to medium
IV	40-50 %	Sub-humid to semi arid	Medium
V	25-40 %	Semi-arid	Marginal
VI	15-25 %	Arid	Low
VII	<15 %	Very arid	Very low

Long term efforts at agroclimatic mapping are still underway, but preliminary estimates suggest that approximately 20 percent of Kenya's land area can be classified as high to medium potential and the remainder as marginal or low productivity areas.

The high to medium potential areas are found principally in the Central and Western regions of the country. These areas, generally of higher elevations, also harbor the vast majority of Kenya's farming population. As a consequence, they are under considerable population pressure leading to small farm sizes, more intensified cropping schemes, and the persistent conversion of once wide-ranging forest areas, both natural and plantations, often on steeper slopes, to small-holder farming. Despite their excellent potential, soil erosion and gradual reductions in soil fertility pose significant problems to sustainable agricultural production in these areas. This must be contrasted against the GOK overall agricultural development strategy which focuses on food security to be achieved by continued intensification of agricultural productivity. In some parts of the high potential area (e.g. Kisii), population density approaches 1,000 people per km2 and the typical small farmer is no longer able to feed his/her family without greater dependency on cash crops or off-farm income. Kenya is rapidly coming to grips with the fact that the higher potential lands are fast running out and the persistant out-migration from these areas to the urban centers or the lower potential lands, is creating another facet to the development challenge.

The marginal to low potential areas have long been used for extensive livestock husbandry. In many areas, crop production is impossible without irrigation or water-harvesting. The great variability in rainfall marked by frequent droughts puts even the most conservative farmers at risk in these areas. While the

expansion of irrigation holds some promise (less than 10 percent of the land suitable for irrigation has been so developed) the high costs of irrigation development and potentially destructive environmental consequences gives cause for concern regarding this strategy option. As population increases in the arid and semi-arid areas, increasing livestock numbers and expansion of cultivation puts pressure on adjoining lands. Many of the designated parks and reserves are already experiencing considerable grazing pressure for livestock who compete directly with the once abundant wildlife of the plains. Soil and water conservation practices spurned after independence are now experiencing a significant and promising comeback, particularly in the marginal hilly areas in Machakos and Kitui Districts. These practices, principally contour farming, vegetative strips along the contour for run-off and erosion control, and more limited efforts at terracing, will not be sufficient under current land-use pressure. Small-holdings are unable to put enough land in fallow and erosion remains a constant threat thereby causing a continual decline in soil fertility. As population increases in these areas, the spectre of land degradation and desertification looms large.

In short, the basic soil resources of both the higher and lower potential areas of the country are threatened by degradation. This degradation is real and its impact is already beeing felt, especially among small-holder subsistance farmers. The current degradation processes are also undermining the emerging achievements in agricultural research which has produced higher yielding and earlier maturing varieties of basic food crops, particularly corn. These varieties will not live up to their full productive potential on eroded or fertility depleted sites. A concerted effort at greater stewardship of this vital resource base, through the increased application of soil and water conservation and agroforestry practices is urgently needed. Kenya has made some advances along these lines but can and must do more. Doing so will constitute a prime example of natural resources management. Faced with intense population pressure, stwardship now rather than extremely costly rehabilitation later is a markedly better investment strategy.

2.4 Biological Diversity

Kenya encompasses an area of 582,600 km2 between three degrees N and six degrees S. The climate is tropical with long dry seasons in the west and is Sahelian in the north and east. The west central highlands are modified by elevation. Approximately 50 percent of this area is above 1,000m which gives the climate equatorial and mountain aspects. This great variation in climate and topography results in a very diverse flora and fauna.

2.4.1 Forests

Forests occupy around 3.4 percent of Kenya's land area. A great tropical rain forest once extended into Kenya from the shores of Lake Victoria eastward to the central highlands. This forest remains only as isolated relics on escarpments and mountain ranges

today. The largest contiguous forest area is along the Mau escarpment. Other tropical forest areas include the Kakamega Forest, Mt. Kenya Forest, forests of the Aberdares plateau and forests on isolated mountain ranges such as the Ngulia, Matthews Range, the Chylulu Hills, the Ngong Hills, the Machakos and the Kitui Hills.

Riverine and coastal forests are critical and all out of proportion to their geographic size because of their richness of plant and animal species and their high degree of endemism. The Tana River forests are among the most extensive riverine forests. The largest areas of coastal forests are in the Shimba Hills and the Arabuko Sokoke Reserve. The coastal Kaya forests are of particular environmental and cultural value.

o Forest Conservation

There are 200 separately gazetted forest areas in Kenya. Around 20 percent of the hectarage of these gazetted areas is under the control of the Kenya Forest Department and 80 percent under local County Councils. Clearance for agriculture is the single greatest threat to Kenya's forests. Forest areas comprise a high percentage of potential lands that can be developed for crop production and the rapidly increasing human population is placing very serious pressures on some forests. Local authorities can issue permits for forest clearing and settlement. On a local level there may be little incentive to protect forests and the impact can be dramatic. For example, in the Kitui and Machakos Districts in 1981 only 525 ha of forest remained out of 28,000 ha gazetted. An assessment carried out in 1980 estimated that, for the previous 15 years, forests had been cleared at rates of one to 15 percent annually. Aerial photography and satelite imagery that confirm the rate of forest destruction are available but have not been analyzed.

Exploitation for timber is being carried out at a rate that can not be sustained over the long-term. Technically, since 1983 indigenous trees cannot be cut. However, the rate of cutting has accelerated and cutting licenses are freely provided. Cutting for fuelwood is not yet considered a serious threat to forests. Fuelwood supplies are provided by forest cutting for agricultural expansion at present. In the future, however, the increasing demand for fuelwood in urban areas will likely be a major reason for forest cutting.

o Institutions Responsible for Forests

The Forest Department of the Ministry of Environment and Natural Resources is responsible for Government Forest Reserves and local county councils are responsible for Trust Lands. Within the National Parks forests are the responsibility of the Wildlife Conservation and Management Department. Forests under the jurisdiction of the Kenya Forest Department are relatively intact while those under local authorities are suffering serious

destruction. Local authorities lack the expertise, manpower resources or the incentives to properly manage and protect forests

A major problem in forest conservation is weak forestry legislation. The most recent forest policy is the Forest Act of 1968. This legislation leaves almost everything up to the discretion of the Forest Department, thus no laws can be violated. Local authorities are guided by the Chief's Authority Act which leaves decisions up the county councils.

2.4.2 Wildlife

Few countries in the world contain a richer variety of wildlife than Kenya. The large migratory herds of the Mara-Serengeti ecosystem are unequaled anywhere on earth. A checklist of mammals of the Masai-Mara Reserve shows 59 species of larger mammals excluding bats, rodents and similar groups. The same checklist shows 450 species of birds while Lake Nakuru National Park supports 1,200 species of birds. This high level of animal diversity makes Kenya one of the most important wildlife countries on the African continent.

- o Conservation and Protection of Wildlife

Wildlife is legally protected throughout the country but the greatest security for its continued existence lies in a system of parks and preserves. There are 22 national parks encompassing 26,000 km2. Two parks, Tsavo-East and Tsavo-West account for 80 percent of this total. An additional 27,000 km2 are gazetted as National Reserves, Nature Reserves, Game Reserves Sanctuaries and Biosphere Reserves.

One of the truly tragic events in conservation is the decline in rhino and elephant populations due to poaching. Since 1973 elephant numbers have decline 85 percent, from more than 130,000 to less than 20,000. Rhino numbers declined even more drastically, from 20,000 in 1973 to just 350 in 1987. Serious declines have also been noted in Grevy's zebra, Kori bustards and crowned cranes. Numbers of the more common animals are declining and disappearing through a large portion of their ranges as encroachment by man and his farms and domestic livestock occupy habitats and migratory corridors and ranges. As more people occupy areas containing wildlife, illegal harvests for meat further depletes wildlif populations. Sport hunting for mammals was stopped in 1977 but illegal offtake continues at an alarming rate. Land owners are permitted to shoot animals that are damaging their crops or livestock but are not allowed to consume the meat. It is difficult to distinguish between depredation control and illegal harvest.

- o Institutions Responsible for Wildlife

The Wildlife Conservation and Management Department of the Ministry of Tourism and Wildlife has primary responsibility for wildlife and park management. The department is seriously underfunded and relies on support from NGOs and other assistance

organizations. Poaching control is the responsibility of the Anti-poaching Unit ot the WCMD. National and Game Reserves are under the jurisdiction of the Ministry of Local Government and more specifically the local County Councils. Management of wildlife in reserves may be shared by the County Councils and the WCMD.

o Endangered Species

The compilation of Endangered and Theatened Wildlife and Plants published by the U.S. Fish and Wildlife Service on November 30, 1988 lists 11 mammal species, two birds and one reptile as being endangered or threatened in Kenya. Listings in the Louis Berger report show 12 mammals, 14 birds, one fish, two reptiles and seven invertebrates as endangered, vulnerable or rare. The Berger report lists 48 vulnerable or endangered plants, 25 of which are in the coastal forests. Of particular interest among the mammals are cheetah, wild dog, elephant, black rhino, the Tana River Mangabey, the Tana River Red Colobus monkey and the Grevy's zebra. The leopard is also listed but there is some question as to whether the leopard is threatened.

o Economic Values of Wildlife

Wildlife viewing is responsible for one half of tourism revenue to the country. During 1987 and 1988 tourism was the country's major source of foreign exchange, bringing in $320 million in 1987. The majority of wildlife viewing occurs in National Parks and Reserves but is expanding into private ranches and tribal lands. It is this expansion outside of established sanctuaries that holds great potential for income generation and for future survival of wildlife. Wildlife and livestock can be compatible under managed conditions thus increasing the total economic returns from the land over either use by itself. Wildlife values can equal or surpass income generated from farms on the semi-arid and savanna lands where large mammal populations are most abundant.

There are other economic values of wildlife such as sustained cropping of wild game and game ranching or farming of wild animals. Some species such as impala that thrive on livestock ranches and eland or oryx that browse and have excellent drought resistance hold great potential for sources of protein in semi-arid environments. Sport hunting is now banned but reinstitution of hunting could further enhance the economic values of wildlife and perhaps help reduce poaching.

o Major Issues and Trends Identified During Field Trips and Interviews

The team interviewed 28 persons familiar with wildlife conservation in Kenya who represented 13 governmental, NGO and donor organizations. Visits were made to Nairobi National Park, Lake Nakuru National Park, Egerton College, Masai-Mara National Reserve, Tsavo West National Park and the Tana River Primate study

area. A summary of the impressions based on these visits and interviews are as follows:

- Financial support for management and protection of national parks and reserves is woefully inadequate.

- Park infrastructure has almost collapsed in many parks and their maintenance and protection has degenerated.

- Poaching has seriously reduced rhino and elephant populations to the brink of extinction.

- Tourist visits to parks such Tsavo have declined 40 percent and will continue to diminish in the face of injury and death to visitors and losses of elephants which are the main attractions in this park.

- Trespass by domestic livestock and farmers into protected areas is damaging wildlife habitat and creating human-wildlife conflicts.

- As human populations increase the demand for living space increases to the detriment of wildlife.

- Wildlife habitat is being converted to farms in areas that will not support agricultural activities over the long term.

- Human developments are cutting off migratory corridors for wildlife and threatening the existence of national parks and reserves.

- Activities of tourists in heavily visited parks and reserves are damaging the vegetation and soils and interfering with lives of animals such as cheetah and lions.

- Pastorialists such as the Masai will not tolerate wild animals as competitors on their lands unless wildlife can produce economic benefits to local peoples.

- Forests are being destroyed at an alarming rate and the remnant tropical forests are exceedingly important from the standpoint of biological diversity and protection of ground water supplies.

- Uncontrolled agricultural activities on some watersheds are resulting in siltation of aquatic habitats such as Lake Nakuru.

- Land tenure patterns are changing; group ownership is giving way to individual ownerships. Subdivision of the land is increasing rapidly.

- The Mara Reserve, which is under jurisdiction of the Narok County Council, is the best managed protected area in Kenya.

- Interventions such as anti-poaching, increased protection of parks and reserves and cash or amenity benefits to local peoples are viewed by many as stop-gap measures.

- The only totally unanimous opinion expressed by everyone interviewed was that the future of wildlife in Kenya hinged upon education of the people; adults who live with wildlife now and children who hold the future of wildlife in their hands. Extension education to inform pastorialists of the values of wildlife and wildlife reserves as a source of economic benefits at the local level and conservation education for children and school teachers were viewed as critically important tasks.

- There is a need to coordinate the activities of government agencies, donors, NGOs, PVOs and other groups interested in wildlife conservation in order to avoid overlap in activities or omission of important needs.

- The economic, and technical feasibility of interventions must be carefully considered in order to more fully ensure their applicability on the ground.

- Government agencies as well as donors, NGOs, PVOs and other groups agree on the need to orient their activities at the local level. "From the Ground Up" and "Good Neighbors" are now common buzzwords.

- Revenues generated from wildlife based tourism must be returned in adequate amounts to support management and protection of parks and reserves and some portion of these revenues must reach the pockets of the local people who are most closely affected by the presence of wildlife.

- Most people agree that the Kenya Wildlife Conservation and Management Department would be more effective as an autonomous agency.

- Many believe that it is possible to reduce human-wildlife conflicts to acceptable levels through demonstration of economic benefits of wildlife and by including local peoples in the decision-making process.

- The notion of fencing national parks to keep poachers and trespassers out and to keep wildlife inside is becoming popular among high government officials. This team question the advisability of fencing as do many people with whom we have spoken.

- There is a serious lack of properly trained and educated Kenyan wildlife biologists and of University teachers to provide the needed education and training.

- Many conservationists in Kenya are focusing on individual species and are not looking at entire ecosystems.

3. DEFINING THE ACTION PROGRAM

3.1 Introduction

The Action Program defines opportunities for involvement in natural resources management activities that should be considered for funding by USAID/Kenya or through other donor organizations or NGOs. It was developed following field trips and interviews with several key individuals and organizations -- public, private and semi-private -- aimed at determining sectoral NRM priorities not adequately addressed through other ongoing or proposed programs. The approach is economic. The achievement of the proposed strategy is possible only with investments made by the major actors in the strategy -- farmers, local groups or associations, the donor and the GOK. The Program also estimates the probable investment magnitudes for each strategy for each investor (in Section 4 below)

Sections 1 and 2 above have set the stage for identification of the Action Program components. The components selected for detailed elaboration reflect topics not adequately addressed by other donors or NGOs in the geographical areas selected for field visitations by USAID/Kenya. Because there are many other areas that could have been visited and topics that could have been addressed, however, a list of several other possible topics is provided in Section 3.3 below.

The geographical emphasis includes Tsavo-West National Park, Lake Nakuru National Park, Masai Mara Wildlife Reserve, and Tana River. The topical emphasis includes extension and training, agroforestry, infrastructure development and institutional strengthening. Care was taken to avoid recommending actions that are likely to stir controversy, such as the strong recommendation by several to fence all of the national parks in the country.

3.2 Strategy Components

3.2.1 Tsavo-West National Park

o Description of the Park

Tsavo-West National Park together with the recently gazetted Kyulu Hills extension occupies 9,065 km2 of semi-arid grassland and bushland in SE Kenya along the Tanzania border. The area has spectacular scenery which includes the 80 Km long Kyulu Hills which rise to 2,170 meters in elevation, the Ngulia Mountains which attain 1,824 meters in height, and numerous dramatic granite outcroppings and volcanic cones, all of which are backstopped by Mt. Kilimanjaro, Africa's highest mountain. The hills and mountain ranges are sources of water for the Tsavo River which flows eastward across the northern sector of the park to join with the Galana River. A major attraction is Mzema Springs which has a flow of 20 million liters per hour and supports a rich variety of plant and animal life.

Most of Kenya's wildlife is represented in the park which includes 60 species of mammals, 400 kinds of birds, and nearly all species of reptiles. Hornbills are perhaps more numerous here than in any other area of the country. The predominantly dry bushland with its grass understory is excellent habitat for elephants, rhinos and buffalo. Tsavo is best known for its large elephant populations which have numbered up to 20,000 animals in the recent past.

o Justification

Tsavo-West and East National Parks have been the African continent's most important elephant sanctuary. The two adjacent parks constitute a geographic area sufficiently large, 21,038 km2 (8,231 square miles), to support large self-sustaining populations of elephants. This is something that few other parks in the world can do. What has happened within the park is one of the great tragedies for park and wildlife protection in modern times. Poaching has eliminated the black rhino except for a fenced centrally located and guarded enclosure which now has nine animals. Elephant poaching continues at a rate estimated by some at 10-12 animals per day. Elephant numbers have been reduced to 3,500 animals according to some authorities and 6,000 according to others. Regardless of exact figures, the population can not sustain losses of 300-400 animals per year.

Encroachment by Masai cattle into the park along the western border affects an estimated 10 percent of the park. These trespasses are due to a shortage of water and forage for cattle because of conversion of grazing lands into agricultural plots and subdividing of formerly large contiguous tracts of common tribal lands. Attempts by park authorities to evict the illegal cattle have resulted in strained relations with the Masai herdsmen.

Discussions with the assistant park warden and a tour of portions of the park demonstrated vividly the nature and severity of the problems and their root causes. Since the 1976 reorganization of the Kenya Parks Department with the Game Department and the centralization of operations in Nairobi, virtually no maintenance funds have been allocated back to the park. Consider the following facts:

- There are 800 km of roads in the park but only 100 Km are usable;

- Of the eight control gates, only four are operated because of a lack of funds;

- Only a single vintage Land Rover pickup remains operational and it is out of service about 50 percent of the time;

- Seventy-three rangers are on duty of which 44 are assigned to gates and tourist areas. This leaves 29 persons to guard the park, a ratio of one ranger per 312 km2;

- The vicinity of park headquarters has the appearance of a vehicle graveyard. Many of these vehicles and pieces of heavy equipment need only minor repairs and parts but there is no money for these items;

- The park radio communications system is practically inoperative;

- Not a week passes without a breakdown in the pumps that supply water to various points in the park;

- Park rangers cannot respond to attacks by armed criminals because of a lack of transportation. During a recent attack on a bus load of tourists, the one operational vehicle was in the shop for repairs and the attackers escaped before they could be apprehended.

A proposal developed by members of the USAID/Kenya Mission provides a good summary of the problems and a list of proposed corrective actions for Tsavo. These are as follows:

1. Inadequate financing to maintain the transportation system infrastructure has led to:

- Reductions in tourist visits because many tour operators refuse to drive the roads;

- Inability to effectively police perimeters against illegal entry by livestock;

- Difficulty in conducting anti-poaching efforts;

- Deterioration of facilities and attractions.

2. Lack of maintenance of pumps and bore holes has led to:

- Incursions of wildlife into farming areas with resultant conflicts and bad relations;

- Redistribution of animals in the park to the detriment of tourist viewing.

3. Shifting of revenue to the Treasury has led to:

- Inadequate financing;

- Excessive share (80 percent) of the budget tied up in labor costs;

- Cumbersome procurement and disposal regulations;

- Inappropriate and inflexible budgeting by the Government;

- Over-centralization of management decision-making.

4. Antagonistic Park-Masai relations and illegal grazing have resulted in:

- Soil erosion due to overgrazing;

- Destruction of wildlife habitat;

- Worsening of the value of the park to tourists.

5. Solutions to the park's problems should have the following components:

- Policy changes by the GOK and WCMD that would provide an acceptable degree of financial autonomy to the park;

- Reorientation of key staff through training and technical assistance in "profit-seeking" management techniques;

- Developing a management plan for the park that would define the process of redevelopment and growth, establish appropriate and acceptable pricing policies, maximize revenues and minimize adverse environmental impacts, and improve park-Masai relations by shifting significant revenue to Masai enterprises.

Tsavo-West National Park offers an outstanding opportunity for USAID to demonstrate a commitment to wildlife conservation in East Africa. The park is one of the largest in the world and is seriously in need of assistance. It is our impression that a crisis situation exists in the park and that it should have higher priority than any other protected area in the country. Few donors are involved in the park. Present donor activities include support for the enclosed rhino protection area and limited support for anti-poaching activities. The only known support directed at improving park management is an extension project funded by USAID and channeled through the African Wildlife Foundation. A properly designed and executed intervention in Tsavo-West National Park could serve as a model for other parks in Kenya and other areas of Africa.

o Proposed Actions

Major components of the action program would be as follows:

- Continue support for the current dialogue with the Masai and other herdsmen to better understand their concerns, reasons for their actions and attitudes, numbers of livestock, numbers of people and area affected by the park.

- Fund a study to explore mechanisms to increase tourism in the park and to revamp the pricing structure on use of facilities by tourists. Attachment I of the proposed USAID/Japan Intervention is a good model to follow for this study. One person who has a background and understanding of business and economics should be able to conduct this survey in three months.

- Design a marketing strategy to improve tour operators' knowledge of the park and encourage them to route visitors to the park. An examination of bookstores in Nairobi failed to locate a tourist guide booklet of Tsavo though other parks and reserves were featured. A person who has experience in the tourism industry, in marketing, should be able to complete this study in three months.

- Finance the renovation of park infrastructure to improve the road system, purchase needed vehicles and heavy equipment, build a vehicle maintenance structure, obtain spare parts and repair tools, and train maintenance personnel. This is an expensive proposition and will probably require financial support from cooperating donors such as the Government of Japan.

- Provide financial support to hire a sufficient number of park rangers and wardens and train these new employees adequately. Initial funds to hire new employees would have to come from a donor with all salaries picked up by the GOK after the third year.

- Design infrastructure for the Masai to develop their own tourism industry associated with the park. This would include operating camps presently contained in the park as well as establishing additional camps outside the park. An expert in park and business management is needed to work with the local people to develop a credit system whereby capital investment monies will be made available. We anticipate a three-year commitment by a donor agency to support the expert assistance needed for design and implementation of this venture. The current tourist enterprise operated by the Narok County Council among the Masai group ranches in the Mara area could serve as a model for the Tsavo area.

- Educate and train extension and conservation personnel to communicate to the Masai and other peoples near the park the values and benefits of the park to them and their way of life. A program to train 10 extension personnel (community action leaders) who are deployed in two teams should be sufficient to conduct the necessary conservation and environmental education for local herdsmen and school groups.

- Establish a policy dialogue with appropriate officials in the GOK to create a financial plan that would allow sustainable and adequate management of the park.

- Seek financial backing from the Government of Japan to finance the renovation of park infrastructure. Contract the other activities to qualified private organizations.

3.2.2 Masai Mara Wildlife Reserve

o Description of the Area

The Mara-Serengeti ecosystem contains one of the richest concentrations of wildlife in the world with over one million wildebeest, 100,000 zebra and a host of other herbivors and

associated carnivores. The wildebeest migrate northward out of the Serengeti plains into the Mara region of Kenya over an area of 30,000 km2. The Mara portion of this ecosystem is a 4,368 km2 region in Southwest Kenya that extends to the Ewaso Ngiro River to the North, the Siria escarpment on the West and the Loita Hills to the East. The Mara National Reserve contains 1,368 km2 of this unique wildlife system while an additional 3,000 km2 lies on adjacent group ranches of the Masai.

Four vegetative communities occur in the area and are determined by rainfall, drainage, nature of the soils, incidence of fire and impacts of foraging by wildlife and domestic livestock. Grasslands cover the rolling central plains and areas of poorly drained soils. The most common grass is red oat grass (Themeda triandra) which is highly palatable and nutritious. Brushlands occur on stony ridges and drainages and are much reduced by elephants and fires. Dominant shrubs are Croton dichogamous and various thorn species such as Acacia brevispica. Savana woodlands cover large expanses of the Mara but are being reduced by elephants, fires and grazing. Dominant tree species include several kinds of Acacia. Smallest in extent of the communities is Riverine forests. These forests contain a large variety of animals, especially birds. Euclea divinorum, Diospyros abyssinica and Warburgea ugandensis are the dominant trees.

The entire Mara region is home to the Masai people and their domestic herds of cattle and goats. The Masai have always been very tolerant of wild animals and are partly responsible for the present existence of the great wildlife complex that occurs in the Mara area. However, during the last 30 years wildebeest numbers have erupted, tourist visits have increased, cattle numbers have multiplied and agricultural developments have encroached on the periphery of the Mara area. Competition for space and conflicts over best uses of the area are intensifying.

The Mara Reserve is administered by the Narok County Council with technical assistance provided by the Kenya Wildlife Conservation and Management Department. The adjacent eight group ranches are administered by elected committees or by private owners if subdivided.

o Justification

In 1987 the Mara Reserve recorded 18 percent of all visits to parks and reserves in Kenya and generated KShs 444 million, eight percent of gross tourist revenues for the country. Only about 10 percent of this amount remained in the district and only about one percent went to local group ranches. This imbalance in revenue distribution must be rectified if conservation and sustainability of the Mara area is to succeed. A harmonious compromise between competing forms of land use must be developed. If wildlife can be made to contribute substantially to the economic welfare of the people then it will be protected; if not, it will be replaced by livestock or agricultural developments.

The group ranches that surround the Mara Reserve on all sides in Kenya are critical to the continued existence of the entire ecosystem. Benefits from wildlife that can accrue to people living on these ranches include income from visitor tariffs in lodges within the reserve, income from employment associated with the reserve, and income from sales of crafts in local shops. A great potential exists for development of an infrastructure that can accommodate tourism outside the reserve on the group ranches. Development of this tourism potential holds one of the most promising mechanisms for local people to receive sustained benefits from wildlife and thus insure the continued existence of wildlife in the region.

o Donor, NGO and PVO Support and Programs

Major support is being provided by WWF/FOMM and by EEC. WWF/FOMM is contributing approximately $300,000 per year to support on-site personnel, repair shop operations, ecological monitoring, the research station, rhino surveillance, radio commnuications, visitor patrols and aircraft operations. EEC has developed a three-year plan funded at $1.4 million for group ranch development, road repair, research and monitoring, forest protection, aesthetic improvements and regional coordination. WCI is supporting a study of visitor impacts and has requested support from USAID to conduct a visitor attitude survey. Possible World Bank projects include road improvement and maintenance, machinery maintenance and two new group camps on ranches.

o The Niche for USAID

A unanimous conclusion by all persons and agencies contacted is that extension education for adults and conservation education for school children is critically needed. The future of wildlife in the Mara area and associated economic benefits from tourism as well as a traditional life style all depend upon the Masai people understanding the links between their environment and their social and economic welfare. Providing a mechanism for transmitting conservation and environmental information to group ranchers and to all of the affected Masai people is the niche that USAID can fill. There would be almost no overlapping with activities of other donors and assistance organizations. Other needs for management of the Reserve and for developing the tourism potential on group ranches are being addressed. The educational component is as important for long term sustainability of the area as any activity presently being conducted or planned.

o Proposed Actions

The following components are proposed:

- A six-month training program for extension personnel (community action leaders);

- Stateside education for a conservation education expert;

- On-site deployment of community action leaders;

- Yearly refresher training sessions;

- Feedback, evaluation, and adjustments;

- Technical assistance;

- Assistance by Peace Corps volunteers;

- Provision of vehicles and their maintenance;

- Provision and operation of a mobile conservation eduaction unit;

- Preparation and production of educational materials.

The training of extension personnel (community action leaders) will be conducted for a six-month period. Instructors should include a Kenyan who is experienced in agricultural or range extension methods and techniques, and an expert in environmental education and interpretation, possibly a US university or governmental agency person. Students would be selected from among the Masai on the basis of interest and natural ability to communicate. Their educational level should be post secondary, Form six level.

Training would be conducted on location in the Mara area and based in a facility at Narok or in the Mara Reserve. Local Masai leaders will be asked to assist in the training by demonstrating and discussing conditions and problems as they understand and perceive them. This will provide immediate feedback to be used in developing and orienting the training toward more direct and applicable directions. Also, by conducting the training on location the gap that always occurs between theory and practice can be reduced. Information and field demonstrations to be used by the community action leaders upon completion of their training would be familiar or even the same as used during the training session.

After completing their training, community action leaders will be divided into 4-5 teams and stationed at strategic locations, probably at Narok and 3-4 gates of the Mara reserve where they would have closer access to the group ranches. One of the graduates of the training session will be appointed as field supervisor to coordinate and manage the field personnel. Overall responsibility for project direction and control would rest with WWF/FOMM.

The mobile conservation education unit would not become operational until a suitable person is identified and sent to a university in the US for appropriate education and training. Upon return, this person would develop appropriate materials and techniques to work with local schools and teachers.

Each year one-week refresher sessions for all field personnel will be conducted. The purpose of these sessions is to introduce new methods and techniques, and to receive feedback on the success or problems with current procedures and techniques. These sessions will be conducted jointly by the supervisor and by technical assistance personnel from WWF/FOMM or from a university of government agency in the US.

Each field agent will be provided a motor bike and adequate educational materials for communicating the messages. The supervisor will be furnished a four-wheel drive vehicle. A larger vehicle will be modified to function as a mobile conservation education unit that can serve schools and villages. A 30-passenger bus is needed to transport participants on field trips during the training session and later to transport groups to various locations for demonstrations and field discussions.

It is not clear at this juncture exactly what kinds of educational materials the field personnel will need. We assume that much of the field educational activity will involve on-site demonstrations and discussions. There is some concern about the effectiveness of a more abstract approach. For the schools we believe that the usual approaches using audio-visual materials and brochures will be effective. A "Masai Conservation Reader" that uses local illustrations and conditions would perhaps be valuable.

3.2.3 Lake Nakuru National Park

o Description

Lake Nakuru National Park is a 160 km2 area adjacent to the town of Nakuru in the Rift Valley of Kenya. The main component of the park is Lake Nakuru, one of four alkaline lakes in the Kenya portion of the Rift Valley. The lake is an important link in the migratory range of the Rift Valley's lesser flamingo population. At times more than one million lesser flamingos can be found on the lake. The shallow alkaline waters support large quantities of blue-green algae which is a primary food of the flamingos.

Plant communities occur in bands around the lake beginning with open sedge and grass flats near the lake shore followed by Acacia forests which merge into open bushland and grasslands. Rocky ridges and hillsides support a variety of tree species including the unique Euphorbia candelabra.

In addition to the spectacular flamingo population there is a rich variety of other wildlife species. More than 1,200 species of birds have been recorded in the park. Pelicans and cormorants numbers have increased to noticeable levels since the introduction of Tilapia into the lake. Defassa waterbuck dominate the mammalian complex and are present in abundance. The park now contains one of Kenya's major black rhino populations and is an important part of rhino recovery efforts in the country.

Lake Nakuru is Kenya's second most visited national park. Tourist facilities include two lodges located in the park. The town of Nakuru, Kenya's fourth largest, is close by and offers additional visitor facilities. An additional consideration is the potential for education of Kenyan citizens because of the location of the park close to human population centers.

o Justification

Lake Nakuru is a catchment basin for several seasonal streams and springs in its 2,800 km2 watershed. There is no outlet to the lake, thus its concentrations of sodium carbonate which support the large blue-green algae biomass. In recent years many of the large farms on the watershed have been subdivided into smaller and smaller plots, some of which are less than one hectare. Improper farming practices are causing severe soil erosion which is reducing the land's capacity for producing food as well as silting in the lake. Siltation is further accelerated by removal of forests on the higher slopes due to agricultural clearing and cutting for fuelwood. An additional threat comes from industrial pollution. The city of Nakuru is developing into an industrial center and all discharges empty into the lake.

Lake Nakuru is becoming a threatened ecosystem and the factors which are posing the threats are simultaneously threatening the long term capacity of the surrounding lands to produce food and fuel for an expanding human population. The people who are degrading the land and who are removing the forests need to be informed of the consequences of their actions and, more importantly, shown how their activities can be modified to protect the resource base while producing sustainable crops of food and fuel. Extension training in agroforestry and sustainable forestry practices offers a possible solution to the problem.

o Proposed Actions

We propose training 10 agroforestry extension personnel and deploying them in small teams. An agroforestry expert who has experience in the field application of agroforestry techniques in developing countries will conduct a one-month training workshop and remain for an additional five months to assist in the initial application phase of the project. Training can be conducted at nearby Egerton College. A supervisor will be selected from among the 10 trainees. The agroforestry expert will return for one month each year for three years to conduct a five-day refresher course and to spend three weeks in the field assessing progress of the project. It is expected that all costs for the project will be picked up by the Government after year three. Overall responsibility for the project will be provided by a selected faculty member at Egerton College who will also assist in the initial training and with the refresher sessions. We also propose that a Peace Corp Volunteer be attached to the project.

3.2.4 Tana River

The National Museums of Kenya (NMK), representing the member organizations of the Tana River Primate Project, has put forward an unsolicited proposal for the continuation and development of its activities. As this project falls within the major natural resources management concerns of AID, the proposal was reviewed and the project site visited during the NRMS Action Program mission by team members and staff of USAID/Kenya. As a result of an overwhelmingly positive appraisal, the NRMS team wishes to endorse this proposal to USAID with the recommendation that it be funded. The NRMS team has also made a series of suggestions for modifications and additions to the NMK proposal to further ensure its coherent fit with the ongoing and planned strategy objectives of USAID in Kenya. The changes suggested involve additional funding requirements. Neither these changes nor the budget implications have been discussed in any detail with the representatives of the NMK. The sections which follow (drawn heavily from the NMK proposal) provide a description of the proposed project, a justification, a brief action plan and an indicative budget.

o Description

Riparian evergreen forests located in an otherwise arid environment are very rare throughout Africa, and those located along the lower Tana River of Kenya are among the most outstanding. The Tana forests contain two of Africa's rarest and most endangered primate species, the Tana River Red Colobus (Colobus badius rufomitratus) and the Crested Mangabey (Cercocebus g. galeritus). These two monkey species, which are Kenya's only endemic medium-sized mammals, are found only in the forest patches of the lower Tana.

The forests along the lower Tana also contain a unique assemblage of other animals and plants, including a new species of tree described only last year, Cynometra lukei. Examples of this unique biome-type are legally protected only in the Tana River Primate Reserve. The Tana Reserve, comprising 171 km2, is under pressure from expanding human populations and corresponding agricultural development in the area. The people living along the lower Tana are primarily Pokomo agriculturalists and Orma pastoralists.

The first detailed biological field studies of the Tana area, and its rare primates, were conducted in the early seventies. The Tana River Primate Reserve was subsequently gazetted as a National Reserve in 1976, largely as a result of this work. Very little was done in the area after that time, until the primates were resurveyed in 1985. This revealed a drastic decline in the numbers of the two primate species, approximately 80 percent for the Red Colobus to 200-300, and 25 percent for the Crested Mangabey, to 800-1000.

In response to the discovery of the decline in the two primate species, the Tana River Primate Project was developed under the auspices of the Kenya Wildlife Conservation and Management Department (WCMD) and the National Museums of Kenya (NMK). The Tana Project, which began in 1987, is a collaborative venture involving the WCMD, NMK (including its Institute of Primate Research), and Emory University (including the Yerkes Regional Primate Research Center), Wildlife Conservation International (WCI), the World Wildlife Fund (WWF), African Wildlife Foundation (AWF), the University of Nairobi, and Moi University. The project has developed to date as a series of coordinated research projects, undertaken by Kenyan and overseas scientists, designed to assess the status of the Reserve and its primate populations.

The initial aim of the Tana Project was to study the two endangered primates and their forest habitat, with the overall goal of understanding why they have declined so drastically since 1975. Fundamental to this is an understanding of the patterns of forest regeneration and senescence and of the impact of people living in and around the Reserve. The Tana Project provides exceptional opportunities for research and training of students in biology and natural resource management. The project will lead to the preparation of a management plan for the Reserve that will ensure the conservation of these unique primates and their habitat. The project objectives are as follows:

- provide facilities and support to accommodate Kenyan and overseas scientists and students to participate in research and training at the Tana;

- assess the regional ecology of the Tana Basin with particular attention to the Tana River Primate Reserve;

- research on the vegetation of the Reserve with the aim of elucidating the forest condition, regeneration and succession;

- research on the primate populations with a view of documenting the status of each species and to determine the reason for the decline in numbers;

- work with the people bordering or living in the Reserve to devise ways they can directly benefit from it and thus help to protect it;

- develop a series of recommendations for an overall management plan for the Tana Reserve, based on project findings, and assist in its implementation.

There has been substanial progress to date. Through financial support from Yerkes Regional Primate Center and Emory University, a permanent research camp was constructed at Michelelo in the Reserve. The camp comprises six scientist tents, two guest tents, a basic laboratory/library banda, a central meeting area, a simple workshop, and support staff accommodation. All bandas are completely furnished. Additional facilities include: a central

propane refrigerator and freezer, a borehole, pump, storage tanks and piped water, individual cooking facilities, and solar powered lighting. The project also has a camp Land Rover and two field Suzukis. An accommodation fee of Kshs. 1,600/ per month is charged to scientists and students staying at the Michelelo Camp to help defray recurrent expenditures.

Seven long-term resident scientists (three Kenyans and four Americans) have been engaged in research at the site since the inception of the project. A series of publications and reports have been produced and a body of knowledge has accumulated which will provide a solid baseline for sustained management of the reserve and preservation of the endangered species. Funding for activities to the present has been secured from a wide variety (eight) sources. With the completion of the facilities and the ongoing research projects, this funding will come to an end in 1989. The accommodation fees for scientists, while helping to defray costs, cannot meet the Reserve's recurrent costs. Similarly, the protection efforts of the WCMD warden and his staff have been woefully underfunded (in principle salaries only have been allocated by GOK) and continuing human pressure could jeopardize the survival of the endangered species through encroachment on the habitat.

The purpose of the proposal are dual: to ensure the continuation of the research and training components of the project; and, to add a development component aimed at integrated natural resource management so that the benefits flowing from the Reserve contribute to the local economy. These two elements are considered vital to ensuring that this unique natural area and the species it harbors are safeguarded.

Funds are specifically needed to support project recurrent costs and the research and training of Kenyan students at the Tana Reserve over the near term. Research and training will be oriented toward applied issues of conserving biological diversity through the integration of studies on forest ecosystems and human use of these ecosystems. With respect to the latter, it is crucial to develop ways in which the local inhabitants directly benefit from the Reserve, for example through expansion of tourism and development of compatible cottage crafts. The immediate objectives of this second phase of the project are:

- to train Kenyan graduates in disciplines relevant to addressing the pressing national conflict between demographic pressure and preservation of the country's rich wildlife resources;

- to contribute scientific information towards the resolution of human-wildlife conflicts;

- to serve as a pilot area in bringing to bear the interests and needs of the scientific, governmental, and local communities to find ways to preserve relatively small and unique areas of important biological diversity (which abound in Kenya) in a compatible management scheme benefitting all concerned;

- to establish and implement an effective management plan for the areas within and on the periphery of the Tana River Primate Reserve.

o Justification

The opportunities for addressing the issue of biological diversity so fundamental to the future of mankind abound in Kenya. Making a choice of where to invest development resources is often difficult. The Tana River Primate Reserve, however, represents a unique set of circumstances which, measured against any criteria, would place it high on the list of priority areas for national and international attention.

The proposed continuation of the project put forward by the Tana Management Committee and modified and endorsed by the NRMS team should be judged in the light of the following considerations:

- As a modest and manageable pilot exercise, aimed at dealing with human encroachment and habitat destruction, Tana River will be a model for many similar sites. It will generate vital information, scientific, financial and operational in nature regarding approaches and means to resolving the conflict of man and wildlife in Kenya.

- As a field teaching and research laboratory, it will provide the upcoming generation of Kenyan scientists with sound scientific and practical experience in preparation for their careers.

- The concerted efforts of the organizations and individuals of the Tana Management Committee who have successfully established the ongoing program, under considerable odds in this rugged corner of Kenya, constitute a major guarantee to its sustained support from the Government and people of the country.

- The tourism potential, particularly from the coast region, is high and if such private enterprise can be harnessed for local development it will provide input to the local economy that cannot be obtained through current agricultural and livestock endeavors.

- The Tana River Basin is changing through large-scale agricultural development. The project will provide a ready source of scientific information on which to assess environmental impacts.

- The proposed projects fit well within both the priorities of the Agency PNRM in Sub-Saharan Africa and USAID/Kenya's CDSS.

o Proposed Actions

Although this proposal will require further elaboration and clarification, the following statement describes the activities

foreseen. The proposed actions envisaged under the project include three principal components:

- continuation of the teaching and research;

- development of an affirmative management/action plan and its implementation;

- initiation of local development activities involving the adjacent communities including modest tourism development and improved and sustainable agricultural productivity.

As mentioned above, these activities will be planned and directed by the Tana Management Committee (TMC) which will designate an overall project leader. This individual will visit the site regularly to give guidance, support and inspect achievements of the team on the ground. Students and researchers resident at the site together with the WMCD warden and his staff, along with project supplied labor will implement the project. The students and researchers will be expected to contribute part of their time to activities directly related to reserve management and local development. An occasional outside consultant, for which project funds have been earmarked, may be called upon to assist with particular activities.

Teaching, training and research will continue much as they have over the course of the earlier phase of the project, involving both Kenyan and overseas students and scientists. No large-scale increase in their numbers is foreseen. As specified above, their research will be expected to address issues of particular relevance to the overall management, development and preservation of the Reserve and its endangered species. Funding has been set aside to provide graduate training for Kenyan scientists, both in the country and abroad. Overseas graduate students and scientists will be entirely self-supporting depending on their grants for both subsistence and research costs. The TMC will evaluate the accommodation fees periodically to ensure that they adequately defray recurrent expenditures. The TMC will also seek to attract additional research or investment resources from outside sources for special purposes as these may arise.

A draft management plan for the Reserve will be drawn up under the auspices of the TMC by the end of year one and will be approved and implemented thereafter. This plan will take into account forest management, regeneration, and protection needs essential to ensuring the long-term integrity of the Reserve and its primate population. Pilot efforts at forest regeneration will be undertaken in degraded areas of the forest using indigenous species. Corridors linking all parts of the forest will be established to facilitate freedom of movement of the primate species. The Reserve Warden will deploy his staff as required to guarantee the complete protection of the forest. A vehicle will be acquired and put at his disposal as well as operating expenses which will flow through the TMC to enable the WMCD staff to carry out its work. Any and all exploitative activities with the Reserve

will be strictly limited and controlled and no further encroachment or clearing for agriculture will be permitted

In order to ensure that the adjacent communities are thoroughly aware of the project purposes, regular meetings involving TMC representatives, the WMCD Warden, project staff and village leaders will be held. A modest extension/information program will be established to make sure that the local people understand the importance of the Reserve. To offset the likely production tradeoffs associated with stricter control of the Reserve, an affirmative action program will begin to address development needs and opportunities of the local people. This will likely involve a feasibility study for and the eventual setting up of a modest tourist facility (tented camp) near the principal village. Promotional materials will be prepared and distributed to agents in the Malindi and Mombasa areas. Hopefully an entrepreneur capable of operating such a camp can be found among the local communities. Every effort will be made to ensure that income generated by such a facility remains in the area. Similarly, all casual labor hired by the project will come from the local communities. Project staff will also seek advice and guidance from concerned organizations to identify ways and means for improving present agricultural practices of the subsistence farmers in the area.

3.3 Additional Opportunities for Assistance

Following are several NRM topics that USAID/Kenya could address in addition to the four presented above. As mentioned in Section 1, the team addressed the NRM "niches" available to USAID largely in the geographical areas visited by the team. Listed below are several other possibilities:

- Remnant and relic patches of tropical rainforests, riverine forests and coastal forests. These forests are rich in plant and animal species and contain many endemic forms of life.

- Conservation of biological diversity in afromontane (highland) forests. This topic should be addressed by USAID if not sufficiently prioritized in the World Bank Forestry IV effort. The individual components of the Forestry IV effort are still in various stages of planning and negotiations.

- Infrastructure support to the Forestry Department. This was suggested by WB forestry personnel as a niche not covered in the Forestry IV program. It includes repairs and upgrading of forest roads, replacement of machinery and renovation of Forestry Department office facilities.

- Marshes, estuaries and other wetlands. These areas are not extensive in Kenya but contain a large variety of plant and animal species. They are also important for migratory waterfowl and other birds.

o Creation of a coastal marine national park. Development is rapidly altering coastal ecosystems. A park would offer protection and create an additional tourist attraction.

o Provision of overseas education and training in park and tourism management for Kenyans. Present park wardens are apparently coming from wildlife degree programs and do not have adequate training in parks and recreation.

o Provision of faculty support for the natural resources program at Egerton University through immediate placement of instructors from the US.

o Pursue avenues to ensure adequate financing for the national parks by way of the structural adjustment grant mechanism and through other appropriate policy dialogue.

4. ACTION PROGRAM ECONOMICS

4.1 Introduction

The action program economics is presented in the form of financial analysis. Time did not permit specification of realistic and documentable shadow prices and costs to be able to carry out economic analyses. The data used were obtained in several published documents listed in the reference section, and from interviews conducted during the field trips. The results should be viewed as order-of-magnitudes rather than accurate measurements of the probable investments required.

It should be noted that several of the ideas for the strategy components in the Action Program came from people in the field who already have prepared concept papers or specific proposals intending to seek funding. The team did not have the occasion to study the concept papers or the proposals in detail. The Action Program analyses, therefore, reflect the team's judgments of the probable investment magnitudes involved, not those included in the proposals or the concept papers.

4.2 Summary of Assumptions, Analyses and Results

The economics of the Action Program is based on several assumptions as discussed in general in the previous section. The assumptions are specified in detail for analytical purposes below. The assumptions common to all of the strategy components include:

o A real discount rate of 15 percent. Given the current rate of inflation of approximately 11 percent, the nominal rate would be in the neighborhood of 26 percent. A 15 percent real rate is also used by the World Bank in their projects.

o Prices and costs are held constant over the 20-year analytical time period.

o Unskilled labor costs 25 KShs per person per day.

o If the work is carried out by a contractor -- private for profit or NGO -- we include a 20 percent overhead factor on costs for all of the assumed donor investments. The overhead is not factored in for the GOK recurrent cost investments.

It is emphasized at the outset that the base case analyses presented below must necessarily be anchored to a set of assumptions. How realistic these assumptions are can, of course, be questioned. If USAID/Kenya disagrees with any of the assumptions used they can easily be changed to generate a set of different result tables. These can be faxed to the Mission on short notice.

4.2.1 Tsavo West National Park

o Assumptions

The specific assumptions are given in Tables 4.1, 4.2 and 4.3 below. Most of the assumptions are self explanatory. Some, however, need additional clarification. The strategy assumes that the GOK will make provision for, in the national budget, the recurrent costs of all required training and extension work, the replacement of all materials, vehicles and motorbikes and all salaries for the park rangers, assistant wardens, extension agents and the supervisors. The donors will make all the initial investments ("priming the pump") which will phase into GOK recurrent costs after an appropriate period. Note that the retraining workshops to be held under GOK auspices cost much less than the donor funded retraining workshops. This is because GOK is assumed to use already in-house salaried staff as trainers.

o Analysis and Results

The results, expressed in the form of probable investment magnitudes for the Tsavo National Park proposed strategy by donor and GOK, are given in Table 4.4.

Given the assumptions, the present value (over 20 years) of the donor investments amount to nearly $2.3 million, distributed over time as shown in the table. The largest portion of the donor contribution is for infrastructure development and vehicles to restore the park to an efficient operational status. GOK will be expected to invest a present value total of $1.3 million as distributed in the table. In the event a project is designed along the lines suggested in this strategy, the commitment to provide for the recurrent costs in the GOK national budget should be made into a condition precedent.

The team did not project the impact of the proposed investments on tourism in the park, nor on the economic well-being of the local population receiving the benefits of training and extension. Such projections would be pure conjecture without the necessary data. It is certain, however, that tourism in the Tsavo West National Park will increase if the facilities were properly restored and additional and different tourist facilities were developed outside the park boundaries to be operated and managed by the Masai.

Table 4.1 Tsavo West National Park, Extension and Technical Asst.

GOK assumes all training costs in year	5
GOK assumes all materials and vehicle costs in year	5
GOK assumes ranger and assistant warden salaries in year	3
Replacement freq., all vehicles and equipment:	every 8 years
Long term TA: 1 cons. @ $60,000/yr, 3 years, plus $7,000 travel	
Short term TA: 30/days per year, 3 years, daily rate:	$250
Travel/consultant $2,400 Per diem/day $50 Gas price/liter	$0.50
Salaries/yr: Rangers & ext. agents $1,000 Asst wardens	$1,500
No. Assistant Wardens	18

Table 4.2 Infrastructure and Vehicles: Tsavo West National Park

VEHICLES	Gas l/yr	No.	Cost/ea	Total
Large trucks, 4-wh dr	4,000	2	$45,000	$90,000
Water tanker trailers		2	$20,000	$40,000
Land Rovers w/trailers	4,000	12	$30,000	$360,000
Front loaders	1,000	2	$50,000	$100,000
Dozer carrier		1	$30,000	$30,000
Dump trucks	2,000	8	$45,000	$360,000
Road graders	2,000	2	$60,000	$120,000
General purpose trucks	4,000	2	$35,000	$70,000
Bus	2,000	1	$40,000	$40,000
Gen. purpose vehicles	4,000	5	$20,000	$100,000
Dozers	2,000	2	$80,000	$160,000
BUILDINGS TOOLS AND EQUIPMENT				
Maintenance building	500 m3	@	$50	$25,000
Tools and equipment				$100,000
Spare parts				$50,000
Pumps for water sup.	6	@	$10,000	$60,000
Total				$1,705,000

Note: For the purpose of analytical simplicity, it is assumed that the entire infrastructure and vehicle investments will be replaced every eight years (Table 4.1)

Table 4.3 Training and Extension Workshops: Assumed Costs for Donors and GOK, Tsavo West National Park

	DONOR		GOK		
TRAINING ACTIVITIES	Ext. Wkshp	Retr. Wkshp	Ext. Wkshp	Ranger Training	Ranger Retraining
GENERAL					
Days per workshop	130	5	5	30	5
Trainees/workshop	10	10	20	60	60
LABOR					
Daily rate/expat consult	$230	$230	$0	$0	$0
No. expat. consultants	1	1	0	0	0
Tot pers dys, expat. cons	180	10	0	0	0
TRAVEL AND PER DIEM					
Travel cost, expat. cons	$2,400	$0	$0	$0	$0
Travel cost/trainee	$25	$0	$0	$0	$0
Per diem for trainees	$5	$5	$5	$5	$5
Per diem for expat cons	$50	$50	$25	$0	$0
Days TDY, expat. consult	180	10	0	0	0
OTHER DIRECT COSTS					
Equip. & supplies	$500	$200	$0	$0	$0
Phone/telex/fax/mail	$300	$100	$50	$50	$0
Produce Training manual	$100	$0	$0	$0	$0

Table 4.4 Tsavo West National Park: Donor and GOK Costs

	DONOR INVESTMENTS			GOK INVESTMENTS		
Yr	Salaries: Ext. Ag. Rangers, Asst ward. Tech Asst.	Infrastr.: Vehicles, Buildings, Gasoline Materials	Workshops & Long T. Training	Salaries: Ext. Ag. Rangers, Asst ward. Tech. Asst	Infrastr.: Vehicles, Buildings, Gasoline Materials	Work-shops
1	258,820	1,791,900	76,560	0	0	9,050
2	188,260	19,900	76,560	0	0	1,500
3	89,760	39,900	76,560	98,500	0	1,500
4	0	19,900	76,560	98,500	0	1,500
5	0	0	0	98,500	19,900	2,550
6	0	0	0	98,500	39,900	2,550
7	0	0	0	98,500	19,900	2,550
8	0	0	0	98,500	1,724,900	2,550
9	0	0	0	98,500	39,900	2,550
10	0	0	0	98,500	19,900	2,550
11	0	0	0	98,500	19,900	2,550
12	0	0	0	98,500	39,900	2,550
13	0	0	0	98,500	19,900	2,550
14	0	0	0	98,500	19,900	2,550
15	0	0	0	98,500	39,900	2,550
16	0	0	0	98,500	1,712,400	2,550
17	0	0	0	98,500	19,900	2,550
18	0	0	0	98,500	39,900	2,550
19	0	0	0	98,500	19,900	2,550
20	0	0	0	98,500	19,900	2,550
NPV	426,431	1,610,834	218,577	456,412	828,127	19,529
TOTAL DONOR		2,255,842		TOTAL GOK		1,304,067

4.2.2 Lake Nakuru National Park

The strategy for Lake Nakuru National Park involves physical interventions in the form of soil conservation, primarily by way of agroforestry techniques in the watershed area around the lake. The objective is to stop the siltation into the lake to preserve one of the few important remaining flamingo sanctuaries in Africa. The success of the strategy depends on farmers' rate of adoption of the agroforestry techniques proposed. If the recommended techniques do not significantly improve the farmers' economic well-being, particpation will be low or non-existant.

The focus of the strategy must be on the farmers -- how they will benefit from applying the agroforestry techniques. The preservation of the flamingo sanctuary as the major benefit or the reason why they are being asked to practice agroforestry, is not sufficient. The benefits nust be real to them -- in the forms of higher crop yields and food security. To ensure a maximum rate of

participation, therefore, donors must be prepared to provide financial incentives or sharing the costs with the farmers.

The team carried out a preliminary analysis of the financial feasibility, from the farmers' prespective, of practicing agroforestry on sloped farm land around Lake Nakuru. This farmer perspective analysis was carried out to determine whether the NRM strategy would have a reasonable chance of succeeding. Indeed, if the subject matter to be extended to a large number of farmers make little financial sense to them, the strategy will not succeed. Feasibility at the farm level must be the prerequisite for deciding to go ahead. The assumptions and results of this preliminary, first stage, analysis are briefly discussed below but not presented in detail, because it is not part of the proposed strategy. Our aim was, as mentioned above, to determine whether it was worthwhile to proceed with the strategy at all.

The data on typical cropping patterns and associations, crop yields, farm gate prices and time and cash investment requirements for the agroforestry interventions, were obtained from the ICRAF field research station in Machakos and the KARI research station in Katumani.

The agroforestry technique analyzed consisted of planting trees in tight spacing along the contours in the fields and allowing grasses and brush to regenerate naturally around the line of trees on a width of approximately 1.5 meters. The distance between the vegetative bands varied with the slope of the field in order to achieve the objective of stopping soil erosion -- relatively far between the bands on gentle slopes, less so for moderately sloped land, and short distances between the vegetative bands on steep land.

The effect of planting trees in farmers' fields, is that there will be less land to farm. What was previously one cultivable hectare is now less because some of the land is occupied by trees and other vegetation. The challenge of the proposed agroforestry scheme is, therefore, to not only make up the loss of cultivable area in the form of higher crop yields, but also make up for the cash and time investments the farmers will be expected to make in buying seedlings and planting and maintaining them.

As demonstrated at the ICRAF field station in Machakos, although the agroforestry techniques applied on sloped land serve to stop soil erosion (which is the desired effect), they do not increase **total** crop yields significantly. On the average, total yields remain roughly the same as without the vegetative band in any given year. Whereas one hectare without trees would produce 2.5 tons of maize (1st year out of fallow) without the vegetative bands, the same hectare with trees would still produce 2.5 tons, but over a smaller cultivable area. This means that, in terms of higher yields, the farmer would only recover the loss of cultivable area but not the cash and time investments to buy seedlings and plant and maintain them. The latter would be recovered in terms of

the economic benefits of fuelwood and poles from the trees instead of from higher crop yields.

The increases in crop yields attributable to the agroforestry intervention were measured, in the analysis, with respect to an assumed expected decline in crop yields of six percent annually over time, without the agroforestry intervention. Given this assumption, plus taking into account the economic benefits of fuelwood and poles from the trees, the results showed that the intervention is probably financially feasible from the farmers' perspective on gentle and moderately sloped land, but not on steep land. Financial feasibility is difficult to attain on the steep land because more of the cultivable area is occupied by trees as the distance between the vegetative bands is narrower.

Given the results of this preliminary analysis, we concluded that the strategy as proposed in the previous section and analyzed below is sound, but with the caveat that donors will have to share some of the costs with the farmers, particularly those farming on steep land. This could be in the form of providing free tree seedlings and some hand tools in addition to the technical assistance.

o Assumptions

The specific assumptions are summarized in Tables 4.5 and 4.6 below.

o Analysis and Results

The results, expressed in the form of probable investment magnitudes for the Nakuru National Park proposed strategy by donor and GOK, are given in Table 4.7. The Nakuru National Park strategy is the least costly of the four strategies proposed -- for both the donors and the GOK. The donors will be expected to disburse approximately $340,000 in present value terms) as indicated in the table. The GOK commitment will be much lower.

Table 4.5 Nakuru National Park, Extension and Technical Assistance

GOK assumes all training costs in year				5
GOK assumes all materials and vehicle costs in year				5
GOK assumes ranger and assistant warden salaries in year				3
Ratio of supervisors to agents			0.1 per agent	
Ratio: volunteers/agents	0.1/agent	Faced out in year		7
ST TA, days: 90 (30 days/year for 3 years)		Rate/day		$250
Travel/consultant $2,400	Per diem/day	$50	Gas price/liter	$0.50
Sal/yr: Rangers/ext. ag. $1,000, Asst wardens $1,500, PCV				$5,000
No. Assistant Wardens				18
Motorbike cst: $2,000	Vehicles for ext agent supervisor			$20,000
Ins/maint/yr: Motorbike	10%	Vehicle	7%	
Freq. of replacement: Motorbikes every 3 yrs, vehicle every 6 yrs				
Materials/yr: Extension agent	$600	Supervisor		$1,000
Gas consumption: Motorbikes 600 Liters/yr, vehicle 2,000 Liters/yr				

Table 4.6 Training and Extension Workshops: Assumed Costs for Donors and GOK, Lake Nakuru National Park

TRAINING ACTIVITIES	DONOR Initial Workshop	DONOR Retrain. Workshop	GOK Retrain Workshop
GENERAL			
Days per workshop	30	5	5
Trainees/workshop	10	10	10
LABOR			
Daily rate/expat consult	$230	$230	$0
No. expat. consultants	1	1	0
Tot pers dys, expat. con	130	30	0
TRAVEL AND PER DIEM			
Travel cost, expat. cons	$2,400	$2,400	$0
Travel cost/trainee	$25	$0	$0
Per diem for trainees	$5	$5	$5
Per diem for expat cons	$50	$50	$0
Days TDY, expat. consult	40	30	0
Bus rental	$0	$0	$0
Rental wkshp facil/day	$0	$100	$0
Excess baggage/trip	$300	$300	$0
OTHER DIRECT COSTS			
Equip. & supplies	$1,000	$200	$0
Phone/telex/fax/mail	$300	$150	$50
Produce Training manual	$250	$100	$0

Table 4.7 Nakuru National Park: Donor and GOK Costs

	DONOR INVESTMENTS				GOK INVESTMENTS		
Yr	Salaries: ST tech. assist., Volunt.	Salar: Ext ag. Super-visors	Initial and re-training workshops	Materials Gas & Vehicles	Salar: Ext ag. Super-visors	Retrain Work-shops	Materials Gas & Vehicles
1	19,040	22,500	59,760	56,900	0	0	0
2	19,040	22,500	59,760	14,900	0	0	0
3	5,000	0	59,760	34,900	22,500	0	0
4	5,000	0	59,760	14,900	22,500	0	0
5	5,000	0	0	0	22,500	300	14,900
6	5,000	0	0	0	22,500	300	54,900
7	0	0	0	0	22,500	300	14,900
8	0	0	0	0	22,500	300	14,900
9	0	0	0	0	22,500	300	34,900
10	0	0	0	0	22,500	300	14,900
11	0	0	0	0	22,500	300	14,900
12	0	0	0	0	22,500	300	54,900
13	0	0	0	0	22,500	300	14,900
14	0	0	0	0	22,500	300	14,900
15	0	0	0	0	22,500	300	34,900
16	0	0	0	0	22,500	300	14,900
17	0	0	0	0	22,500	300	14,900
18	0	0	0	0	22,500	300	54,900
19	0	0	0	0	22,500	300	14,900
20	0	0	0	0	22,500	300	14,900
NPV	41,747	36,578	170,614	92,211	104,257	1,021	86,870
TOTAL DONOR			341,151		TOTAL GOK		192,147

4.2.3 Masai Mara Wildlife Reserve

o Assumptions

The specific assumptions are summarized in Tables 4.8 and 4.9 below. The extension agent are assumed to be working with a total of 300 family units during any one given year. Some of the Masai will capture and benefit from the training they receive rapidly and enthusiastically, others will not. For this reason, and based on experience from other African countries, we assume that only 10 percent of the Masai herders contacted will be effectively trained in any given year.

For purposes of the analysis, the assumption is made that one well-trained Masai herder will cause another .3 herders to adopt

and realize the benefits of the training, without any direct contact with the extension agents.

Table 4.8 Masai Mara Training, Extension and Technical Assistance

No. hectares in impact region	2,930,000
No. of Masai families in impact region	15,000
Avg size land holding (ha)	195.3
GOK assumes all training costs in year	5
GOK assumes all materials and vehicle costs in year	5
GOK assumes agent & supervisor salaries in year	3
1 extension agent works with	300 Masai/year
No. years of direct agent/Masai contact	2
Training is effective for	10% of Masai
Demonstrat. effect: 1 trained Masai equals 0.3 addit. herders/yr	
Ratio of supervisors to extension agents:	0.1 per agent
Ratio of volunteers to agents	0.05 per agent
Volunteers faced out in year	7
Short term tech. assist.: 1 consultant, 20 days per year,	4 years
Short term consultant daily rate: $250, Per diem/day	$50
Extension agent salary/year $2,000, Supervisor salary/year:	$2,500
Volunteer salary/year	$5,000
Motorbike cost	$2,000 each
Four wheel drive vehicles for supervisors	$20,000 "
Bus (for extension agents etc.)	$50,000
Mobile interpretation unit	$60,000
Ins. & maint./year: Motorbike 10% Vehicle 7% Bus	5%
Freq. of replace., motorbike: 3 yrs, Veh./bus/interp unit:	6 years
Expendable materials, ext. agent: $600/yr, Supervisor:	$1,000/yr
Projected gas consumption/year:	
Price of gas:	$.50/liter
Motorbikes:	600 liters each
Vehicles	2,000 "
Bus and mobile interpretation unit:	2,000 "
LT training in US to MS or PhD level:	1 person, 3 years @20,000

Table 4.9 Training and Extension Workshops: Assumed Costs for Donors and GOK, Masai Mara

TRAINING ACTIVITIES	DONOR		GOK
	Initial Session	Retraining Workshops	Retraining Workshops
GENERAL			
Days per workshop	130	5	5
Trainees/workshop	20	20	20
LABOR			
Daily rate/consult	$230	$230	$0
No. consultants	2	2	0
Total person days, cons.	180	10	0
TRAVEL AND PER DIEM			
Travel cost. per cons	$2,400	$2,400	$0
Travel cost/trainee	$25	$0	$0
Per diem for trainees	$10	$10	$10
Per diem for cons	$50	$50	$25
Days TDY, consultant	180	10	0
Bus rental	$2,000	$0	$0
Rental wkshp facilit./dy	$100	$100	$0
OTHER DIRECT COSTS			
Equip. & supplies	$5,000	$500	$0
Phone/telex/fax/mail	$800	$150	$50
Produce training manual	$250	$100	$0
Transl. Training manual	$1,500	$300	$0

o Analysis and Results

The results, expressed in the form of probable investment magnitudes for the Masai Marai Wildlife Reserve proposed strategy by donor and GOK, are given in Table 4.10.

Given the assumptions, the strategy will be accomplished in year 15. At this point all of the targets will have been met (the Masai in the region will have been effectively trained, school children will have received appropriate environmental education for several years, etc.) and the wildlife reserve will presumably no longer be threatened. The present value (over 20 years) of the donor investments amount to approximately $884,000, distributed over time as shown in the table. GOK will be expected to invest a total of $360,000 (present value) as distributed in the table.

Table 4.10 Masai Mara Wildlife Reserve: Donor and GOK Costs

	DONOR INVESTMENTS				GOK				
Yr	Salary Volunt & Tech Assist	Salaries: Agents Superv	Workshps & Long T Traing	Materials, Gas & Vehic.	Salaries: Agents Superv	Retrain Workshops	Materials, Gas & Vehic.	Masai Train.	Hectares Covered
1	15800	45000	188000	161300	0	0	0	300	58600
2	15800	45000	188000	15300	0	0	0	390	76180
3	15800	0	188000	115300	45000	0	0	507	99034
4	15800	0	168000	15300	45000	0	0	659	128744
5	5000	0	0	0	45000	1050	15300	857	167367
6	5000	0	0	0	45000	1050	145300	1114	217578
7	0	0	0	0	45000	1050	15300	1448	282851
8	0	0	0	0	45000	1050	15300	1882	367706
9	0	0	0	0	45000	1050	115300	2447	478018
10	0	0	0	0	45000	1050	15300	3181	621424
11	0	0	0	0	45000	1050	15300	4136	807851
12	0	0	0	0	45000	1050	145300	5376	1050206
13	0	0	0	0	45000	1050	15300	6989	1365268
14	0	0	0	0	45000	1050	15300	9086	1774848
15	0	0	0	0	45000	1050	115300	12812	2307303
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
PV	49756	73157	525301	236389	189975	3142	167000		
TOTAL DONOR:				884603	TOTAL GOK:				360117

4.2.4 Tana River

The Tana Management Committee's proposal has been modified by the NRMS team to reflect the addition of an affirmative action plan for the development of the area. The suggested level of funding for this five year endeavor is US$ 691,000; a detailed budget breakdown is given in Table 4.11 below. The WCMD will contribute the personnel costs for the warden and staff assigned to the reserve. The Tana Management Committee will continue to provide direction and oversight to the activities of the project contributing the services of its highly qualified members. Travel and accommodation for these individuals at the site will be provided by the project (six person months per year)

Given the fundamental importance of the Tana Reserve as a reservoir of biological diversity, it is expected that the Tana Management Committee will continue to seek and obtain outside funding and support for an enhanced research program. The GOK will

be expected to take on the administration and recurrent costs of the activities after the completion of this phase of the project. It is anticipated that by that time the issues of human pressure on the reserve will have been satisfactorily resolved and that local populations will benefit from earnings generated by an influx of tourism to the area.

Table 4.11 Tana River Primate Reserve Proposed Budget

Budget Line Items	1991	1992	1993	1994	1995	Total
Core oper. cost	20,000	25,000	30,000	35,000	40,000	150,000
Vehic. procurement	48,000	12,000	0	0	0	60,000
Grad train/overseas	30,000	30,000	30,000	30,000	30,000	150,000
Grad. train/Kenya	15,000	15,000	15,000	15,000	15,000	75,000
WMCD oper. exp.	10,000	11,000	12,500	15,000	12,500	61,000
TA (loc. & expats)	24,000	24,000	24,000	24,000	24,000	120,000
Dev. infrastructure	0	50,000	0	0	0	50,000
Contingencies	5,000	5,000	5,000	5,000	5,000	25,000
Total	152,000	172,000	116,500	124,000	126,500	691,000

4.3 A Focus for USAID's Natural Resources Management Program

The four strategy components described and justified above should be prioritized by USAID/Kenya. From a biodiversity perspective, Kenya's unique parks and preserves contain an enormous variety of plants, animals and intertwined biological processes. The national parks support some of the world's most important complexes of large herbivores and their associated predators. Remnant and relic patches of the once wide-spread tropical rainforests contain a rich variety of species and are high in endemic forms, some of which are endangered. This reservoir of natural biological communities contains genetic resources of inestimable value to mankind and his need for medicines and germ plasm for improvement of crops and domestic animals. Tourism associated with the wildlife resources in parks and reserves provides the country with its number one source of foreign exchange and offers an opportunity for additional economic development in the private sector.

Threats to these valuable natural resources include encroachment into national parks and reserves by domestic livestock, poaching of economically important species to the verge of extinction, elimination of vital migratory corridors and seasonal ranges by changing land use patterns such as subdividing and farming in semi-arid regions, and cutting of forests with no consideration for regeneration and a sustained source of building materials and fuelwood. Government financial and management policies for natural resources contribute to many of the problems. Failure to return sufficient funds to the parks and reserves has destroyed the infrastructure needed for proper maintenance and

management. Failure to provide benefits from the parks and reserves to the local peoples causes ill will and threatens the existence of these areas. Preservation of the ecological integrity of Kenya's national parks, reserves and unique natural communities thus seems to be a worthy goal for the USAID Mission to undertake.

Because of the large number of players who are involved in natural resources conservation in Kenya, USAID should focus on geographic areas, types of resources, and important activities which are not being adequately addressed by either the Government of Kenya, other donors or NGO/PVO groups. Environmental and conservation education and extension education activities have been identified by the team as not being adequately addressed. Concurrently, there is a lack of institutional ability to teach either forestry, wildlife management, park management, tourism enterprises and general natural resources education at the college and university levels. The major problem is a lack of properly educated faculty in these disciplines.

A second approach is to support projects that result in better management and protection of existing parks, reserves and unique natural areas. We believe that the system of relic and remnant areas of tropical rain forests, riverine forests and coastal forests should receive special attention. These areas possess a very high level of biodiversity and endemic species but do not have large populations of the more showy species, thus they are being largely ignored. For the more highly visible parks and reserves, careful assessments should be made before any interventions or projects are considered. Areas should be selected that have a minimum of non-Kenya governmental, donor or NGO/PVO involvement. If possible a sanctuary should be selected that has a high potential of becoming a model or showcase for successful interventions by an outside agency, namely USAID.

Finally, through private sector economic assistance at the local level, enterprises built around parks, reserves and their wildlife resources can add significantly to the economic welfare of local people and help insure the continued existence of biodiversity contained in protected areas as well as large geographic areas outside of protected lands. Specifically, we are referring to development of wildlife based tourism as an enterprise for Masai and other pastoral peoples.

All of the activities mentioned fall within areas of expertise that are strengths of the United States. We offer all types of natural resources education at numerous universities. The professions of forestry, wildlife conservation and management, parks management and extension education in our Land Grant universities are perhaps best developed in the United States. Private enterprise development is a trademark of our country.

REFERENCES

Africa Bureau Sector Strategy, 1987. Plan for Supporting Natural Resources Management In Sub-Saharan Africa. Office of Technical Resources, Bureau for Africa, Agency for International Development.

African NGOs Environment Network, no date. In Pursuit of Sustainable Development.

African NGOs Environment Network, 1988. Programme of Action, 1988 - 1990.

African NGOs Environment Network, 1988. The Programme of Action, 1988 - 1990. Executive Summary.

African NGOs Environment Network, 1988. Report of the Proceedings of the Workshop on Improving Indigeneous African NGOs/African Government/Aid Agencies Collaboration in African Recovery and Development, 14 - 18 November, 1988, Nairobi, Kenya.

Agency for International Development, 1984. Country Development Strategy Statement, FY 1986, Kenya.

Agricultural Situation Report, 1989.

Berger, Louis, International Inc., 1988. Republic of Kenya Natural Resources/Biological Diversity/Forestry Sector Assessment. Report prepared for USAID/Kenya.

BIFAD, 1988. A Task Force Report; Environment and Natural Resources: Strategies for Sustainable Development. World Resources Institute, New York, 88pp.

Brokensha, David B, B. W. Riley and A. Castro, 1983. Fuelwood Use in Rural Kenya: Impacts of Deforestation. Prepared for USAID/Kenya, Institute for Development Anthropology, N.Y.

Christophersen, Kjell A., 1988. An Economic Approach to Arid Forest Project Design: Experience From Sahelian Countries. E/DI and The University of Idaho. Funded by United States Agency for International Development.

Dewes, Peter, T. Njoka, W. Gibbons and D. Kamweti, 1988. Natural Resources Management and Development in Kenya. Summary Report prepared for USAID/Kenya by Louis Berger International, Inc., Nairobi, Kenya.

Douglas - Hamilton, I. 1988. Identification Study for the Conservation and Sustainable Use of the Natural Resources in the Kenyan Portion of the Mara-Serengeti Ecosystem. Final Report to the European Development Fund of the EEC. 185pp.

Figueiredo, Pedro, 1988. The Yield of Food Crops on Terraced and Non-terrace Land: A Field Survey for Kenya. Swedish Univ. of Agricultural Sciences, International Rural Development Center

Getahun, Amare and C. M. Ndegwa, no date. Woodfuel in Kenya: Problems and Prospects, E/DI, prepared for the Ministry of Energy and Rural Development, Nairobi, Kenya.

Holmgren, Eva and Gunilla Johansson, 1988. Comparisons Between Terraced and Non-Terraced Land in Machakos District, Kenya 1987. U-Landsavdelingen, Swedish University of Agricultural Sciences, International Rural Development Centre, Arbetsrapport 86, Uppsala, 1988.

Kokwaro, J. O., 1984. The Distribution and Economic Importance of the Kenyan Mangroves. ETMA, Nairobi, Kenya.

Little, Peter D., 1984. Local Resource Management In Kenya: An Issues Paper. USAID/Kenya and Clark University, prepared by Institute for Development Anthropology, Binghamton, N.Y.

Ministry of Agriculture, Agriculture Engineering Division, Soil and Water Conservation Branch, 1988. Annual Report, 1978/88, Soil and Water Conservation Project (SIDA)

National Environment Secretariat, Ministry of Environment and Natural Resources, 1981. The Role and Functions of the National Environment Secretrariat.

Openshaw, Keith, 1983. Production and Consumption of Wood Energy in Kenya With Particular Reference to Agroforestry. Energy Initiatives for Africa (USAID 698-0424)

Shaikh, Asif, Eric Arnould, Kjell Christophersen, Roy Hagen, Joseph Tabor and Peter Warshall, 1988. Opportunities for Sustained Development, Successful Natural Resources Management in the Sahel. Funded by the United States Agency for International Development, Office of Technical Resources and Sahel Office, Bureau for Africa

Soil and Water Conservation Project (SIDA), 1988. Annual Report, 1987/88. Ministry of Agriculture, Soil and Wate Conservation Branch

U. S. Fish and Wildlife Service, 1988. Endangered and Threatened Wildlife and Plants, 50 CFR, 17.11 and 17.12.

United States Agency for International Development, 1985. Plan for Supporting Agricultural Research and Faculties of Agriculture in Africa.

U. W. Agricultural Extension Service, College of Agriculture, 1095. Holistic Ranch Management, Workshop Proceedings.

Wilson, Alison, 1988. Guidebook to the Masai Mara Reserve. Design Horizons International, Nairobi, Kenya. 48pp.

ANNEX 1: ECONOMIC PROFILE OF KENYA

The following is a summary profile of the Kenya economy as it affects the potential for improved natural resources management.

1. Gross Domestic Product growth rate in 1988: 5 %

2. Major foreign exchange earning sectors:

Tourism	$US 350 million
Coffee	$US 270 "
Tea	$US 240 "
Horticulture products	$US 55 "

3. Foreign exchange reserves: < two months of import cover
4. External debt: $US 4 billion
5. Debt/service ratio (of export earnings): 36 %
6. Population:

Present population	22.7 million
Growth rate	3.9 % per year
Population density of arable land area, 1988	171 people/km2
Projected pop density of arable land, 1993	209 people/km2

7. Livelihood derived from agriculture sector: > 70 %
8. Land area:

High and medium potential arable land:	20 %
Arid and semi-arid (ASAL)	75 %
Barren	5 %

9. Irrigation

Potential	750,000 hectares
Current irrigated land	30,000 "

10. Approximate livestock numbers:

Cattle	13.0 million
Sheep	2.3 "
Poultry	20.0 "
Camels	.8 "

11. Crop production, 11987/88:

Maize	2.4 million tons
Wheat	.22 "
Rice	.024 "
Sugar cane	.411 "
Coffee	2.1 million bags
Tea	.164 million tons
Pineapple	.191 "
Sisal	.037 "
Cotton	.039 "
Tobacco	8,262 tons

12. Transportation:

Railway	2,100 km
Roads	53,800 km of which 10 percent is paved

13. Forested area:

Natural forests	530,000 ha
Commercial	460,000 "
Bamboo and scrub	283,000 "
Mangroves	53,000 "

14. Fuelwood:

Fuelwood consumption > 95 % of rural energy consumption

Projected supply shortfalls

1990	1995	2000
9.8	12.0	30.6

15. Forest products processing:

No. licenced sawmills	350
Sawn timber produced/year	200,000 m3

ANNEX 2: PERSONS CONTACTED

USAID/Kenya, Peace Corps:

Stafford Baker, Directo, Private Sector Office, USAID/Kenya

James F. Dunn, Deputy Agricultural Development Officer

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Carol Jolly, USAID PVO project, USAID/Kenya

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Phillip Tennai, Manager, Ngulia Safari Lodge, Tsavo West

Ramesh Thamdy, Lake Nakuru Conservation and Development Project, WWF

David Round-Turner, Project Leader, Masa Mara National Reserve, WWF

Ed Wilson, Economist, WWF

Washington D.C.:

John Gaudet, AFR/TR/ANR

David Gibson, Forestry Advisor, REDSO/ESA (on home leave)

Chip Rowe, Forestry Advisor, World Bank

Fred Weber, Consultant

ANNEX 3: GLOSSARY OF TERMS

AFRENA	Agroforestry Research Networks for Africa
ANEN	African NGOs Environment Network
ASAL	Arid and Semi-Arid Lands
AWF	African Wildlife Foundation
DANIDA	Danish International Development Agency
EEC	European Economic Community
FINNIDA	Finnish International Development Agency
GOK	Government of Kenya
ICRAF	International Center for Research in Agroforestry
JICA	Japan International Cooperation Agency
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forest Research Institute
KENGO	Kenya Energy and Environment Organizations
KREDP	Kenya Renewable Energy Development Program
NMK	National Museum of Kenya
NES	National Environmental Secretariat
NGO	Non-Governmental Organization
NORAD	Norwegian Agency for Development
NRM	Natural Resources Management
PNRM	Plan for Natural Resources Management
RAES	Rural Afforestation Extension Service
SIDA	Swedish International Development Agency
USAID	United States Agency for International Development
WCI	Wildlife Conservation International
WCK	Wildlife Clubs of Kenya
WMCD	Wildlife Conservation and Management Department
WWF	World Wildlife Fund

ACTION COPY

UNCLASSIFIED 202 287-1601 INCOMING TELEGRAM

Department of State

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ACTION AID-00

ACTION OFFICE AFTR-05
INFO AFEA-03 AFPD-04 PPDC-01 BIFA-01 SAST-01 PPPB-02 STAG-02
STFN-02 RELO-01 DO-01 /023 A4 KL25

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INFO AMEMBASSY ANTANANARIVO

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AIDAC

FOR DWIGHT WALKER AND JOHN GAUDET - AFR/TR/ANR
ANTANANARIVO FOR GREG BOOTH

E.O. 12356: N/A
SUBJECT: KENYA NATURAL RESOURCES PLANNING

1. USAID/KENYA IS CURRENTLY REVIEWING ITS AGRICULTURE AND NATURAL RESOURCES SECTOR STRATEGY IN PREPARATION FOR THE NEW CDSS WHICH WILL BE SUBMITTED IN JANUARY 1990. THIS CABLE SPECIFICALLY ADDRESSES MISSION ACTIVITIES RELATED TO THE NATURAL RESOURCES AREA.

2. IN OCTOBER, 1988, THE MISSION CONTRACTED WITH LOUIS BERGER TO CARRY OUT A SURVEY AND PREPARE A REPORT ON NATURAL RESOURCES MANAGEMENT AND DEVELOPMENT ASSISTANCE IN KENYA. THE COMPLETED REPORT WAS QUITE COMPREHENSIVE AND PROVIDED THE MISSION WITH A GOOD OVERVIEW ON THE STATE OF THE ENVIRONMENT IN KENYA. THE STUDY FOCUSSED PRIMARILY ON ENVIRONMENTAL ISSUES IN THE AREAS OF TROPICAL FORESTS; AGRICULTURE; TOURISM AND WILDLIFE; AND WETLANDS AND OTHER ACQUATIC ECOSYSTEMS. THE MISSION NOW INTENDS TO FOLLOW UP THE BERGER STUDY TO ANALYZE PROPOSED DIRECTIONS AND SPECIFIC ACTIVITIES FOR POSSIBLE NATURAL RESOURCES PROGRAMMING.

3. WE ARE THEREFORE PROPOSING THE FOLLOWING SERIES OF EVENTS AND REQUEST AID/W COMMENT AND SUPPORT.

- A) IN EARLY MARCH PREPARE A SCOPE OF WORK FOR A SMALL TEAM TO ASSIST THE MISSION IN THE DEVELOPMENT OF A PLAN FOR POSSIBLE NATURAL RESOURCES PROGRAMMING. IN THIS REGARD WE REQUEST THE SERVICES OF GREG BOOTH FOR A PERIOD OF 3-4 DAYS ON HIS RETURN FROM TDY IN MADAGASCAR.

- B) IN EARLY APRIL WE ARE PROPOSING TO CO-SPONSOR WITH THE NATIONAL ENVIRONMENT SECRETARIAT, MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES, A TWO-DAY WORKSHOP WHICH WOULD BRING TOGETHER REPRESENTATIVES FROM GOVERNMENT, DONORS AND THE NGO COMMUNITY TO IDENTIFY: CRITICAL ENVIRONMENTAL CONCERNS; ON-GOING ACTIVITIES TO ADDRESS THOSE CONCERNS AS WELL AS NEWLY PLANNED ACTIVITIES; GAPS THAT ARE NOT CURRENTLY BEING ADDRESSED; AND OPPORTUNITIES FOR COORDINATED ACTION AMONG THOSE INVOLVED. THE INFORMATION GENERATED AND RECOMMENDATIONS FORTHCOMING FROM THIS WORKSHOP WOULD FEED DIRECTLY INTO THE DEVELOPMENT OF THE MISSIONS ACTION PLAN ON NATURAL RESOURCES. IN ORDER TO ASSURE THE GREATEST OUTPUT FROM THIS WORKSHOP AND INPUT TO OUR AGRICULTURE AND NATURAL RESOURCES STRATEGY AND EVENTUALLY THE MISSION CDSS, WE ARE REQUESTING NRMS TO PROVIDE SHORT-TERM ASSISTANCE, POSSIBLY FROM USDA'S OFFICE OF INTERNATIONAL COOPERATION AND DEVELOPMENT (OICD), TO HELP ORGANIZE AND IMPLEMENT THE WORKSHOP. THIS FINANCIAL SUPPORT FROM NRMS FOR OIC INVOLVEMENT WOULD BE IN ADDITION TO SUPPORT OF THE

WORKSHOP ITSELF.

- C) IMMEDIATELY FOLLOWING THE WORKSHOP WE PROPOSE THAT A SMALL NRMS-SUPPORTED TEAM ASSIST THE MISSION IN PREPARING THE PLAN FOR POSSIBLE NATURAL RESOURCES PROGRAMMING. IT WOULD SEEM HIGHLY DESIRABLE THAT THIS TEAM PARTICIPATE IN THE PROPOSED WORKSHOP. THE ACTION PLAN OF COURSE WILL OUTLINE BOTH SHORT AND LONG-TERM OPTIONS FOR MISSION INVOLVEMENT IN THE NATURAL RESOURCES AREA.

4. FOR THE PRESENT AND OVER AT LEAST THE NEXT 12 - 18 MONTHS THE MISSION WILL CONTINUE TO SUPPORT NATURAL RESOURCES ACTIVITIES UTILIZING MISSION FUNDS, COUNTERPART FUNDING GENERATED THROUGH PL480 AND FERTILIZER SALES, AND CENTRAL FUNDS. THESE ACTIVITIES INCLUDE AGROFORESTRY RESEARCH, ENVIRONMENTAL ASSESSMENTS AND DISTRICT PLANNING, WILDLIFE INITIATIVES WORKING WITH AWF, WWF, WCI AND EAWF, AND COPERATIVE EFFORTS WITH CARE, CRS AND OTHER NGO'S, AS WELL AS SELECTED TRAINING PROGRAMS. OUR NEW PVO-CO-FINANCING PROJECT INCLUDES A MILLION DOLLAR SET-ASIDE FOR NATURAL RESOURCES PROJECTS. ADDITIONALLY, WE SEE OUR INVOLVEMENT WITH KARI, EGERTON AND THE REMOTE SENSING FACILITY AS DIRECTLY SUPPORTIVE OF NATURAL RESOURCES AND ENVIRONMENTAL EFFORTS BY THE KENYA GOVERNMENT. TAKEN TOGETNER THESE MISSION SUPPORTED ACTIVITIES CONSTITUTE A SUBSTANTIAL INVESTMENT AND COMMITMENT TO THE PRESERVATION AND ENHANCEMENT OF THE ENVIRONMENT AND KENYA'S NATURAL RESOURCES HERITAGE. WHAT POTENTIAL FOR EXPANSION OF THESE EFFORTS MAY EXIST WILL BE ANSWERED IN PART BY THE EXPLORATORY AND INFORMATION GATHERING PROGRAM IDENTIFIED ABOVE.

1. USAID/KENYA IS CURRENTLY REVIEWING ITS AGRICULTURE
5. USAID/KENYA WOULD WELCOME AID/W COMMENT GENERALLY AND SPECIFICALLY AS TO REQUESTED SUPPORT UNDER THE NRMS INITIATIVE. CONSTABLE

000488

UNCLASSIFIED

PROJECT - 698-0467

CLASS: UNCLASSIFIED
CHRGE: AID 03/23/89
APPRV: DIR:EVSINDING
DRFTD: AGR:JDUNN:AMM
CLEAR: 1. HRD:CAROLE J
2. D/DIR:ERIC Z
DISTR: AID DIR AGR 2
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E.O. 12356: N/A
SUBJECT: KENYA MISSION NATURAL RESOURCES
ACTION PROGRAM AND ACTION PLAN

REF: A) NAIROBI 06865, B) DUNN/CHRISTOPHERSEN 3/9/89
TELCON, C) STATE 085199/01, D) DUNN/WALKER 3/22/89 TELCON

1) MISSION VERY PLEASED THAT AFR/TR/ANR IS WILLING TO WORK WITH US ON SUBJECT PLAN. AS PER OUR DISCUSSION REF D, THE NRM TEAM WILL BEGIN ASSIGNMENT IN KENYA O/A APRIL 17 WITH TEAM LEADER KJELL CHRISTOPHERSEN ARRIVING O/A APRIL 14 FOR CONSULTATION WITH MISSION PERSONNEL ON SOW ACTIVITIES, LOGISTICS, ETC. IT IS UNDERSTOOD THAT NRMS WILL PROVIDE THE NATURAL RESOURCES ECONOMIST AND TEAM LEADER; THE TROPICAL FORESTRY ADVISOR; AND WILDLIFE EXPERT. THE MISSION WILL PROVIDE THE AGRONOMIST/SOILS EXPERT UNDER SEPARATE CONTRACT. MISSION ACCEPTS PROPOSED CANDIDATES FOR FIRST TWO POSITIONS BUT REQUESTS AFR/TR/ANR CONTACT DR. JAMES ALLAWAY FOR WILDLIFE EXPERT POSITION. ALLAWAY CAN BE CONTACTED BY PHONE [illegible]. ALLAWAY HAS HAD EXTENSIVE EXPERIENCE IN AFRICA AND HAS BEEN INVOLVED IN A NUMBER OF KENYA PROJECTS RANGING FROM WILDLIFE AND TOURISM TO ARID/SEMI ARID LANDS STRATEGY

2) UNFORTUNATELY THE PROPOSED NRM WORKSHOP WILL NOW BE DELAYED UNTIL EARLY JUNE. AS A RESULT SOME OF OUR OBJECTIVES FOR THE WORKSHOP WILL CHANGE BUT WE BELIEVE THE NRM TEAM WILL BE ABLE TO OBTAIN THE SAME INFORMATION BUT THROUGH DIFFERENT CHANNELS. THE MISSION WILL POUCH MATERIALS TO AFR/TR/ANR WHICH WE BELIEVE THE TEAM WILL FIND HELPFUL IN PREPARATION FOR THEIR ASSIGNMENT. IN PARTICULAR WE WISH TO EMPHASIZE THAT THE TEAM CAREFULLY ANALYZE DOCUMENTS SUCH AS THE RECENTLY COMPLETED LOUIS BERGER ASSESSMENT AND USE THE STUDY AS A POINT OF DEPARTURE RATHER THAN RE-DOING THE SAME WORK. ALSO WITHIN THIS CONTEXT WE ENVISAGE STRONG INTERACTION AND CONSULTATION WITH THE PVO COMMUNITY BY TEAM MEMBERS.

3) ONCE AGAIN WE WISH TO EMPHASIZE THE MISSION'S INTEREST IN DIRECTING OUR OVERALL ACTIVITIES TO FOOD SECURITY, INCOME GENERATION AND RESOURCE CONSERVATION. ADDITIONALLY WE SUGGESTED DURING THE RECENT BOOTH TDY TO NAIROBI THAT IT WOULD BE HELPFUL TO PERHAPS LIMIT TO SOME EXTENT AT LEAST OUR INVESTIGATIONS TO AREAS SUCH AS

[illegible] ENVIRONMENTAL [illegible]
[illegible] INTERFACE WITH LAND USE [illegible] TO PARKS.
[illegible] WE SEE THE DEVELOPMENT OF A STRATEGY WHICH
[illegible] ISSUES OF SUSTAINABILITY OF NATURAL RESOURCES
[illegible] SOME EMPHASIS ON MARGINAL AREAS, LAND USE AND LAND
ACCESS CONFLICTS, GENETIC DIVERSITY INCLUDING WILDLIFE,
FORESTS, PARKS, ETC., AND INSTITUTIONAL BUILDING EFFORTS
SUCH AS ENVIRONMENTAL LAW AND REGULATION OF
ENVIRONMENTAL PROCEDURES, IMPACT ASSESSMENTS. WE WILL
DISCUSS THIS FURTHER DURING CHRISTOPHERSEN'S PRELIMINARY
SESSIONS. OVERALL THE SOW IN REF.C REPRESENTS THE VIEWS
OUTLINED IN OUR MEETINGS WITH BOOTH AND IS ACCEPTABLE TO
THE MISSION. HOWEVER WE DO WISH TO CAUTION THAT THE
EMPHASIS ON LOCATING AND VERIFYING SUCCESSFUL
INTERVENTIONS MAY NOT ONLY BE EXCESSIVE BUT TO SOME
DEGREE PREMATURE. WE'RE STILL TRYING TO IDENTIFY
OPTIONS FOR POTENTIAL INVOLVEMENT.

6) WE LOOK FORWARD TO CONTINUED COOPERATION WITH
AFR/TR/ANR AND TO WORKING WITH THE NRM TEAM. PLEASE
ADVISE IF FURTHER INFORMATION IS REQUIRED. CONSTABLE

BT
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