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**PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
OF USAID/MOZAMBIQUE TRANSITION PROGRAM**

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ACRONYMS

ADA	Sub-Saharan Africa Disaster Assistance Program
ADMAD	Administrative Management and Design
ADRA	Adventist Development and Relief Agency
AFR	AID Bureau for Africa
AFR BEO	African Bureau Environmental Officer
A&E	Architectural and Engineering
AID	U.S. Agency for International Development
CAMPFIRE	Communal Area Management Project for Indigenous Resources
CARE	Cooperative for American Relief Everywhere
CFW	Cash for Work
CNA	National Commission for the Environment
CPSP	Country Program Strategic Plan (USAID)
DEPP	Provincial Department of Roads and Bridges
DFA	Development Fund for Africa
DNA	National Water Directorate
DNEP	National Directorate of Roads and Bridges
DOA	Delegation of authority
DPS	National Directorate of Health
ECMEP	Provincial State Enterprise for Construction and Maintenance of Roads and Bridges
EEC	European Economic Community
EIR	Environmental Impact Review
EMEMP	Environmental Monitoring, Evaluation and Mitigation Plan
EMOFAUNA	GRM wildlife Parastatal
ESRP	Economic and Social Rehabilitation Program
FAA	U.S. Foreign Assistance Act
FAO	Food and Agriculture Organization, United Nations
FFW	Food for Work
FHI	Food for the Hungry International
GRM	Government of the Republic of Mozambique
ICDP	Integrated conservation and development projects
IEE	Initial Environmental Examination
INPF	National Institute of Physical Planning
IPM	Integrated Pest Management
LTC	Land Tenure Center, University of Wisconsin
MCA	Ministry of Construction and Water
MOA	Ministry of Agriculture
MOH	Ministry of Health
MSU	Michigan State University
NEAP	National Environmental Action Plan
NEC	National Environmental Commission

NEMP	National Environmental Management Program
NGO	Nongovernmental organization
NORAD	Norwegian Agency for Development
NRM	Natural Resources Management
NRP	National Reconstruction Plan
ODA	Overseas Development Administration (U.K.)
E&M	Operatons & Maintenance
PEA	Programmatic Environmental Assessment
PRONAR	National Rural Water Supply Program
PSSP	Private Sector Support Program Project (USAID)
PVO	Private Voluntary Organization
RAA	Rural Access Activity (USAID)
Reg. 16	AID Environmental Procedures (22 CFR Part. 216)
RENAMO	Mozambique National Resistance
ROCS	Roads and Coastal Shipping Projects (WB)
SADC	Southern African Development Commission
SARP	Southern African Regional Programs (USAID)
SARSA	Systems Approach to Regional Income and Sustainable Resource Assistance (Central USAID project)
SCF	Save the Children Federation
SEA	Supplemental Environmental Assessment
TA	Technical Assistance
TPA	Traditional Political Authority
UA	University of Arizona
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UNOHAC	United Nations Office for Humanitarian Assistance Coordination
UNOMOZ	United Nations Operations in Mozambique
USAID/M	USAID/Mozambique
USAID	U.S. Agency for International Development (mission)
UW	University of Wisconsin
VLOM	Village-level Operated and Maintained (pump)
WASH	AID Water and Sanitation for Health project
WPF	World Food Program
WSS	Water Supply and Sanitation
WVRD	World Vision Relief & Development

EXECUTIVE SUMMARY

A. Background

After almost two decades of warfare capped by the most serious drought in this century, the stage is set for the reintegration, rehabilitation, and development of Mozambique's displaced people. This process is occurring spontaneously and rapidly with assistance from the Government of the Republic of Mozambique (GRM), the donor community, international private voluntary organizations (PVOs), and nongovernmental organizations (NGOs). One-third of Mozambique's population is displaced, including at least 1.5 million refugees, more than 3 million internally displaced people, and several hundred thousand soldiers and their dependents.

B. Purpose and Rationale of Programmatic Environmental Assessment

As required by the USAID Environmental Procedures (22 CFR Part 216)—hereafter also referred to as more commonly known, Reg. 16—programmatic environmental assessments (PEAs) are undertaken to assess the environmental effects of individual actions and their cumulative environmental impact on a country or geographic area. The Mozambique PEA addresses the environmental implications of the USAID Mission's transition program. The transitional program is designed to facilitate the reintegration, rehabilitation, and development of people who are displaced as a result of the war.

In addition, the U.S. Foreign Assistance Act and its amendments, which set out the terms of the Development Fund for Africa (DFA), specifically require that major U.S. actions overseas, including institutional and policy reforms, include provisions to protect long-term environmental interests from possible negative consequences. AID is moving beyond reviewing development activities for potential environmental impacts to supporting programs which are primarily focused on natural resources sustainability, and positive environment and development linkages.

C. USAID Transition Program

A significant portion of the Mission's activities are intended to facilitate Mozambique's transition to peace. The 18-24 month transition program began in November 1992 and contains two sets of activities: one concerned with emergency relief for the millions of citizens adversely affected by civil strife and drought and the other supportive of the peace process as set out in the October 1992/Accord.

While some Mission activities are specific (e.g., de-mining, rural roads improvement), others are more interdisciplinary (e.g., reintegration of displaced people). These latter activities have potential long-term developmental and environmental implications.

This PEA focuses on the Mission primary transition program activities: de-mining, road improvement, agricultural production, water resources, and sanitation. Of special concern to the PEA team were the potential short- and long-term environmental impacts on soil, water, and forest resources, and biodiversity (particularly endangered and threatened wildlife). The PEA also examines the potential impact on Mozambique's reconstruction process, with emphasis on the reintegration, rehabilitation, and development of displaced people.

D. Reintegration, Rehabilitation, and Development Process

As summarized by the World Bank, effective reintegration, rehabilitation, and development of Mozambique's rural economy must address four major issues:

- Access to land and secure land tenure
- Provision of effective agricultural services
- Scaling down of food aid
- Development of a marketing infrastructure and reduction of transportation costs

In addition, the PEA team would add community formation and timing to this list.

There appears to be consensus between the GRM and donor community that reintegration should be largely restricted to facilitation of spontaneous settlement—displaced people moving to places of their own choosing. The PEA team supports this approach.

For such a reintegration strategy to work, however, three general prerequisites need emphasis. The first is for FRELIMO and RENAMO to move forward with the donor-assisted peace process as outlined in the October 1992 Accord. Second, the government must stick to its policy of favoring smallholder agriculture. Third, planning, implementing, and monitoring of development (e.g., rural population movements) must remain high priorities.

Consistent policies are needed to expedite the return of displaced people to rural areas. These policies include improved rural-urban terms of trade, secure land tenure, an effective research and extension service, improved rural health and education services, and population planning.

E. Environmental Monitoring, Evaluation, and Mitigation

The PEA team is concerned about the reliability of information on where displaced people are settling and the environmental implications of these population movements. We also believe it will be important for the Mission to monitor the impact of its PVO assistance on communities and districts. REDSO/ESA has already suggested a monitoring and evaluation methodology that is discussed in this report.

While PVOs have concentrated on emergency relief (e.g., food distribution, agricultural packages), they have increasingly been initiating long-term development activities

as part of a donor-supported program for the reintegration, rehabilitation and development of Mozambique's displaced people. At the same time, Mozambique's universities are focusing their research on land tenure, marketing, and traditional political authorities.

USAID's grants management project is the primary vehicle through which the Mission supports PVOs to implement the transition program. It would not be practical to change the existing PVO grants. However, the Mission could ensure that future grants and grant amendments are designed in an environmentally sound manner, using Africa Bureau approved guidelines.

PVOs are responsible for integrating environmental concerns into initial PVO concept papers and proposals from the very beginning. However, it is the responsibility of the USAID grants manager to standardize PVO field methodologies; identify lessons learned from PVO activities regarding positive and negative environmental impacts; and communicate how environmental concerns are to be integrated into the design of PVO proposals.

The GRM does not yet have the capacity to undertake the monitoring and evaluation of donor activities. In the long term, however, it will be the GRM who will ultimately be responsible for monitoring, evaluating, and mitigating impacts of its development activities.

This PEA suggests, for the GRM, PVOs and other implementing partners, elements of a monitoring and evaluation plan/program, by which significant negative environmental impacts can be discovered and reviewed. Sections V, VI, and VII of the PEA also identify specific environmental indicators and mitigation measures which could be used by the GRM. It will be necessary to identify which of the responsible GRM institutions or PVOs will be providing the data that could be used to monitor performance in the environmental sector. Further, a beginning has been made herein in drawing up a list of appropriate actions needed to mitigate impacts.

F. Summary of Environmental Impact Assessment

We have reviewed transition program activities for their potential short- and long-term environmental impacts. USAID Environmental Procedures (Reg. 16) contains three categories of such impact, and these categories were used by the team as part of our analysis. The categories are described below.

Category 1 includes subprojects or grants that would normally qualify for a categorical exclusion under Reg. 16. Examples include education and training programs, controlled experimentation and research, and institutional support to PVOs.

Category 2 includes all activities identified by Reg. 16 as having the potential for some (but not significant) negative impacts. These activities could require changes in design and implementation and will be monitored to some degree during the life of the grant.

Category 3 includes all activities identified by Reg. 16 as having the potential for significant negative impacts. These activities require a comprehensive review and a definition of necessary actions to mitigate the impacts, along with a responsible monitoring program that can be incorporated into the project. This specifically includes (but is not restricted to) actions having a significant effect on the environment.

F1. Potential Short-term Environmental Impacts

Based on the PEA team's analysis, none of the transition program activities are anticipated to have any significant negative environmental impacts in the short term.

F2. Potential Long-term Environmental Impacts

F2a. De-mining and Sanitation: Category 1

Based on our analysis, de-mining and sanitation activities are not anticipated to have significant negative environmental impacts in the short-term or long-term. Therefore, any de-mining or sanitation project proposals received by the Mission can be placed in Category 1. Activities placed in this category can be considered for exclusion under the Foreign Assistance Act.

F2b. Agriculture, Road Improvement, and Water Supply: Categories 2 and 3

Our analysis considers how each of the three remaining program activities (agriculture, roads, water supply) could potentially have a negative impact on six environmental elements:

- land and soil resources
- forest resources
- water resources
- land tenure
- biological diversity (including protected area management and endangered species)
- population dynamics

The PEA team determined that the three transition program activities could potentially have significant impacts on four of the six selected elements in the long term. These elements are (in order of potential severity): forest resources, biological diversity, water resources, and land and soil resources.

Ranking criteria are provided in the PEA to help the Mission determine if a proposed activity should be placed in either Category 2 or 3. Consistent with Reg. 16, the two criteria that will be used to place a project proposal into one of the three environmental impact categories are:

- cost of project proposal
- size and environmental sensitivity of project proposal

USAID/MAPUTO has received Delegation of Authority to approve project proposals that request financial support up to \$500,000. Authorization from AID/Washington is required for project proposals requesting more than this amount. The Mission may place a project proposal in Category 2 because of the project's minimum potential environmental impact; however, it may also decide to request authorization from Washington for the Category 2 activity based on the project's size.

This report provides suggested environmental questions that the Mission can use to determine whether a proposal should be placed in Category 2 or 3. This information is based on information obtained from the AID Africa Bureau's Environmental Guidelines For PVO/NGO Field Use In Africa, and from the experience of PEA team members.

G. Summary of Institutional Analysis

The GRM does not have the institutional capacity to work effectively with USAID during the implementation of its transition program. Because of AID and other donor requirements, there is a danger of overloading GRM institutions with assessment, monitoring and evaluation requirements. Therefore, we stress the need to integrate environmental assessment and monitoring activities into transition program implementation activities.

USAID/MAPUTO is implementing its transition program through PVOs. The primary reason for favoring PVOs is their management capacity to deliver and monitor the type of assistance required under the program. In the long term, however, it will be important for Mozambique's human resources and institutional capacity to be improved for it to address the complex multisector problems and opportunities that lay ahead.

To establish national environmental standards for economic development, Mozambique's National Environmental Commission (NEC) was established in 1992. NEC's purpose is to coordinate with ministries and institutions to discuss environmental issues and establish environmental guidelines, and to store information on national environmental activities.

One specific task of NEC's is to develop a National Environmental Management Program (NEMP). The NEMP is to provide a framework for the integration of environmental concerns into Mozambique's economic development program. The GRM is planning to complete this program in March 1994, and it is hoped that the NEC will eventually have the capacity to integrate environmental concerns into its development activities and to monitor environmental impacts.

H. Recommendations

H1. Proposed Alternative Approaches

The various components of the USAID program, including the transition program and activities related to it, are well-conceived from an environmental point of view. While we do not recommend alternative approaches, we do recommend that PEA issues be

incorporated into the Mission's long-term CPSP program. If properly monitored and evaluated, the integration of environmental issues will reduce the need for more project-specific environmental assessments in the future.

H2. Proposed Supplemental Activities

Support to private voluntary organizations. The overall goal of the Mission's program is to move from relief to development through a sustainable process of reintegration, rehabilitation, and development. A large proportion of AID-assistance is channeled through PVOs. While the PEA team was impressed with the results achieved to date by PVOs, the Mission should play a more active role in helping them integrate, prioritize, and coordinate their activities.

USAID has already met with PVOs to define the parameters of its PVO grants management project. The scope of these meetings could be expanded to address the topics provided below.

- Provide assistance for standardization of field methodologies (e.g., socioeconomic surveys, agricultural techniques).
- Identify lessons learned associated from PVO activities in Mozambique and other countries in southern Africa.
- Identify additional opportunities to integrate sustainable environmental interventions.
- Communicate policy initiatives related to PVO activities (e.g., tenure issues, traditional political authorities, marketing, institution building).
- Facilitate donor and GRM coordination.

Facilitate spontaneous settlement. The Mission should emphasize helping displaced people move to areas of their own choice instead of to areas dictated by the government. This approach will have more positive environmental, economic, and institutional impacts.

The Mission should be continually alert to the temptation of government and donors to revert to a more directed form of resettlement. Various resettlement plans have been discussed by the government and supported by donors such as UNHCR, UNICEF and Italian Cooperation. Indeed, UNICEF and Italian Cooperation have already implemented resettlement projects in Manica Province. The success rate of such efforts in Africa is poor, and that of villagization schemes is even worse.

There may be a few exceptions to the policy of spontaneous resettlement, including smallholders (with secure land rights) and soldiers who prefer to settle adjacent to joint venture cotton and sugar cane farms. However, these exceptions should be at the request of the individual.

Intensifying production activities of spontaneous settlers. Facilitating spontaneous settlement alone will not ensure sustainable development. If development is to be sustainable environmentally, Mozambican farmers must increase their productivity without mining their

resources base. The Mission may want to support research on sustainable agricultural systems.

An example of research that may contribute to sustainable development is the Eduardo Mondlane University's agro-ecological research program on Inhaca Island. This research is targeted to improving the sustainability of cultivation on sandy soils. Though directly applicable to the relatively narrow coastal zone within the Tongaland/Pondoland vegetation complex, the results could also be relevant to areas in Mozambique where the Mission is supporting PVO activities.

Adaptive research for sustainable production techniques will certainly be required in most of Mozambique's major ecosystems. The most detailed recent study of sponsored and spontaneous settlement in Africa is the UNDP-funded and World Bank-executed Land Settlement Review (McMillan, et al 1992). The study examines onchocerciasis (river blindness) control in 11 West African countries.

The study deals in detail with the dilemma posed by the type of extensive cultivation methods practiced by Mozambican farm households. According to the report, "the extensive land-use system works as long as land is plentiful; it breaks down when land resources become scarcer. By the time a crisis occurs, levels of social conflict may be so high as to discourage the concerted community and household action needed for developing more sustainable land use systems."

Pricing and marketing. While the Mission is addressing pricing issues through policy dialogue, it is neglecting this subject in areas where it is assisting PVOs. For example, World Vision, which has the most impressive agricultural production program of the nine PVOs, is not directing attention to marketing issues.

Raising the productivity of existing household production systems is not sufficient when producer prices are unfavorable, farmers cannot get their produce to market, or rural stores are poorly stocked (i.e., farmers reduce production if there is nothing to buy).

H3. Options for Future USAID Assistance

Current USAID assistance to Mozambique falls predominantly in the category of short-term help for the transition to peace and stability. These and other USAID activities have been discussed in previous sections of this report. Please refer to Section IX for the PEA team's recommendations for future Mission activities.

I. Conclusion

With assistance from USAID, the reintegration and rehabilitation of Mozambique's displaced people is proceeding spontaneously and rapidly. As discussed above, the PEA team has examined the Mission's transition program within the context of the overall resettlement and rural development process. We have determined that there is no potential for the transition program to have a significant negative environmental impact in the short

term, but that there could be environmental impacts in the long term if the program is not properly implemented.

USAID has a unique opportunity in Mozambique: to assist the government as it simultaneously develops both an economic development and environmental management program. This is being accomplished at a time when a significant amount of Mozambique's land has actually been improved as a result of being abandoned during the war.

PREFACE

The USAID mission in Mozambique and AID's Africa Bureau (ARTS/FARA/ENV) selected Chemonics International to conduct a programmatic environmental assessment (PEA) of the USAID/Mozambique transition program development activities related to re-integration, rehabilitation, and reconstruction. Chemonics selected the Mozambican consulting firm, Austral, to provide the needed local expertise.

The Chemonics team received orientation from AID/AFR/ARTS/FARA/ENV in Washington from 14-15 June and arrived in Maputo on 18 June. There they received orientation from the Mission and began working with Austral counterparts to refine the report outline. Guidance was provided in Maputo by the REDSO environmental officer from Nairobi as well as various Mission officers.

The basic requirements for the PEA were laid out in a scoping statement and background paper prepared by AID/AFR/ARTS/FARA/ENV and the USAID mission to Mozambique. This involved identification of environmental impacts associated with transition activities in the short- to longer-term and effects on various classes of resources. In addition, the scoping statement required the team to define environmental issues and problems related to program activities, and to identify mitigating, supplemental, or follow-on activities required in resolution of such issues and problems. Also, to provide guidelines for assessment, monitoring and evaluation, and for design of environmental components in development projects. The team was also required to conduct an analysis of relevant institutions and their ability to ensure that environmental concerns were duly considered and implemented with regard to transition program activities.

SECTION I INTRODUCTION

A. Background

After almost two decades of warfare capped by the most serious drought in this century, the stage is set for the reintegration and rehabilitation of the nearly one third of Mozambique's population which was displaced or forced into exile. This process is proceeding spontaneously and rapidly with assistance from the Government of the Republic of Mozambique (GRM), the donor community, international private voluntary organizations (PVOs) and non-governmental organizations (NGOs). USAID/Mozambique (USAID/M) is an active participant.

B. Purpose and Rationale of Programmatic Environmental Assessment

Programmatic environmental assessments (PEA) are undertaken to assess the environmental impacts of a group or class of actions on the environment of a given country or geographic area—in this case, USAID transition activities in Mozambique. The main elements of this 18-24 month commitment in support of Mozambique's transition from short term development through rehabilitation to long term development include:

- Drought related relief and emergency assistance, including food distribution
- Support for the peace process, including electoral support, mine clearance, rural roads rehabilitation, and rehabilitation through PVOs
- Institutional and private sector support, including commercial food aid

In addition, the U.S. Foreign Assistance Act and its amendments, which set out the terms of the Development Fund for Africa (DFA) specifically require that major U.S. actions overseas, including institutional and policy reforms, include provisions to protect long-term environmental interests from possible negative consequences.

The primary mandate of this PEA, according to the Scoping Statement (Annex F), is to examine the actual and potential impacts of the USAID/M transition development program, and to examine the medium and longer term implications of the resettlement phenomenon.

The PEA stresses the assessment of land mine clearance, road rehabilitation, agricultural production, and water and sanitation activities. Of special concern are environmental impacts on soil resources, water resources, forest resources, and on wildlife and biodiversity (especially endangered and threatened species). The PEA also examines

transition activities in light of their potential impact on reintegration, rehabilitation and development in general, and on land tenure and population dynamics in particular.

The PEA will identify short and medium to long term impacts of individual transition activities and their aggregate effects on the environment. Conclusions from the PEA will be used in formulating USAID development strategies and in designing future assistance activities.

This PEA suggests, for the GRM, PVOs and other implementing partners, elements of a monitoring and evaluation plan/program, by which significant negative environmental impacts can be discovered and reviewed. Sections V, VI, and VII of the PEA also identify specific environmental indicators and mitigation measures which could be used by the GRM. It will be necessary to identify which of the responsible GRM institutions or PVOs will be providing the data that could be used to monitor performance in the environmental sector. Further, a beginning has been made herein in drawing up a list of appropriate actions needed to mitigate impacts.

One of the most important objectives of the PEA is to reduce the amount of assessment activity, paperwork, and related activity required once it is in place. The PEA should provide the basis for a delegation of authority (DOA) to the missions from the Africa Bureau Environmental Officer (AFR BEO) for local environmental approval of specified projects and sub-activities assessed by the PEA. The DOA could be granted within the framework of procedures and guidelines set forth in the PEA regarding size of grant/project, environmental risk, etc.

A major purpose of a programmatic environmental assessment is to facilitate the incorporation of environmental issues into AID country programs at the start of the planning process. Such incorporation is important, granted the increasing awareness that sustainable development must link conservation of the natural resource base with poverty alleviation. This linkage was emphasized in the report of the Bruntland Commission and at the 1991 Rio Conference on Environment and Development (UNCED). It is especially important in Mozambique and in other African countries where the large majority of the population are not only rural but poor. Unless their productivity, disposable income, and living standards improve, such people have little option but to over-utilize what resources they have, including land, water, and forest and savanna products. Environmental issues, therefore, are not something to be dealt with only in an appendix during project and program planning. Rather they should be directly linked to efforts to increase productivity in a fashion that is sustainable environmentally as well as economically and institutionally.

In this PEA, considerable emphasis is placed on policy development and implementation and on monitoring and evaluation as they relate to the USAID/Mozambique program of activities. In pointing out probable environmental implications of different approaches to GRM goals, the PEA will have achieved a major objective if it facilitates USAID's early recognition of the need to take preemptive actions, either to mitigate proposed activities or to probe more deeply through specific environmental assessments. For example, the National Reconstruction Plan intends to link northern Mozambique to southern

Mozambique through physical infrastructure. A decision on whether to support bridges or barges will require an environmental assessment of each potential locus. In identifying the probable environmental consequences of different policies and related implementation activities, it is hoped that this PEA will give USAID/Mozambique more leeway in deciding when more detailed environmental impact assessments are necessary. In particular, this refers to the sub-grants to be funded under the PVO Support Project. Two separate Supplemental Environment Assessments were carried out in conjunction with this PEA to address the pest and pesticide management issue. Finally, as outlined in Section VI, a process of environmental monitoring, evaluation, and mitigation (EMEMP) is proposed which should help allow impacts that are identified to be minimized or avoided.

SECTION II
ENVIRONMENTAL IMPACT ASSESSMENT OF THE
USAID TRANSITION PROGRAM

A. USAID Transition Program

A significant portion of USAID's activities in Mozambique are intended to advance the peace process. In addition to activities directly related to the Peace Accord, USAID/M is implementing or intends to implement others which support the country's transition from shorter-term emergency to longer-term development. The GRM has identified its strategy to achieve this in the Economic and Social Rehabilitation Plan (ESRP), the United Nations Office for Humanitarian Assistance Coordination (UNOHAC) reintegration program, and the partially completed National Reconstruction Plan (NRD). USAID's portfolio contains two sets of activities. One of these, initiated in November, 1992, is incorporated within the transition program over an 18-24 month period; it addresses emergency relief for the millions victimized by civil strife and drought, and other steps to support the peace process. The second set focuses on providing a foundation for the country's transition from emergency relief to long-term development.

Some of USAID/Mozambique's activities such as mine clearing, demobilization, rural roads rehabilitation, and rural water supply and sanitation—are quite specific. Others, like reintegration, must address a wider range of topics such as land tenure and market recovery. These latter activities have longer-term developmental and hence environmental implications, especially those the Mission is funding through PVOs, and through Michigan State University (MSU) and the University of Wisconsin (UW). While NGOs have been concentrating on emergency relief in the form of food assistance and the distribution of apaks of seed and tools, increasingly they are initiating development activities as part of a donor-supported national program for reintegration, rehabilitation, and development.

This PEA must address and prioritize the environmental implications, both positive and negative, of sectoral and multisectoral activities. The PEA must also link USAID's sectoral activities to the Mission's broader goal of facilitating reintegration, rehabilitation, and development. Realization of that goal will require careful coordination to ensure that the full range of necessary activities is implemented and monitored. At the moment, certain activities necessary to ensure a sustainable resettlement process are insufficiently emphasized. For example, emphasis is placed on agricultural production in the USAID activity portfolio, but the institution building necessary to facilitate increases in productivity and required marketing capability to move surpluses are not emphasized.

Seven of the ten key elements of the transition program (see Annex F, Appendix IIA) will be examined in this PEA (but with slightly different groupings): de-mining; facilitating resettlement and re-integration; stimulating sustainable agricultural production; repair and rehabilitation of infrastructure; water supply services and sanitation services. Three elements will not be addressed (as established in the Scoping Statement): demobilization, health services, and education. The PEA will address the key transition program activities in light of their potential for direct or indirect impact on the following clusters of resources and associated management factors: soil/land productivity; vegetative cover quality/quantity; biological diversity; water resources quality.

A1. Potential Short-term Impacts of Transition Program Activities

In this section, the short-term (1-2 years) environmental impacts of specific USAID and USAID-sponsored transition activities are assessed. In section A2, the medium- and longer-term effects of transition activities on specified classes of resources will be discussed.

A1a. De-mining

A1a1. Description of De-mining Activities

De-mining (mine clearing) activities in Mozambique are coordinated by the UNOHAC, which sets procedures and priorities. About 4,000 kilometers have been identified for high priority de-mining. USAID is evaluating proposals from private companies for clearing mines from about 2,000 kilometers of priority roads in Sofala, Manica and Zambizia provinces.

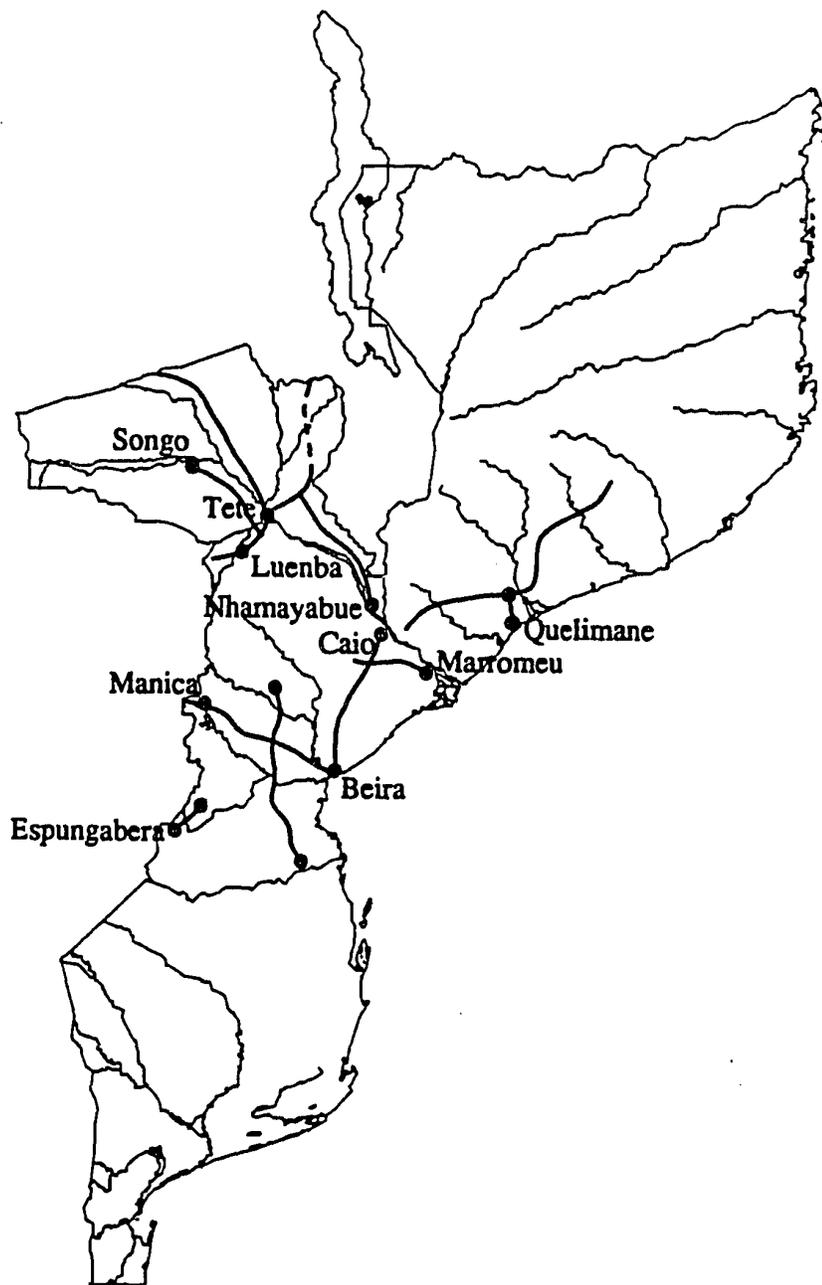
Objectives and justification of de-mining. The objective of de-mining activities is to open roads that are crucial to the demobilization and reintegration efforts supporting the peace process. Road opening and maintenance activities cannot proceed until mines have been cleared (see A1c. below). Mine clearing and maintenance operations will permit the supply of food aid and agricultural inputs to assembly and resettlement areas, facilitate the return of refugees, allow demobilized soldiers access to assembly areas, and allow access to markets for agricultural surplus.

Geographic area of de-mining project. Geographic area and priorities for de-mining are determined by UNOHAC in consultation with the GRM and the donor community. Priority roads for de-mining listed in the Request for Proposal 93-010 include 1198 kilometers in Sofala province, 437 in Manica, 301 in Zambesia, and 219 in Manica/Sofala (see map, Figure 1).

Time frame for de-mining. USAID mine clearing is expected to begin in September, 1993 and last about one year.

Methodology employed for USAID mine clearance. Mine clearance will be done by private contractors. The actual methodology, expected to be manual, will be specified in the proposal and approved by the UNOHAC mine clearance project manager. The

Figure 1: Mine Clearance Priorities



contractor will provide a project manager, team leaders and trainers. Mozambican nationals will be trained for about three months in de-mining techniques. The mine clearance teams will locate and destroy *in situ* or remove and destroy all mines and munitions in the roadway and on the verge. Mines located will be documented and cleared areas will be marked.

Other de-mining activities. Some roads such as the stretch from Marromeu to Chupanga have been cleared under other arrangements, including private mine clearance in Nampula by LOMACO, a multinational agribusiness firm. Anti-personnel mines are also reported to be a menace on many trails and in open country. Contractors, upon special request from the UNOHAC Mine Clearance Project, may be asked to clear certain trails.

A1a2. Short-term Impacts of De-mining

Environmental. Negative environmental impact will be inconsequential: a few holes in the roads, minor short-term damage to vegetation. Mine clearance will not open access to new areas; it merely permits access to areas already occupied or abandoned because of the mines.

Socio-economic and cultural. De-mining is crucial to the reintegration process in that it facilitates the return of refugees and displaced people and allows delivery of necessary support (food aid, medical supplies, etc.) It also sets the stage for transport of inputs and surplus production. Without mine clearance, relieving the pressure on land and resources around accommodation centers and safe areas will be a much slower process. De-mining will provide employment to Mozambican specialists trained in mine clearance and local residents (for identification of minefields, support, etc.)

A1b. Agricultural Production

A1b1. Description of USAID Agricultural Production Activities

USAID transition agricultural activities consist primarily of distributing basic agricultural inputs (agpaks of seeds and tools) to displaced persons in accommodation centers and to those drought-affected farmers returning to their homes. In most cases, the inputs are supported by technical assistance from extension agents, instruction booklets, and demonstrations at central locations. The general strategy is to focus initially on known production methods and varieties.

Agricultural production activities are carried out by PVOs with USAID grants World Vision Relief & Development (WVRD), Food for the Hungry International (FHI), Adventist Development and Relief Agency (ADRA), and Save the Children Federation (SCF). Laudable and generally successful efforts have been made to assure that the seeds (basic grains, pulses, vegetables and oilseeds) and tools (hoes, axes, pangas, hand sickles, and watering cans) are appropriate to the agroclimatic conditions of the area and the cultural patterns of the producers. Most of the inputs are purchased from neighboring countries, primarily Zimbabwe, because the national supply is not adequate.

The PEA team observed other agricultural activities designed to bridge the gap between emergency transition aid and rehabilitation (agricultural development). These included variety trials, seed multiplication, and farmer training. Some PVOs intend to include small animal husbandry in their agricultural assistance packages. Other noteworthy activities are cooperation with, and training of, Ministry of Agriculture (MOA) personnel.

Objectives and justification of activity. The objective of USAID agricultural activities is to provide the minimal inputs necessary for the beneficiaries to recover production. Due to the drought and war destruction, most of the people in safe zones and accommodation centers did not or do not have seeds or basic tools to get started in the production of basic foodcrops. The same holds for displaced persons and refugees returning to their places of origin. Many of the people who remained on their farms or returned early suffered serious production losses from the recent drought. There is general and almost unanimous agreement that distribution of agpaks is the most efficient short-term approach to food security and reduction of dependence on emergency food assistance.

Geographic areas and population affected. Provinces covered include Tete, Nampula, Zambezia, Manica, Sofala, Gaza, and Inhambane. The six PVOs named above distributed USAID financed agpaks to about 87,000 farm families in the 1992/93 agricultural season. They distributed an additional 118,000 agpaks financed by themselves or other donors. USAID grants have been approved or requested for 189,000 agpaks to be distributed in the 1993/94 season, and the PVOs expect to distribute about 220,000 more with other funding.

Timeframe. Distribution of agpaks, will continue through 1994. Distribution in accommodation centers and other areas of population concentration is diminishing at present so as to avoid the "dependency syndrome." Distribution is increasing in rural areas and will increase even more as roads are opened.

Methodology employed. PVOs have extensive experience in their areas of operation and work with district and local officials to identify beneficiary families. Distribution plans are coordinated with food aid and food-for-work activities.

Local preferences are taken into account in the makeup of seed and tool packages, and amounts of seed per package are calculated to support a basic family unit. Transport to distribution centers is by the best mode available, be it truck, tractor, boat, plane or on foot. Actual distribution is overseen by a representative of the relief agency with the assistance of local authorities and government officials. In most cases, follow-up activities are conducted to determine impacts and assess future needs.

A1b2. Short-term Impacts of Agricultural Production Activities

In assessing the environmental impacts of transition activities, it is important to bear in mind that only limited emergency actions are under consideration; most of the environmental impacts associated with such development projects as irrigation and agricultural research are not pertinent. Most of the damage to the environment in

Mozambique is due to concentration of the population because of the war. These undesirable conditions will be relieved or mitigated, at least in the short-term, when the people return to their homes, assisted by USAID's transition activities. (See Sections IIA2 and IID for possible medium- to long-term impacts of transition activities.)

The following potential impacts from agricultural activities were considered:

Soil erosion. Generally not a problem in Mozambique except in some areas of steep slopes where inappropriate cultivation is practiced. Inappropriate cultivation is usually due to excessive population pressure, which is not likely in the short-term in any of the areas of USAID activity. Deforestation (such as from excess charcoaling) and overgrazing can also lead to soil loss from wind or water erosion.

Soil fertility. Has undoubtedly deteriorated in accommodation centers and other areas of concentrated agricultural production. This is due not to USAID activity but to the civil strife that gave rise to such concentration. USAID support to returnees will relieve this condition. Returnees will generally find land in their former homes restored to some extent by the enforced fallow. Effects on soil fertility in the short-term due to USAID transition activities are not cause for concern.

Pesticide use. Not currently an issue as pesticides are not recommended or supplied to farmers. The limited use on trials and seed multiplication plots is insignificant from an environmental perspective and safe from the health perspective so long as application is supervised by trained technicians. There are plans to implement an Integrated Pest Management (IPM) component in PVO agricultural programs which will involve minimal use of pesticides.

The Scoping Statement for the Transition Program PEA identified the need to assess the use of pesticides that might occur in Mozambique as a direct or indirect result of assistance provided through the Mission's program, and the capacity of PVOs to address the subject. Thus, it was determined that the pest and pesticide management aspect justified a specific Supplemental Environmental Assessment (SEA) to the overall PEA of the USAID/Mozambique Transition Development Program (Fisher and Matteson 1993). This SEA will coincide with and complement another, legally distinct, SEA being carried out in the same period to cover possible locust and grasshopper interventions in Mozambique, under the PEA for USAID assistance to Locust and Grasshopper Control in Africa and Asia (Belayneh 1993). The latter SEA was sponsored by the regional Africa Emergency Locust and Grasshopper Assistance (AELGA) Project, now managed by AID/AFR Disaster Relief Coordination Office (DRCO)."

Water. USAID assistance will tend to relieve pressure on areas of overpopulation where there have been problems of water quality and quantity. People returning to their homes are not likely to exert any negative influence on water resources in the short term, certainly not because of USAID sponsored transition activities.

Pathogens, pests. There is always a risk of introducing disease with seed or other genetic material and of attracting unwanted pests with new vegetative patterns, particularly in situations where there is no official control or quarantine. The danger of attracting or introducing diseases and/or pests through transition activities is considered minimal and the PEA team does not recommend any changes in the short term for the following reasons: 1) seed is brought in from Mozambique or the southern Africa region and is certified by the supplier; and 2) for the most part, traditional rather than new vegetative patterns will be re-established.

Biomass. Fuelwood and thatch material has been depleted in areas of population concentration. There is also a possibility that fuelwood will be depleted along some of the more heavily traveled routes used by displaced persons in returning to their homes. This environmental problem will be relieved as people return to their homes where biomass has had time to regenerate. Land clearing for fields and homes will provide much of the initial requirements for the relocated population. Granted a higher war-induced death rate for over a decade, in many cases population pressure may be less than before the dislocation. The PEA team finds no cause for concern in the short term unless populations again become overconcentrated in some areas (which highlights the need for monitoring population movements and concentrations to be discussed below).

A1c. Repair and Maintenance of Infrastructure

For the purposes of this PEA, "infrastructure" refers to be 1) roads and bridges; and 2) water and sanitation facilities which may include rural health posts. USAID's involvement in these will be through the Rural Access Activity (RAA) which entails rural roads rehabilitation, the PVO Support Project for rural rehabilitation and recovery and water, health and sanitation, and donations to UNICEF from its primary health care budget.

A1c1. Rural Access Activity

There are presently 29,155 kilometers of road in Mozambique, of which 5,400 kilometers are paved. However, less than 30 percent of the road network is in fair to good condition resulting in extremely high transportation costs. The poor condition of transport infrastructure is attributable to many factors which include: a) security problems; b) a shortage of managerial and skilled manpower; c) diminished financial resources available for investment in infrastructure and maintenance; and d) inappropriate transport sector policies (World Bank, 1992).

USAID/Mozambique's Rural Access Activity is designed as a short term activity to help open up all-weather road access to areas of high priority for emergency relief, reintegration, and recovery from the recent drought. RAA has requested \$19 million, of which \$11 million would be funded under the current drought emergency relief and recovery project of USAID's Southern African Regional Programs (SARP). This activity will provide direct access for: relief distributions to areas currently supplied by costly airlifts; large numbers of refugees, displaced persons, and demobilized soldiers and their families returning

to their homes; pre-election activities; and regeneration of commercial activity which is critical to post-war social and economic reintegration.

USAID intends to provide financing for the National Directorate of Roads and Bridges (DNEP) to contract with private construction companies for the reconstruction of selected pieces of this essential physical infrastructure (see map, Figure 2). DNEP, with the assistance of an architectural and engineering (A&E) firm selected by USAID, will develop tender documents and specifications for contracts with regional construction companies for road and bridge rehabilitation. While it is intended that the A&E firm will also inspect the quality of work by the regional contractors, provision for maintenance of the completed sections of road and/or bridges is through the Roads and Coastal Shipping projects (World Bank).

The RAA proposes to undertake the following:

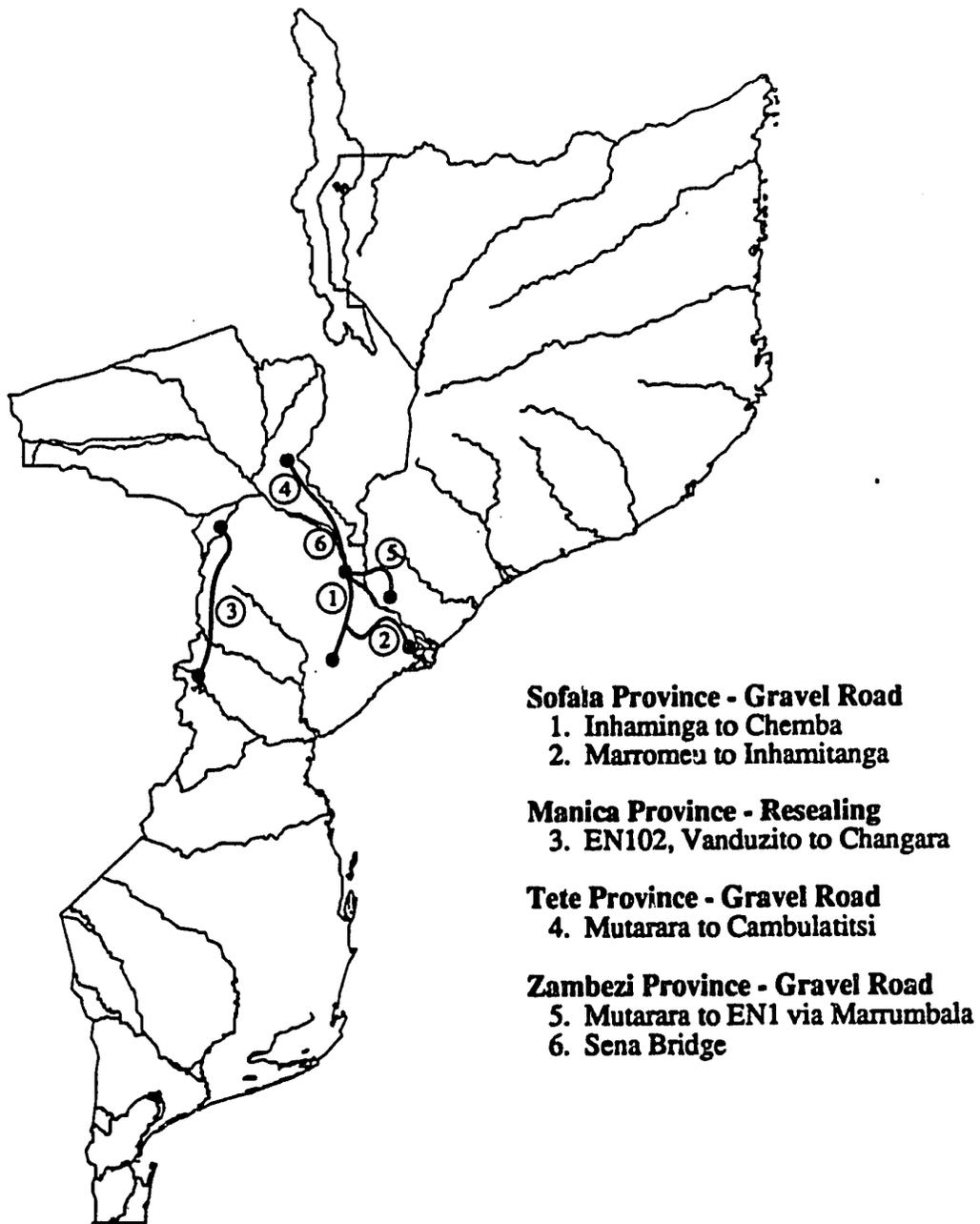
1. Quickly and simply rehabilitate up to 720 km of gravel surface roads.
2. Reseal approximately 270 km of paved road in the Beira-Tete-Malawi corridor where the pavement surface is being destroyed by increased traffic since the October 1992 cease-fire and movement of food supplies over the long unmaintained road, and repair 15 km of other paved road. These rapid temporary repairs are needed for the roads to remain functional until MFI-financed major rehabilitation begins in three to five years.
3. Convert the existing, but partially destroyed, rail bridge over the Zambezi River at Sena into a vehicle and pedestrian bridge. This would involve replacing two spans, one at each end, with "bailey" type bridges, and adding decking to provide a vehicle running surface.

This activity addresses the immediate needs of providing basic infrastructure and access for the population returning to the rural sector, access for civic and pre-election programs, and access for the return of commercial activity to a large, populous region of the country. It also reconnects the northern and southern halves of the country with a road and bridge crossing the Zambezi River at Sena. This bridge will shorten the present road route from Beira to Quelimane (through Chimoio and Tete) from 1000 km to 320 km, and alleviate the present need to enter Malawi to transport goods by road from the north to south of the Zambezi.

A1c2. Short-term Environmental Impacts of Rural Roads Rehabilitation

The routing of roads is governed initially by topography and settlement patterns, or commerce and military concerns. Most routes have developed over a period of many years, strongly influencing regional development patterns and the ecology extending for several kilometers on each side of the road. Thus, rehabilitation of previously well-established roads rarely presents serious ecological problems in the siting of borrow pits, spoil areas, or

Figure 2: USAID's Rural Access Activity, 1993-1994



construction camps. In the case of the roads selected for USAID/Mozambique's rehabilitation projects, this should be even less of a problem because their rehabilitation will follow well established road beds and will not construct new roads nor open up new areas for development.

The roads identified for rehabilitation fall under several categories ranging from completely engineered and surface treated to nothing more than earth roads with minimal drainage and bridges. The short distances of road inspected by the PEA team as well as hundreds of recent photos provided by the USAID/M mission and the *Rural Access Activity Technical Analysis* (15 June 1993) all indicate that most of the roads to be rehabilitated were originally well constructed with appropriate camber, drainage, and bridging. However, time has brought about the need for additional drainage facilities in areas of excess moisture and/or inferior subgrade.

The *Environmental Guidelines for PVO/NGO Field Use* produced by USAID/Africa Bureau (draft 1992) indicate which of the potential impacts should be of most concern for different types of road rehabilitation in various settings. With the information given in this document, project engineers can determine which are the most important impacts to focus on for the particular road being rehabilitated in Mozambique. Of general concern are the opening of borrow pits, spoil areas, and brick quarries; the maintenance of drainage facilities; and the impoundment of water. As stated in the guidelines, in all road projects, protection against soil erosion via runoff to and from drainage areas should be provided.

These roads do not border on ecologically sensitive areas and will generally have positive environmental and social effects in the short- and long-term. The benefits include increased access to rural areas; reduction in transport costs for food, agricultural inputs, and products and hence increased agricultural production and extension; and the injection of capital into local communities through civil works, and thus alleviation of some poverty.

A1d. Water Supply and Sanitation

Water-borne diseases are widespread in Mozambique. Cholera epidemics are common in many urban areas and, along with hepatitis, have been endemic since 1979. Child mortality is 280 per 1,000, largely due to diarrheal diseases and malnutrition, which are closely connected to the lack of sanitation and clean water. Child morbidity in Beira is 36.4 percent and the morbidity by diarrhea is 14.7 percent, both among the highest rates in the world (World Bank, 1991).

Efforts to provide clean water to Mozambique's rural population have been hampered by the recent war. While Mozambique does have a water supply improvement program, only 10-13 percent of the rural population had access to safe drinking water in 1990 (World Bank, 1990).

Only 44 percent of Mozambique's urban population has access to clean drinking water (World Resources Institute, 1993). Open drainage ditches are the norm in urban areas. There were 122 urban water supply systems in 1990, one-third of which use ground water

(NORAD, 1990). In the capital city of Maputo, the ground water is contaminated by nitrates and is unsuitable for human consumption and domestic and industrial waste are also discharged daily into the Maputo Bay. In Beira, only 28 percent of the urban waste is collected (World Bank, 1991). In addition, the municipal dump in Beira is contaminating the underlying aquifer.

A1d1. Present and Proposed Activities

Water supply and sanitation (WSS) services are being addressed through USAID/Mozambique's PVO Support Project. This project is currently authorized at \$90 million; it finances selected international PVOs that manage and provide assistance to individuals and groups most seriously affected by food and civil insecurity, and that work to facilitate the transition from emergency relief to rehabilitation.

A1d2. Short-term Impacts of Water Supply and Sanitation Activities

Constructing new water sources can encourage migration of the population and extension of displaced person camps. To avoid this possible negative impact, wells should be constructed in locations where the population currently lives, or traditionally lived and is returning.

Latrines can be responsible for well and aquifer pollution. Consequently, all latrines should be constructed according to the National Institute of Physical Planning (INPF), National Directorate of Water (DNA), and National Directorate of Health (DPS) established standards and specifications for construction and siting of improved latrines; and with MOH (Ministry of Health) and DPS for the rehabilitation of health posts. Particular care must be taken in the siting of latrines in areas close to water sources and in areas of high water table.

PVO water and sanitation technicians should coordinate with the National Rural Water Supply Program (PRONAR) for the training of their own community well technicians in well construction, pump installation, operation, and maintenance (O&M). PVOs should be familiar with the INPF-established standards and specifications for the construction and siting of improved pit latrines, as formulated under the National Low Cost Sanitation Program. All PVO WSS interventions must be accompanied by a community participation and education program coordinated with PRONAR and, if available, the National Low Cost Sanitation Program. All wells and water storage tanks must be constructed and/or rehabilitated based on PRONAR's established technical standards and specifications for siting, construction, and usage. This should include proper sampling and analysis of water to assure safety of water supply and determination of the maximum number of wells that a given aquifer can sustain. All wells must be sealed with a village-level operated and maintained (VLOM) hand pump to prevent contamination entering into the well shaft. A concrete apron will be constructed to ensure correct drainage of wastewater away from the wellhead. Appropriate measures must be taken to minimize standing water caused by well use. Erosion is not a serious issue in well construction and utilization but should be considered by the implementing PVOs.

Sustainability depends on the development of a user-fee system for water points and latrines and the effective coordination of PVO's water and health education program with PRONAR's PEC program.

Maintenance is an issue because the moving parts of wells wear out and latrines must be maintained. Field observations made by the PEA team revealed that only about one-fourth of the water pumps installed by the various donors and agencies were operating as soon as one year after installation. Because of the lack of standardization, pump parts for repair could not be scavenged from non-functioning pumps. Community water and hygiene committees must be formed as part of any WSS to: a) maintain and operate pumps and latrines properly; b) recover recurrent O&M cost for both pumps and latrines; and c) receive and disseminate water and hygiene education and training programs. Maintenance of pumps will be greatly facilitated if the PVOs work with PRONAR and adopt the locally manufactured VLOM pump. A standard pump will ensure that standardized parts are more widely available and that the maintenance component of WSS education programs will be most effective.

Key indicators will be the number of people with safe water within 1 km and latrines within 100 m of their homes.

A2. Potential Medium- and Longer-term Impacts of Previously Discussed Transition Program Activities

A2a. Land and Soil

Of all transition activities, only agricultural production road rehabilitation and water supply activities are expected to impact land and soil resources. Water supply activities may permit some small-scale irrigation which should be environmentally positive or benign. Water supplies for returnees will contribute, along with other activities, to reducing pressure on land and soil in and around accommodation centers. Assuming agricultural activities are expanded to promote sustainable production systems and natural resource management, their long-term effects should be positive, at least compared to effects without such intervention (see Section IXC, Options for Future USAID Assistance.) Otherwise, the effects could be disastrous, as in many other parts of Africa where the carrying capacity of the land has been exceeded and natural resources have been depleted. Agricultural program/project designers must consider certain measurable criteria when developing agricultural development in Mozambique. These criteria would include:

- Control of soil erosion by cover crops, mulch, contour planting, physical structures, etc.
- Maintenance of soil nutrients through rotations including legumes, composting, chemical fertilizers, etc.
- Maintenance of soil physical condition by incorporation of organic material, etc.

- Control of pests, plant diseases and weeds (IPM)
- Avoiding build-up of acidity and toxicity in soils through improper use of chemicals and fertilizers
- Avoiding/minimizing environmental contamination of land and water resources in the area
- Conservation/protection of genetic resources unique to the area - identification, collection, reproduction, gene banks, etc.
- Protection of wildlife habitat through maintenance of protected areas, windbreaks, restrictions on burning, etc.

Road rehabilitation will contribute to re-cultivation of abandoned lands, which will involve clearing by burning in some cases. This amounts primarily to a restoration to the status *antebellum*. The overall long term impact of transition activities on land and soil resources is likely to be minimal and more positive than negative.

A2b. Forest Resources

Road Improvement Activities

According to information obtained from the Mozambican Ministry of Agriculture, the roads which will be improved under the transition program are not located in or in close proximity to National forest reserves. (Please refer to Figure 3 for a map showing national protected areas, forest reserves and roads to be improved.)

The increased growth of vegetation in some areas during the war may provide farmers returning to their original lands with increased fuelwood resources in the medium-term. Further, the initial return of people to their original land will not generally increase the population to higher than pre-war levels as a result of the counterbalancing effects of the war-induced death rate and population growth during the war years.

Provided favorable price incentives and marketing capacity, road improvement activities will facilitate the movement of people from more densely populated refugee camps, accommodation centers and urban areas to their original lands. With this in mind, the road improvement activities should reduce deforestation near such areas and help relocate people to areas having greater fuelwood resources. However, policies need to be established which provide returnees with incentives to manage their land sustainably (e.g., secure land tenure).

In the long-term, road improvement activities may increase the movement of rural populations into areas which were previously less accessible. If not properly managed, the road improvement activities could contribute to deforestation.

Agricultural Activities

The PEA team anticipates that USAID supported transition activities in agriculture will not significantly affect the rate of deforestation during the medium term.

Transition program agricultural activities are designed primarily to provide drought- and war-affected farmers with seeds and other basic inputs. It will also provide farmers returning to their land with ag-packs of farming tools and supplies such as hoes, machetes, and watering buckets. It is extremely unlikely that the distribution of seed and tool paks will have any long-term impact on forest resources. Future USAID agricultural projects, if any, will likely emphasize sustainable production practices and natural resource management which will pose no threat of deforestation.

Please refer to Annex B for additional information regarding forest resources in Mozambique.

A2c. Water Resources

Sanitation activities have a positive impact on water resources both in accommodation centers and in reoccupied areas. Agricultural activities should have no deleterious effects on water resources if properly designed and executed (assuming pesticide contamination and over-exploitation are avoided in follow-on development projects). Care should be taken to assure that water levels are not lowered by irrigation in areas with inadequate aquifers. The same holds for the development of water supply: avoid overdevelopment that could result in long-term damage to the basic water resource.

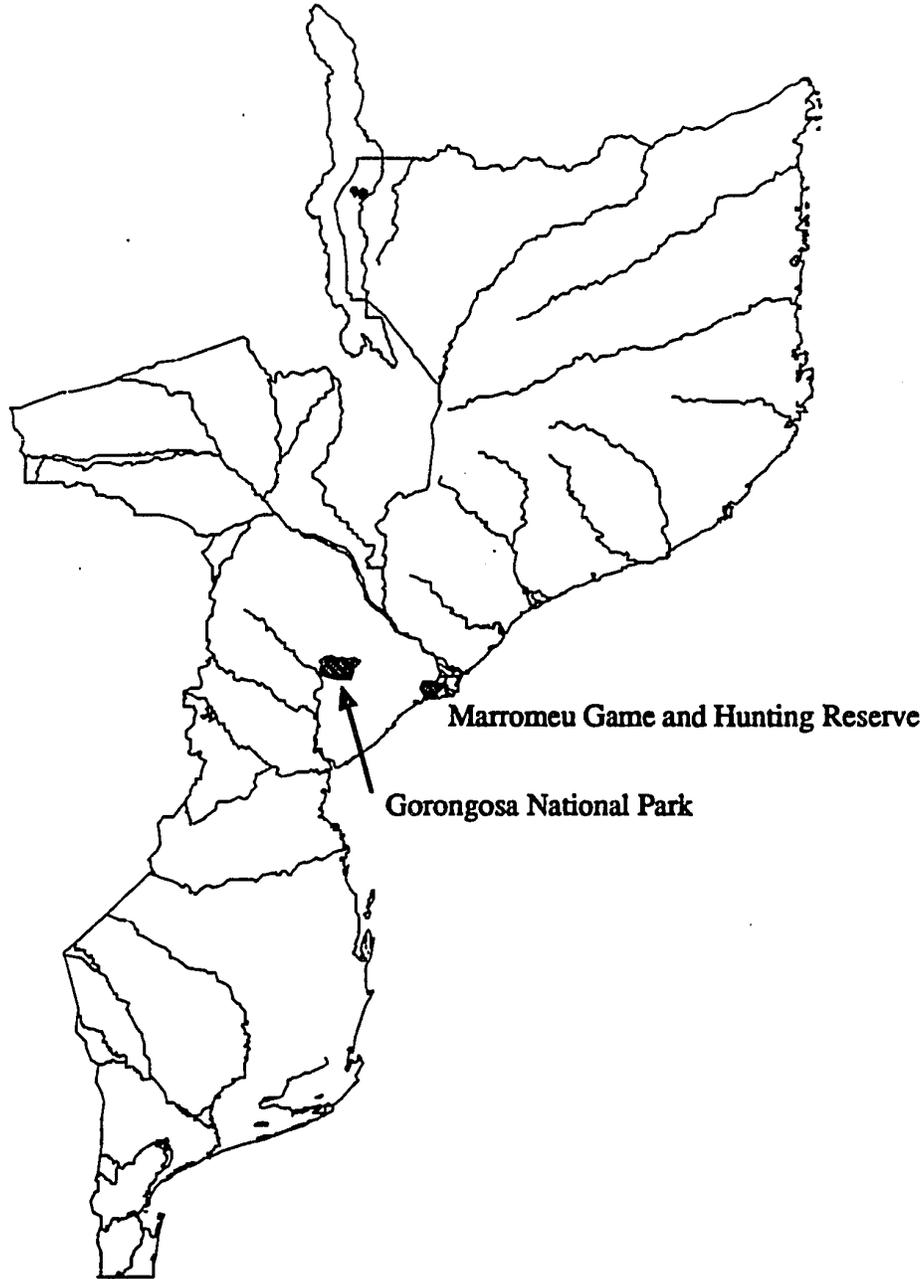
A2d. Biodiversity and Development

The increases in vegetation growth on abandoned land during the war may provide resource planners in the Ministry of Agriculture with an opportunity to implement a long-term biomass management strategy for the sustainable use of forest resources. The strategy is scheduled for approval in August 1993 (personal communication with Forestry Department staff, May, 1993).

The resettlement process will set the course for future land-use patterns in the country. There is a great deal at stake for the forestry and wildlands sector. If provided with suitable lands and policies, rural people will have more incentives to practice sustainable agricultural and forest use. Sustainable agricultural and forest practices will also reduce the pressure on protected areas and associated wildlife.

According to the MOA (1991), Mozambique's rural population has had insufficient involvement in wildlife management and access to wildlife related benefits. The perception of resource ownership among rural populations has been reduced as a result of RENAMO exploitation for foreign exchange earnings, dispossessing people of their traditional lands. The legacy of enforcement of colonial regulations regarding protected wildlife areas has undermined former customary tribal rules for conserving resources.

Transition Activities*



*See Scoping Statement (Annex F) for indications of proposed or potential protected areas (Fig. 2).

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

The MOA is interested in providing rural populations with benefits associated with wildlife resources (e.g., tourism, trophy hunting). Its principles for accomplishing this are:

- Local capabilities and revenue sharing should be considered as part of any joint international partnership.
- In order to maximize local employment opportunities, outsider organizations should only import into an area the manpower for which there is no local substitute.
- No usage rights should be granted that interfere with or reduce local rights.

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

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

A2e. Endangered and Threatened Wildlife Species

The program activities will not be conducted in areas which maintain important wildlife habitats. In the medium- to long-term, the transition program could have significant positive and negative impacts on threatened and endangered wildlife species to the extent that national protected areas are affected. Section A2f (Protected and Conservation Areas) of this report contains information regarding the potential impact of the transition program activities on protected areas in Mozambique.

Please refer to Annex A for a list of threatened and endangered wildlife species and other information regarding wildlife management in Mozambique.

A2f. Protected and Conservation Areas

Road Improvement Activities

The two protected areas located in the transition program area are the Gorongosa National Park and the Marromeu Game Reserve. (Four hunting reserves are also contiguous with the game reserve). Please refer to Figure 3 for a map showing the location of the protected areas and proposed roads to be improved.

The roads which will be improved under the USAID transition program are not located in National protected areas. Further, there are no significant human population movements occurring near the Marromeu Game Reserve and hunting blocks which are associated with the transition program. Information is not available regarding human population movements in or around the Gorongosa National Park (EMOFAUNA personal communication, June, 1993).

The MOA is presently considering an expansion of the two subject protected areas (UNDP/FAO, 1991). If approved, the boundary of both protected areas would be extended west and directly north to the Zambezi River.

It is not anticipated that the road improvements planned under the transition program will have an impact on the two protected areas in the medium-term. In the long-term, however, improving roads could potentially increase human populations near the protected areas. This could result in increased conflicts between the local human population and protected area resources (e.g., fuelwood, game meat, minerals).

Conversion of wildlife habitat to agricultural production is one of the most serious threats to protected areas in Africa. However, should the transition program envision additional road improvements near protected areas, there could be some positive impacts of road improvement on the protected areas. For example, improved roads could provide improved protected area access for tourists and protected area managers. Improved roads also sometimes prevents destruction of vegetation by reducing the need for vehicles to detour outside the established road to avoid pot holes (USAID, 1991).

Agricultural Activities

As with the section on forest resources discussed above, it is anticipated that USAID-supported agricultural activities will not significantly affect the protected areas in the medium term. The return of people to their original land will not increase the population to higher than pre-war levels in most areas.

In the long term, an increase in agricultural productivity could increase pressure on protected areas. As with forest resources, secure land tenure and increased farmer income (from trophy hunting or tourism) could encourage sustainable practices in association with protected areas.

Presently, none of the NGOs supported by USAID are conducting activities in association with protected areas. However, Food For The Hungry International is implementing activities within the Gorongosa District.

In the long term, there may be opportunities for USAID-supported NGOs to link their agricultural extension (and other activities) to the sustainable management of protected areas. For example, key farmers living adjacent to protected areas could be selected for NGO agricultural extension activities.

Please refer to Annex A for additional information regarding protected area management in Mozambique.

A2g. The Human Resource

A2g1. Socioeconomic and Cultural Impacts

The PEA team sees no danger that transition activities will reduce farm incomes provided they are properly planned and implemented; on the contrary, USAID-financed agricultural activities will contribute to increases in family food supplies and well-being, and to community formation. Increased food security will promote social and political stability. Though distribution of food and agricultural inputs cannot be expected to be completely equitable, the risk of promoting divisiveness in the community can be reduced by ensuring that inputs are available to both returnees and those who chose not to leave. Considering the efforts to utilize acceptable tools and seeds in the agpaks, cultural rejection is unlikely.

There is some concern expressed by both recipients and development workers about the use of hybrid corn seed. The problem is that hybrid seed should be replaced every year: such seeds will not maintain hybrid vigor more than a year or two. Project beneficiaries are accustomed to saving their own seed from year to year or obtaining it from traditional sources; thus the risk of considerably reduced yields from the second year on. Hybrid corn seed is not likely to be widely available to small farmers on a commercial basis for several years. Prior experience with hybrid corn in the Zambezi valley in Zambia suggests caution, especially in areas prone to drought, and where credit is not readily available. The argument in favor of hybrid seeds in Mozambique is that they generally out-produce traditional varieties even under traditional cultural practices and without fertilizer—if there is sufficient rainfall. It was also suggested that the introduction of hybrid seed is a reasonable first step in the innovation process. While we do not recommend the distribution of hybrid seeds in agpaks, we see no cause for concern as the use of hybrid seed will be discontinued by most farmers if it is not deemed appropriate. Meanwhile, they have produced a crop during the difficult transition period, which is the main objective, and will be in a better position to obtain open pollinated traditional seed for future crops if that is what they prefer.

A2g2. Dependency and Urbanization

Programs dealing with both emergency relief and development always run the risk of creating a dependency syndrome among at least a portion of those assisted. In Mozambique

this risk exists in regard to both accommodation centers and transit camps where food and services are provided. The longer people remain, the more reluctant some will be to leave, adding to the environmental problems created by dense populations.

There are no easy solutions to such problems especially when relief is the responsibility of many government, donor, international PVO, and national NGO agencies. A consistently implemented policy on the provision of free food, Agpaks, tools, and survival paks is essential. Free distribution of grain cereals is a difficult problem, especially if adjacent PVOs do not synchronize timing when they phase out such assistance. It can and does reduce producer prices, acting as a disincentive for smallholders to produce for the market. Prolonged distribution can create dependency among the recipients.

In regard to seed, the World Bank has recommended that free seed be distributed only until the first "good harvest" has been realized. Thereafter, free distribution and subsidies should be removed. Considerable flexibility is needed in implementing such a policy since a "good harvest" may not necessarily carry households through until the next harvest. In that event, further subsidies will be required. However, rather than distribute grain free, recipients increasingly should be required at least to make partial repayment. One tactic is already being used effectively by Food for the Hungry whereby farmers are returning to the Casa Agrícola an amount equal to the seed received plus a 50 percent supplement. Because of the scarcity of cash, returning seed for seed after a harvest makes sense.

B. Food for Work and Cash for Work

Some transition activities—such as rehabilitation of the road from Marromeu to Chupanga—were financed in part by Food for Work (FFW). In this case the food was supplied through the World Food Program (WFP). It is likely that FFW and/or Cash for Work (CFW) will become more important with the increase in infrastructure projects. The relative merits and disadvantages of FFW and CFW have been discussed in a number of documents such as the report from Abt Associates entitled "Natural Resources Management and Program Food Aid in Niger." Use of CFW and FFW will be most effective where they are part of a dynamic process, the end result of which is increasing monetization of markets.

In the case of Mozambique, use of cash puts less pressure on PVOs in regard to logistics and management. It also stimulates the growth of marketing networks through purchases of food and other goods. The current minimum wage, however, is well below what the Nutrition Unit of the Ministry of Health considers necessary for a family dependent on wage income. That factor, along with inflationary pressures, favors Food for Work. (Recent communication from USAID/M informs that the minimum wage has been increased by 20 percent since the PEA team left the country. We think it unlikely that this will affect the conclusion above, considering inflation.)

The PEA team believes that FFW has been appropriate in the transition program so far, but that care should be taken to monitor the impacts. It is important that food aid, including FFW, not overburden Mozambique's capacity for administration and transport. At the local level it is also important that it not promote dependency, not result in production

disincentives, not stand in the way of participatory community development, and not adversely affect local markets. More specifically, it is important that availability of FFW not utilize scarce labor which would be better used clearing fields and restoring food security. For such reasons CFW alone or combined with FFW should be considered where appropriate. In either case women should have access to employment along with men, and efforts should be made to ensure that each affected household has the opportunity to provide at least one laborer part of the time.

Because food assistance is a large component of the USAID transition program response to the post-drought and post-civil war recovery, it is appropriate that steps be taken to monitor for unintended socio-economic impacts, as discussed in Section II.B. Also, as discussed in the Scoping Statement, it is established that many FFW/CFW mitigation activities have the potential for unintended environmental impacts, especially those involving labor-intensive interventions.

C. Relative Environmental Significance of Potential Impacts (Prioritization)

Transition program activities (de-mining, agriculture, road improvement, water supply and sanitation) were assessed above with regard to short-term environmental impacts (§ II,A1), and medium- to long-term impacts (§ II,A2.) A determination was made for each of these activities regarding their potential impact on:

- Land and soil
- Forest resources
- Water resources
- Land tenure/stewardship
- Biodiversity
- Endangered species
- Protected areas
- Population dynamics

The purpose of this section is to prioritize transition activities according to their actual and potential environmental impacts and to indicate which classes of resources are most at risk from transition activities.

C1. Direct and Near-term Impacts of Transition Activities

The PEA team anticipates no consequential direct or near-term negative environmental impacts from transition program activities. On the contrary, the analysis in section A1. indicates the impacts will generally be positive.

C2. Potential Medium- and Longer-term Impacts of Transition Activities

The PEA team anticipates no negative medium- or long-term environmental impacts from the transition program's de-mining and sanitation activities. There is a potential for

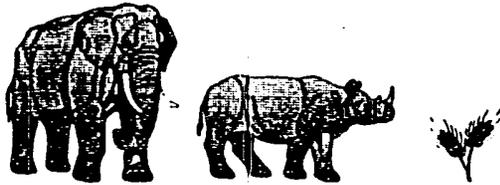
negative impacts from the road improvement, water supply, and agriculture transition program activities, in decreasing order of severity.

The environmental elements which are potentially most at risk from transition program activities in the aggregate are forest resources, water resources, biodiversity, endangered species and protected areas. Land and soil resources are at risk to a lesser degree. Negative impacts can be largely avoided if PEA recommendations regarding supplemental and follow-on activities are implemented. Mitigating and supplemental activities will be discussed later in this report.

The impacts of transition activities on environmental and social elements are shown in graphic form in Figure 4. The PEA team used this matrix to associate transition activities with resource categories subject to environmental impact. Although the matrix does not measure impacts, it indicates the activities which cause the most impact (positive and negative) in the aggregate, and the resource categories most affected by transition activities.

- **De-mining activities** are not applicable to any resource category except for positive effects on land tenure and population dynamics. De-mining allows roads to be opened which facilitates the return of people to the land, the flow of goods and services and the transfer of surplus production.
- **Agricultural activities** will have positive or benign effects except possibly in the cases of land and soils, forest and water resources, and protected areas. Current activities (distribution of agpaks, limited seed multiplication and extension) are expected to pose no risks except as noted above with regard to dependency and hybrid seed. Any follow-on research and extension activities which do not promote sustainable production practices could cause erosion and deforestation and promote incursion into protected areas.
- **Road rehabilitation** could impact negatively on land if water is impounded due to lack of adequate bridges and culverts. This activity could foster damage to forest resources if roads are used for access or egress to forests for illegal or imprudent exploitation. It could damage water resources by impoundment or changes in drainage patterns, and also threaten biodiversity and endangered species.
- **Current water supply activities** (community wells) put water resources at risk if they are not properly maintained and covered. Larger scale follow-on activities (impoundments/reservoirs, transmission and distribution systems, etc.) could pose other risks if not properly designed. Construction for water supply projects could destroy habitat for wildlife and reduce biodiversity, and destroy forest resources.
- **Sanitation projects** in the transition program are considered as having mainly positive effects on all classes of resources. Construction for larger sanitation projects could conceivably have effects similar to larger scale water supply projects.

Figure 4: Long-term Impacts of Transport Activities



LEGEND
- Not Applicable
0 Environmentally Positive/Benign
1 Low Negative Impact
2 Medium Negative Impact
3 High Negative Impact

11-22

	De-mining	Agriculture	Roads	Water Supply	Sanitation	Total
Land and Soil	-	1	1	0	-	2
Forest Resources	-	1	2	1	-	4
Water Resources	-	1	2	1	0	4
Land Tenure/ Stewardship	0	0	0	0	0	0
Biodiversity	-	0	2	2	-	4
Endangered Species	-	0	2	2	-	4
Protected Areas	-	1	2	1	-	4
Population Dynamics	0	0	0	0	0	0
Total	0	4	11	7	0	

D. Reintegration, Rehabilitation and Development

D1. Introduction, Objectives and Justification

Reintegration, rehabilitation, and development involves a variety of USAID transition and "core" program activities to enable war and drought displaced individuals and families to re-establish themselves in areas of their choosing in such a way that they not only can provide for their own food security but can also market surplus products. Several of these activities have already been dealt with (de-mining, agricultural production, repair and maintenance of roads, and water supply and sanitation services). All are important if the GRM is to achieve a process of national reconstruction which is economically, environmentally, and institutionally sustainable. They will not be further dealt with here; rather, policy dialogue, land tenure, PVOs, land use and marketing, and democratic initiatives as they relate to community empowerment through awareness and institution building are considered.

This portion of the PEA also differs from preceding portions in that short- and longer-term environmental, socioeconomic and cultural impacts are dealt with together.

D2. Population Affected by the Reintegration, Rehabilitation and Development Process

As discussed here, reintegration, rehabilitation, and development relate to four categories of individuals and families. The first category includes people who have not left their homes but who have been so adversely affected by war and drought that they are not able to meet their basic needs. The total number of them is uncertain, because an unknown proportion continue living in RENAMO areas. The second and third categories refer to the internally displaced. *Afectados* are those who are self relocated; *deslocados* are those who have moved to, or been incorporated within, accommodation centers in the Beira and Limpopo corridors and surrounding the major cities of Mozambique. The number is estimated at up to three million. The fourth category, refugees (*refugiados*), are defined as those who have crossed international borders. They number approximately 1.5 million, 1.1 million of whom have moved to Malawi. Together, all four categories constitute almost five million, or about one-third of Mozambique's total population of approximately 15 million. That number does not include over 300,000 troops to be demobilized and their dependents. Nor, apparently, does it include "Perhaps an additional one million displaced by the villagization program (*aldeias comunais*) and the establishment of cooperatives and state farms" (Myers, September, 1992).

Regardless of where they choose to resettle, land occupation by the large majority of wars and droughts affected smallholders is a form of land settlement. Whether spontaneous or otherwise, land settlement is a distinctive type of development intervention which has been well studied throughout the tropics and subtropics (Scudder, 1984; World Bank 1985, 1991; McMillan, Painter and Scudder, 1992). Based on such studies, it is reasonable to assume the following:

- The majority (but not necessarily a large majority) of returnees will prefer to return to their communities of origin.
- During the first few years, the primary concern of that majority will be to achieve food security through the cultivation of food crops. In many households, it will take up to two years to clear the necessary fields.
- Provided those involved believe their tenure to land to be secure, consider rural/urban terms of trade to be favorable, and have market access once food needs have been met, it is reasonable to expect people to respond favorably to new opportunities for diversifying and intensifying production. To help them achieve that result, donor assistance should focus on economic development, community formation, public health, and education.
- Affected people and returnees alike have been influenced by their experiences since Independence. A significant minority (estimates range around 25 percent, though at least one provincial governor has estimated 50 percent) can be expected not to return to their communities of origin, but rather to seek settlement within the Limpopo and Beira corridors or within urban and peri-urban areas. Such settlement will not be restricted to young men and women. It is also apt to involve households from more isolated communities in terms of market access and social services, an assumption that has important implications for how government and donors select priority areas for development interventions.

The PEA team is concerned about the unreliability of information on people's intent; about the environmental implications of future decisions by hundreds of thousands of households as to where to settle; and about the lack of a coordinated government, USAID Mission, and donor policy to influence such decisions. Without favorable prices for agricultural produce, market access, availability of consumer goods, and rural services, it is unreasonable to expect the large majority to return to their original villages, or once there, to remain. Similarly, the expansion of services and opportunities in or near accommodation centers by some PVOs will encourage more people to remain in the Beira and Limpopo corridors and peri-urban areas with increasingly adverse impact on soils, forests, and urban pollution. To address these concerns it is necessary to commence a more careful monitoring of people's destinations and to plan and implement a more comprehensive strategy to encourage rural development.

D3. Geographical Areas

Since the Peace Accord, increasing numbers of people have left their places of refuge both within Mozambique and in neighboring countries. Although data are scarce, evidence summarized by UNOHAC and UNHCR suggest that approximately three million people wish to return to their communities of origin. Figure 5 (from UNOHAC's June 1993 Post-War Population Movements in Mozambique) illustrates expected flows of these people. Referring only to refugees, Table 1, below, shows UNHCR's best estimate as to destination of over one million refugees.

Table 1. Estimated Destinations of Refugees

Tete	729,044
Zambezia	223,462
Maputo	139,923
Gaza	93,058
Sofala	84,355
Manica	69,746
Inhambane	50,000

Although such AID "core" activities as policy dialogue cover the entire country, as do democratic initiatives, AID funded PVO activities relating to reintegration, rehabilitation and development tend to be concentrated in Tete, Zambezia, and Sofala which together are the origin provinces of the majority of displaced people as well as of refugees. Hard hit by the insurgency, areas in which PVOs work also tend to be relatively isolated—a characteristic which requires development initiatives to address both production and marketing constraints.

D4. Policy Dialogue

Because of the financial costs and managerial and other constraints associated with government-sponsored and donor-financed settlement schemes, there appears to be a general GRM and donor consensus that reintegration should be largely restricted to facilitated spontaneous settlement whereby individuals and families move to places of their own choosing. The PEA team supports this approach, with donor, PVO and government assistance largely restricted to road rehabilitation, aiding the transport of people to localities of their own choosing, and assistance during the reintegration, rehabilitation and development process through appropriate policies, programs and projects. USAID/M has been a major proponent of assisted spontaneous settlement, with most of its people-related assistance channeled through PVOs.

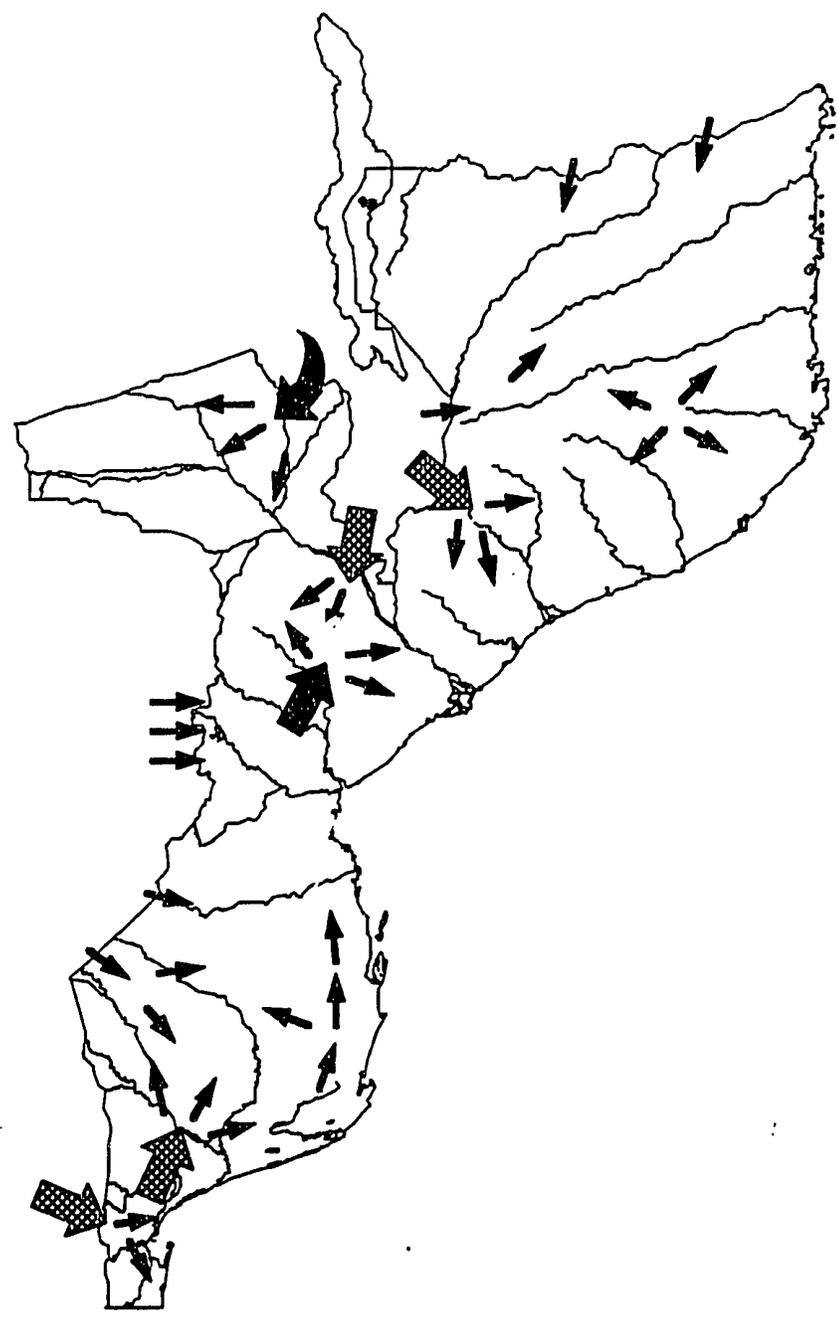
D4a. Pursuing the Peace Process

For such a strategy to succeed, three general prerequisites need emphasis. The first is that FRELIMO and RENAMO move forward with the donor-assisted Peace Process as outlined in the October 1992 Accord. Otherwise more displacement will occur, further increasing pressure on the natural resource base in the receiving areas. At the same time, an increasing proportion of displaced people and refugees will become attracted to an urban setting, increasing the pressure on the urban environment before the process of industrialization can provide employment and before emergent social services can deal with an increasing urban and peri-urban population.

D4b. Implementing The Smallholder Agricultural Policy

A second prerequisite is for the government to stick to its policy, first articulated in the early 1980s and frequently reiterated up to the present date, to favor smallholder

Figure 5: Post-war Population Movements



Source: United Nations Department for Humanitarian Affairs, June 1993

agriculture. This policy makes sense not just for social equity reasons but also for economic and environmental reasons. According to World Bank (1991) and UNCED (1992) documents, approximately 85 percent of Mozambique's population live in rural areas, and the large majority are members of 2.5 million smallholder households cultivating on average 1 to 1.5 hectares per five-person household. Their production activities take place on approximately 90 percent of the cultivated land, provide livelihood for about 80 percent of the population, and contribute the bulk of the agricultural output, including about 50 percent of marketed output of major food crops under favorable weather conditions.

Smallholders are also the sole producers of cashews which are a major export crop. Moreover, changed incentives introduced by the ESRP in 1987 have shown the rural economy to be "resilient and capable of a reasonably rapid recovery if peace prevails" (World Bank, 1993:24). For example, during the 1989-1991 period, smallholders, along with the re-emergence of larger farms, showed a "strong performance... which largely compensated for the downfall of the state sector which dominated commercial farming" (ibid:7).

Looking to the future, "Going beyond subsistence production to production of marketable surpluses will require a strategy that also looks at smallholders (family sector) as part of the private sector, rather than as a distinctive and separate grouping" (ibid:24). This point is an important one which is also made by the Ministry of Agriculture, Michigan State University, and University of Arizona (UA) Research Team in their various land access and land use studies in Nampula Province. To quote a July, 1992 draft report, "As with smallholder production, the Nampula family sector demonstrates a high level of indigenous knowledge that allows a relatively efficient use of resources given available technologies. Similarly, these families—even those in the lowest quartiles—are active participants in output markets and would probably welcome stronger input and consumer goods markets. The problem lies not with lack of dynamism but dearth of opportunities."

Notwithstanding its importance for the reconstruction of Mozambique's economy, the GRM's implementation of its smallholder policy has been inconsistent at best in regard to such critical issues as secure land tenure and decentralized planning and fiscal management. On the donor side, insufficient attention continues to be paid to food crops since "the ratio of investment between export and food crops for 1991-93 is 75-25" (UNCED, 1992: 86). A better balance is required. Insufficient attention has also been paid to marketing networks, especially within areas to which displaced people and refugees are returning.

D4c. Broader Development Policies Relating to Non-farm Activities and Population Dynamics

A third prerequisite for a successful assisted resettlement policy concerns the planning, implementing, and monitoring of policies dealing more broadly with development, including population dynamics and especially migration and population increase. For agricultural development to proceed, it is also important for returns to labor from agricultural activities to compare favorably with those from nonfarm activities and opportunities. Otherwise, fewer people can be expected to return to rural areas and, once there, to remain.

Broader development policies, in other words, require the government, USAID, and the donors to address the wide range of issues impacting the success of reintegration, rehabilitation, and the development process. These include the nature of rural-urban terms of trade for a wide range of farm and nonfarm activities at the household and community levels, improved social services in rural areas (especially health and educational), communications linking those areas with the major cities and development zones, and population dynamics.

Due to the insurgency and drought, over one-third of the population has shifted residence more than once. As pointed out by the University of Wisconsin Land Tenure Center (LTC), MOA/MSU/UA, and other reporters, the behavior, institutions, and aspirations of these people have changed. Little is known, however, about the effects of displacement other than that a majority wish to return to places of origin while a significant minority wish to settle in rural areas with better access to markets and services or in urban and peri-urban areas.

Surely major changes have occurred. On the other hand, during the April 1993 Meeting on Reform of Local Government and the Role of Traditional Political Authorities (TPA), J. Michael Turner, Project Manager of USAID's Democratic Initiatives Project, reports in a back-to-office memo (USAID, 1993) that "an often repeated comment concerned the fact that the TPA is a continuing political, social and administrative reality" and research conducted to date "concluded that the TPAs continued to be consulted by local populations for advice on local land disputes, family and lineage disagreements, and in the case of *curandeiros*, resolution of personal and group health and psychological problems." Bearing in mind that all but one provincial governor attended the meeting, such an acknowledgement points up the continuing importance of local mechanisms for community action and conflict resolution.

Insurgency and drought already have overwhelmed Mozambique's cities and peri-urban areas with more people than can be served. Consistent policies to expedite a return to rural areas are needed. Government agencies, donors, international PVOs, and local NGOs need to synchronize policies to facilitate that return by placing less emphasis on emergency activities and more on reintegration, rehabilitation, and development activities. In particular, policy reorientation should attempt to minimize the attractiveness of accommodation and transit centers at this time in terms of free food and other commodities, and schools and other services to ensure that policies do not encourage further movement to the Beira and Limpopo corridors and to cities and peri-urban areas.

Most reports estimate a 2.6 percent rate of population increase during recent years. This is probably an exaggeration since it does not take into account the impact of the insurgency and drought (communication from R. Green). If the experience of Zambia and Zimbabwe are relevant to Mozambique, however, once reintegration occurs there is reason to expect annual rates of population increase to rise above three percent per annum. As explained in the paragraphs below, land availability in Mozambique for smallholders appears to have been exaggerated. If the PEA team is correct in making this assumption, there is an urgent need now to formulate and implement appropriate policies to slow down the expected increase in population.

It is a well-established fact that high population densities and poverty cause environmental decline. Experience in other countries including Zambia and Zimbabwe, suggests that population increases in Mozambique can be expected to rise above three percent per year (Section II.B4) once reintegration occurs. Thus, the Mission may find it appropriate to assist the GRM in addressing the need to formulate and implement appropriate policies to decrease the expected population increase.

D5. Land Availability and Land Tenure

USAID/Mozambique has funded since 1991 a very important series of land tenure studies carried out by the Land Tenure Center of the University of Wisconsin in close cooperation with MOA's AD Hoc Land Commission. Initiated in 1991, emphasis to date has been on the divestiture of state farms.

Though none of these studies deal in much detail with land availability, reports reviewed by the PEA team tend to overstate the availability of land for reintegration, rehabilitation, and development purposes. There are a number of reasons for this conclusion. First, research by the Ad Hoc Land Commission and the Land Tenure Center suggest that smallholders are not receiving a significant portion of state farms and adjacent lands during the divestiture process.

While these lands amount to less than 10 percent of cultivable land, they include a much greater proportion of the best lands in terms of soil quality and market access. Furthermore, the following LTC quote suggests that existing policies also tend to place smallholders at a disadvantage in acquiring and developing other lands:

"Thus the fiscal incentives unduly favor the international entrepreneur seeking land but bringing his own capital; the tenure and credit restrictions meanwhile impede the local citizen who already has access to land, but no finance."

Second, while 34.1 million hectares of arable land exist, or approximately 10-15 hectares per family, initially the majority of returnees can be expected to utilize former systems of bush fallow cultivation. In part this is because such extensive systems of production yield higher returns per unit of labor, which is a scarce input during certain stages of cultivation (bush clearing and weeding in particular). It also will take time to test and extend more intensive systems of production which are sustainable.

Reports reviewed do not discuss land for fallowing. While recent alluvia along the rivers and streams can support perennial cultivation (indeed double cropping is usually possible after the annual flood) and other soils can support semi-permanent cultivation (fallow periods alternated with periods of cultivation of equal length), detailed studies in Zambia and Zimbabwe and anecdotal data from Mozambique indicate that most lands require longer periods of fallow than cultivation. Failure to provide the necessary fallow period can lead to decreased fertility, increased weeds and pests, and lower yields, lowering living standards where other land is not available.

Third, in assuming that a family of five can meet its needs from a little more than one hectare, the World Bank is relying on relatively high FAO estimates on yields per hectare (one ton for cereal crops plus 200 kg of food legumes). While PVOs are reporting even higher yields per hectare with improved seed, and Tsonga cultivators using ox traction achieve such yields from more fertile Limpopo fields, the FAO figures are high in comparison to other Central African countries where average yields are closer to half a ton. Certainly the Food and Agriculture Organization (FAO) figures (which relate to the early independence years) should be carefully checked. Furthermore, decreased flooding in the major rivers since the early 1980s due to drought has reduced the extent and fertility of Mozambique's floodplains, including the densely populated Zambezi corridor where flooding has been further reduced by the construction of the Kariba and Cahora Bassa dams.

Fourth, much of the 34.1 million hectares of arable land is isolated geographically and, in terms of marketing networks, from markets. This arable land also has tended to be sparsely settled in the past; that is, prior to independence. Such lands are apt to be problem prone, not just in terms of access but also potable water, tsetse infestation, etc.

On the importance of land tenure, LTC's Myers sums up the situation in the following quote: "any farmer who is unsure of his or her land rights is unlikely to make investments to improve productivity" (September 1992:7). In that event, such households will continue to practice a bush fallow system of agriculture which, as population grows, will increase overuse of land, forest (causing deforestation as poverty-stricken farmers make charcoal a cash crop) and savanna products. As recommended by the LTC, tenure that is considered secure, not just by smallholders but by the private sector in general, requires the central government to clarify land policy through the creation "of laws and policies that will lead to security of land tenure" (ibid: 6).

The Land Tenure Center also recommends devolution of authority to resolve conflicts to popularly-elected local authorities in the form of land distribution and land dispute boards (op.cit). Such boards are recommended instead of using traditional authorities such as sublineage heads, ritual leaders (where they are considered owners of the land), *regulos*, etc., because LTC assumes that such institutionalized positions have been altered during the years of war. That is a reasonable assumption since micro-studies throughout central and southern Africa emphasize change in addition to continuity as components in what are, unquestionably, dynamic systems.

However, LTC and MOA/MSU/UA data also indicate that land is still frequently sought through traditional authorities. The problem is how to ensure that they are up to the task and to link them to government policies and laws. Land boards may be one way to go, provided they actually reflect community interests as opposed to those of the local elite and officials (a situation which is currently a major problem in Botswana where local land boards are allocating the better communal lands among a relatively small number of influential men). There is also the problem of TPAs (and perhaps land boards) favoring men over women in matters of land tenure and inheritance. Galli (1992), for example, cites cases where women's associations are fearful of losing access to land that they have prepared and cultivated in Green Zones.

D6. PVOs, Land Use and Marketing

D6a. Introduction

Within Mozambique, as elsewhere in central and southern Africa, rural households practice diversified production systems. Diversity (whether of crops, fields or other resources) is a coping strategy of risk aversion in problem-prone environments. While the components of such systems vary from area to area (RSA wage labor, for example, being important along the lower Limpopo), and through time in any one area according to climatic and historic variables, they include crop agriculture, livestock management (especially important in the 25 percent of Mozambique that is tsetse free), small-scale commercial activities including nonfarm production and trading, and collection of forest and savanna products. Such systems are not only designed to improve food security but also to provide products for sale and exchange. They also tend to utilize all members of the household, raising social status within the family through their ability to assist with family support. In addressing such systems, development strategies need address both farm and nonfarm activities as well as the marketing of surplus production.

D6b. Private Voluntary Organizations

USAID's PVO Support Project is into the third year of its six year program. The Mission's July 6, 1993 submission for a project amendment stated that "the PVO Support Project has demonstrated itself to be the Mission's most visible and effective means of delivering humanitarian and development assistance within the present-day political and economic environment in Mozambique...The activities for which the amended project provides resources are all firmly rooted in the notion that they will contribute substantially to creating the base for longer-term human and physical development."

The PEA team visited in the field the three PVOs most involved in an integrated approach to reintegration, rehabilitation, and development. These are World Vision Relief and Development, Food for the Hungry International, and Save the Children Federation/USA. All three agencies have already initiated development as well as reintegration and rehabilitation activities. While continuing to distribute agpaks and tools, World Vision is testing (and in some instances multiplying) varieties of the major food crops while building up its extension capacity to work with returnees. Like World Vision, Food for the Hungry also has demonstration plots and plans to place increasing emphasis on returnee agriculture during coming years, including small-scale animal husbandry and small-scale oil seed processing. Staff in both organizations emphasized that henceforth their primary interest is in development activities which increasingly focus on returnees.

Though more involved in nutrition centers for children and other family-oriented public health activities, Save The Children Federation also plans to place increasing emphasis on agricultural activities among returnees during 1994. Operating out of Xai-Xai, their staff includes one agricultural officer and six extension workers on secondment from the MOA. In addition, they have initiated a program of community formation whereby a population of approximately 15,000 have elected a commission to provide seed, plows, plow parts and

other tools, and milling services through a recently constructed *Casa Agraria*. To assist them in preparing a three year follow-on program, a consulting agronomist is expected to have arrived by August, 1993.

D6c. Marketing

Marketing studies have been produced by a joint MOA/MSU/UA research team since 1990. Under the USAID funded LTC/Ohio State University/SARSA series of studies on Peri-urban Economic Growth in Africa, the Institute for Development Anthropology and the Institute for International Relations have surveyed food and vegetable traders in the peri-urban area of Maputo. Since the starting point of PVO agricultural strategies emphasizes the introduction of improved seed into existing household production systems, it is important that they be kept up to date on the implications of the land use studies as they relate to local techniques, labor, and other constraints and aspirations.

While providing valuable data, insights and recommendation for reintegration, rehabilitation and development purposes, the results of marketing studies have yet to be incorporated within the activities of USAID-assisted PVO activities.

D7. Democratic Initiatives Project

Though USAID's Democratic Initiatives Project is primarily a "core" activity, emphasis on elections come under the Transition Program. Democratic Initiatives includes three major components: traditional political authorities, the legal sector, and civil society. Though targeted in the short term at elections, all three components are relevant to reintegration, rehabilitation, and development. USAID provided some technical assistance in preparation for the April, 1993 five-day meeting on TPAs, the first time the role of traditional authorities in nation building had been openly discussed. Research referred to in that meeting will be furthered by USAID and will also involve the Institute for International Relations.

In conjunction with the World Bank, a major task of USAID's legal sector initiative is to provide further education for the Ministry of Justice's district-level judges and paralegal personnel at a training facility in Maputo. These judges and paralegal personnel, along with the district administrators and their staff, provide a possible linkage between TPAs and government in relationship to land tenurial security and other issues critical for environmentally sustainable development.

The content of USAID's civil society component is still under discussion, although support for local NGOs will be emphasized. Numbering over 100, these indigenous NGOs need initial institution building assistance. Cooperating with USAID-assisted PVOs, they could over the longer term collaborate in the type of community institution building currently emphasized by Save the Children Federation in Julius Nyerere Village in Gaza Province.

D8. Short-term and Medium- and Longer-term Impacts of Reintegration, Rehabilitation, and Development

Though the Mission's reintegration, rehabilitation, and development activities, and the policies behind them, have had few environmental impacts to date, the future design, coordination, implementation, monitoring and evaluation will determine the extent to which long-run impacts will be positive or negative. The current USAID/M program contains many of the activities need to assist the emergence of viable communities and a sustainable economy. It is necessary to properly integrate, coordinate, monitor, and continually reassess these activities, no easy task when some of the more important measures are being undertaken by nine or more USAID-assisted PVOs. If adverse environmental impacts are to be avoided, it is also necessary, in the PEA team's opinion, for the Mission and USAID-assisted PVOs to include institution building (Section III, B1) and marketing (Section II, D6c and D8) activities in their portfolio. Otherwise, the prolonged continuation of current extensive systems of agricultural production will accelerate deforestation and land degradation throughout Mozambique. Furthermore, in concert with GRM, UNOHAC, and other donors, it is necessary to plan and implement a more coordinated rural development policy if overpopulation, land degradation, and pollution are to be brought under control in the Beira and Limpopo Corridors and urban and peri-urban areas.

The purpose of the paragraphs that follow is to alert USAID to the longer-term environmental, socioeconomic and cultural implications of current activities, and to suggest ways in which some of the more obvious risks can be avoided. Rather than require separate EAs, the approach taken here is to integrate environmental considerations into programming from the very start and to recommend a system of environmental monitoring that can easily be carried out by PVOs, Eduardo Mondlane University, specialized firms in the emergent Mozambican private sector, and other appropriate institutions. Using rapid survey techniques, the purpose of such monitoring is to identify potentially adverse impacts as they arise.

At the community level, the approach is to integrate environmentally sustainable activities into local production systems rather than to risk overloading local institutions with separate natural resource management committees or other institutions. Rather, land use planning at the community level should set aside areas for different uses (including reserves for provision of forest and savanna products) as is currently being discussed under the auspices of MOA's Ad Hoc Land Commission.

The following topics are discussed next: coordination; dependency; facilitated spontaneous versus sponsored land settlement; and intensifying spontaneous settlement. Monitoring and evaluation will be dealt with in Section V. Aside from some cross-referencing, this section of the report omits impacts considered in connection with other activities. This should in no way be interpreted as de-emphasizing those activities. Road rehabilitation and maintenance, for example, are crucial to re-open and extend access and to provide two-way communication and trade. Water supplies, frequently inadequate in settlement areas throughout Africa's savanna woodlands, and probably a major reason why

potentially arable lands tend to be unoccupied, are also a crucial component of any development strategy.

D8a. Coordination

USAID/M has already set the precedent of meeting with assisted PVOs as a group in a "day-long session to jointly define the parameters of possible PVO Support Project-funded assistance" (USAID, 1993). In terms of environmentally sustainable development, such sessions should also be used to familiarize PVOs with the implications of AID-funded and other research as it related to the reintegration, rehabilitation, and development process. At the same time, USAID-financed researchers should also attend such sessions to become more familiar with the needs, capacities and constraints of PVOs. Topics for discussion would include, for example, security of tenure issues, traditional political authorities, land use and other productive activities (both farm and nonfarm) and marketing.

D8b. Facilitated Spontaneous Settlement

In regard to government sponsored settlement/resettlement schemes versus facilitated spontaneous settlement in areas of people's own choosing, USAID's emphasis on the latter will have more positive environmental (not to mention economic and institutional) impacts. In this regard, USAID/Mozambique needs to be continually alert to the possibility that government and donors from time to time will be tempted to revert to a more directed form of resettlement. Various resettlement plans already have been discussed and proposed by the government and supported by donors like UNHCR, UNICEF, and Italian Cooperation. Indeed, UNICEF and Italian Cooperation have already implemented programs of directed settlement in Manica Province. The success rate of such efforts in Africa is poor, while that of villagization schemes is even worse.

Under Mozambican conditions, however, there may be a few exceptions to a blanket exclusion of such schemes. One example relates to smallholders with secure land rights settled as outgrowers around joint ventures cultivating such crops as cotton and sugar cane. Another relates to demobilization of soldiers: some of those who do not wish to return to their areas of origin might wish more direct assistance, including selection as outgrowers. In both examples, inclusion should be at the request of the individual or household.

D8c. Intensifying Production Activities of Spontaneous Settlers

Facilitated spontaneous settlement alone will not ensure sustainable development. The most detailed recent study of both sponsored and spontaneous settlement in Africa is the UNDP-funded, World Bank-executed Land Settlement Review in the onchocerciasis (river blindness) control zone of eleven West African countries. The Final Report (McMillan, Painter and Scudder, 1992) deals in detail with the dilemma posed by the type of extensive cultivation methods practiced by most Mozambican farming households. "The extensive land use system works as long as land is plentiful; it breaks down when land resources become scarcer. By the time a crisis occurs, levels of social conflict may be so high as to discourage

the concerted community and household action needed for developing more sustainable land use systems" (page 70).

A major problem has been the difficulty that research stations have had in designing sustainable farming, and broader production, systems for African savanna woodland habitats that increase productivity of both land and water. Currently USAID-funded PVOs are trying to introduce appropriate improved varieties and other technical assistance into existing farming systems. That approach makes sense provided what is being extended is really appropriate and is targeted at both female and male activities. Though PVOs visited by the PEA team are aware of the need for at least an equal number of female extensionists, ratios continue to favor males in spite of the fact that women are the principal farmers.

D8d. Marketing (including credit)

Raising the productivity of existing household production systems is not sufficient, however, if producer prices are unfavorable, if farmers cannot get their produce to market, and if rural stores are poorly stocked. While USAID is addressing pricing issues through its policy dialogue, marketing issues in areas where USAID-assisted PVOs are working appear to be neglected. The PEA team understands, for example, that World Vision is not directing attention to marketing issues. It is unreasonable to expect rural traders to develop or, in rarer cases, recover transportation means in the same fashion that urban transporters have. Nor can the latter be expected to fill the gap. Rural entrepreneurs make their profit from buying by and selling to local households. If they are to recommence buying and bulking produce, they will need some form of assistance in acquiring transport.

If rural producers at the household level are unable to raise their living standards by intensifying land use and other production activities in an environmentally sustainable fashion, they will have no choice but to over-utilize their natural resource base by, for example, shortening necessary fallow periods and selling charcoal, firewood, and other natural products.

SECTION III INSTITUTIONAL ANALYSIS

A. Introduction

Throughout this PEA, sustainability has been defined in terms of a synergism between environmental, economic, and institutional components. USAID, other donors and the GRM are currently occupied with emergency activities which preclude attention to a well thought out approach to institution building at community, locality, district, provincial and national levels.

Individual PVCs, on their own initiative, are looking to the future and attempting to cope with institutional inadequacies in an ad hoc fashion. Save The Children Federation, for example, has on secondment from the Ministry of Agriculture one agricultural officer and six extensionists. One of the weaker ministries, MOA has some good personnel but little capability to get them into the field. Furthermore they are mostly men in a sector where the main clientele are women. In taking seven such people on secondment, Save the Children is involved in institution building by providing incentives, transportation, and local level experience not just in the field of agriculture but in connection with SCF's more integrated program. Like WVRD, SCF also recognizes the importance of recruiting and training female extensionists.

Though instructive, such ad hoc efforts at institution building are nowhere near sufficient for the medium to longer term. This is especially the case with the Ministry of Agriculture and the Faculty of Agriculture at Eduardo Mondlane University where the emphasis continues to be on state farms, large to medium-scale irrigation, and cooperatives simply because past government policies and training emphasized that type of agriculture. USAID correctly has rejected such approaches. However, if the current government emphasis on the smallholder private sector is to be implemented (and at the moment it is not being effectively implemented), training in both research and extension at all levels is necessary.

B. Public Sector

B1. Overview

At the current stage of its transition to peace, the GRM is understandably weak with regard to institutional capacity to work effectively with USAID in the implementation of the Transition Program. Indeed, because of USAID and other donor requirements, there is a grave danger of overloading GRM institutions with assessment, monitoring, and evaluation responsibilities. That is one reason why throughout this PEA we have recommended integrating environmental assessment into the development process, with special emphasis on

the smallholder private sector (which combines the government's family and small-scale private sectors).

B2. Present Capacity of Mozambique to Address Environmental Concerns

Mozambique's institutional capacity in conservation and natural resource management needs to be improved. There are very few GRM staff trained in natural resources management, and environmental awareness in the country is low (Munslow, 1992). However, rural populations have already incorporated environmental concerns into their traditional practices. For example, there are instances where villages protect forest resources in traditional sacred groves (Hutton, 1993, personal communication). It will be important for Mozambique's human resources and institutional capacity to be improved in order for it to address the complex multi-sector problems and opportunities ahead.

B2a. National Level Coordination

Legislation exists in Mozambique which requires development planners to consider environmental concerns associated with development activities. However, detailed implementation guidelines are not available to translate environmental concerns into development activities. In order to establish national environmental standards for economic development, the National Environmental Commission (NEC) was established in 1992. The purpose of the NEC is to coordinate with all appropriate Ministries and institutions to discuss environmental issues, establish environmental guidelines and to maintain information on national environmental activities.

One of the tasks of the NEC is to develop a National Environmental Management Program (NEMP). The NEMP is intended to provide a framework for the integration of environmental concerns into Mozambique's overall economic development program. The GRM is planning to complete its strategy in March, 1994.

Within the context of a NEMP process, Mozambique is identifying a comprehensive environmental policy to address environmental problems and to provide specific plans of action. Some of the NEMP issues which are being addressed include:

- Identifying the country's resource base and its current conditions
- Identifying and prioritizing major causes of environmental degradation
- Defining necessary sector policy reforms
- Providing decision makers with the criteria for evaluating investment projects according to sustainable management practices
- Establish environmental guidelines for Ministries

B2b. Sector Specific Capability

B2b1. Agriculture

Agriculture is and will continue to be the backbone of the Mozambican economy and culture. If local systems of agriculture are to be sustainable as population increases, they must be stabilized and intensified. A visit to Inhaca Island illustrates a situation where an increasing population is currently beginning to extend its bush fallow system of agriculture into the reserve, posing grave danger to the fragile dunes stabilized over a period of centuries by the trees now being cut to provide a very meager subsistence production. Without adequate agricultural policies, extension and training, this situation will be repeated again and again in the years to come. A large body of sustainable technology is available from international research centers and other development organizations which could be readily adapted for extension in Mozambique. More sophisticated intermediate agricultural research should be a longer term objective.

The Ministry of Agriculture (MOA) appears, at least from the standpoint of USAID-assisted programs, to be one of the weaker ministries. Both the MOA and Eduardo Mondlane University suffer from years of neglect of smallholder agriculture in favor of state farms, cooperatives, and collectives. Both need assistance in the form of human and financial resources and in reformulation of policy to meet the needs of the smallholder sector in agriculture. Due attention must be given to community-based self help projects.

B2b2. Rural Roads Development

The GRM is committed to the development of a normalized road rehabilitation and maintenance system, through its post-war recovery program, the implementation of the UN Humanitarian Assistance Coordination program (UNOHAC), and the World Bank Roads and Coastal Shipping project (ROCS).

The National Directorate of Roads and Bridges (DNEP) falls under the jurisdiction of the Ministry of Construction and Water (MCA). DNEP is directly responsible for the construction and maintenance of the national road network. Its current staff complement is 127 people with varying grades and qualifications. The staff level approved by the MCA is 369 and is obviously lower due to both low funding and lack of suitably qualified personnel. It was recently organized into five departments. The Maintenance department conducts studies on the state of the national road network. It is, however, understaffed and underfunded. A recent study by the Office of the Controller, USAID/Mozambique (June 1993), concluded that DNEP is not capable of independently handling contracting activities and should, with the assistance of an A&E firm, contract for the construction activities planned under the RAA.

B2b3. Water Resources Quality Assessment and Education

The Ministry of Health and Ministry of Construction and Water have some capability to address environmental concerns associated with water resources. For example, the

Ministry of Health was the first Ministry to develop environmental standards in Mozambique. The primary objective of the Ministry of Health's water quality control program is to analyze water and food quality and to provide information and training to communities and local municipalities.

The Ministry of Health has reported that it is capable of testing water well samples from various locations around the country. It has ten field stations which collect information on water quality throughout the country. Drinking water quality tests have been carried out in sixty areas. The National Laboratory under the Ministry of Health apparently has the capability to conduct laboratory tests which are necessary to determine if water meets safety standards.

The Ministry of Health provides information regarding methods for the improvement of drinking water at the community level through proper bore hole establishment and sanitation procedures. Training courses are conducted by the Ministry of Health to train teachers in water and food sanitation. It is also advising international donors regarding the most effective locations for health programs. For example, the Ministry of Health is working with UNICEF in this regard.

Manuals are produced by the Ministry of Health which provide information to local authorities. Land filtration, boiling water and chlorine water treatment are some of the methods recommended for the improvement of water quality in the rural areas. It is interested in developing water safety educational tools which are designed to reach the rural communities.

The Ministry of Health has established acceptable water quality standards and associated legislation based on the World Health Organization's recommendations. In some cases, these standards are set by local provincial officials.

B2b4. Water and Sanitation

The government has developed a plan for the water sector entitled "Emergency Plan of Action—Drought 1992." The plan was developed through the National Rural Water Supply Program (PRONAR) and the National Directorate of Water (DNA), with technical assistance support from the United Nations International Children's Emergency Fund (UNICEF). The plan aims to address the short-term immediate problems of the water supply sector. USAID, Sweden, and Holland are providing support for the activity.

PRONAR is a GRM agency whose avowed role is to stimulate coordination between donors and the GRM but especially between the provincial governments. The provincial governments define their priority areas and the necessary interventions, then the PVOs work with *Agua Rural* (i.e., PRONAR) personnel to implement the project.

PRONAR wants to have uniform quality of pumps and water services country-wide. They are requesting that PVOs standardize water pumps and use the locally manufactured AFRIDEV village level operated and maintained (VLOM) pump. They want the PVOs to

work with them on all water and sanitation projects. About 50 percent of PRONAR project funds come from UNICEF. They prefer that donors channel their contributions through UNICEF rather than PVOs. USAID was the largest single donor to UNICEF last year with \$2 million. PRONAR prefers UNICEF to PVOs because UNICEF's indirect costs are less than 20 percent of donations whereas PVO's generally run 40-60 percent. Also UNICEF works closely with the GRM on a national level and has a long time horizon while PVOs are generally local and temporary.

For those cases where PRONAR is coordinating the construction of water storage tanks (WST) and/or laying pipe to transfer water from lakes or rivers (such as in Sofala) they try to avoid chemical treatment of water by using slow sand filtration. They will, however, use some chlorine when it is needed. According to the Ministry of Health (MOH), faecal-borne intestinal diseases are the single greatest cause of infant (141/1000) and child mortality (280/1000) in Mozambique.

The total number of PRONAR employees is 890, 25 of whom are engineers. These are spread across 10 provinces. There are also 3,964 non civil servant sector personnel in the parastatal water drilling company (GEOMOC), *Estaleiro Provincial Agua Rural* (EPAR) which is a GRM agency with no money allocated to it (i.e., they must charge for their services like a public utility), and 16 water companies.

The MOH has developed a water quality program. Its primary objective is to analyze water and food quality and to provide information and training to communities and local municipalities. The MOH was the first Ministry in Mozambique to develop environmental standards. It has established acceptable water quality standards and associated legislation based on the World Health Organization's recommendations. The Ministry has two primary approaches to improving Mozambique's water and food resources: (a) institutional development of local municipalities through extension; and (b) community development through a facilitator at the local level.

The Ministry has ten field stations which collect information on water quality throughout the country. Drinking water quality tests have been carried out in sixty areas. The MOH National Laboratory has the capability to conduct laboratory tests which are necessary to determine if water meets safety standards. The laboratory also conducts experiments to determine the extent of food contamination which originates from the irrigation of vegetables. Tests are conducted on water samples from various locations around the country. Food contamination from pesticide residues and lead poisoning are also tested by the laboratory.

PRONAR's community sanitation programs were and are part of MOH programs. But because of other priorities and budget constraints on MOH it fell behind PRONAR in the area of water and sanitation. MOH is trying to revitalize its community facilitators. MOH and PRONAR cooperate completely on the production of water related pamphlets and community development. PRONAR uses MOH printers, facilities and staff. Because PRONAR has more of a focused national presence, it is felt that PRONAR should take over

MOH responsibilities in water and sanitation while MOH concentrates on its analytical laboratory capabilities for water safety.

PRONAR firmly believes that water and sanitation should be linked. At independence in 1975 Sanitation was a large department in the Ministry of Health. Since then it has declined in budget and programs. MOH and PRONAR appear to be duplicating efforts in water and sanitation. PRONAR is currently studying, with the National Directorate of Water, where and how to institutionalize a rural sanitation program. It has three functioning pilot projects in the provinces of Cabo Delgado, Tete, and Sofala. Their first concern is how to finance it as there is no way to recover costs for a rural sanitation program. Thus PRONAR sees its role as designing and explaining sanitation with their well and AFRIDEV pump program, and directing the local communities to do it themselves. This is valid education and extension which should be part of PRONAR's water program.

B2b5. Forest Resources

The forestry sector is administered by the National Directorate for Forestry and Wildlife within the Ministry of Agriculture. The Forestry Department was established in 1967 to protect and regenerate forest resources. It is being supported/assisted by the United Nations Food and Agriculture Organization.

The Forestry Department is primarily focused on the problem of providing fuelwood to communities on a sustainable basis. In order to obtain information for the management of Mozambique's forest resources, the GRM has established a Biomass Energy Unit in the National Directorate of Forestry and Wildlife. The unit is responsible for the formulation of policy related to the use of biomass as a source of energy at the household, industrial and commercial levels.

Landsat imagery was purchased in 1992 through the World Bank Urban Household Energy project. The classification of forest types in Mozambique is now completed. Biomass surveys have also been completed for the Maputo and Gaza provinces. The inventories provide information regarding who is cutting the forests and the specific species which are being used.

The forest and biomass inventories will be used to develop a fuelwood management strategy for Mozambique. One of the recommendations from the strategy will likely be to work cooperatively with local communities regarding the use of forest resources. It is anticipated that the GRM will also consider alternative sources of energy such as hydroelectric power.

B2b6. Reserves and Conservation Areas

Wildlife management is administered by the National Directorate for Forestry and Wildlife within the Ministry of Agriculture. The Wildlife Department was established to manage Mozambique's wildlife and protected areas in the field. Multiple use areas are

managed by EMOFAUNA, a parastatal organization under the National Directorate For Forests and Wildlife.

All forms of protected area management have collapsed as a result of the war. In response to the dramatic decrease in the wildlife population, particularly elephants, rhino, and cheetahs, national park and game reserves were established in 1960 to control poaching (Dejene and Olivares, 1991).

Following independence, there was an exodus of the wildlife department's technical experts and a weakening of the ranger corps. Wildlife management in Mozambique deteriorated over the course of the civil war. Facilities have been destroyed and field staff were unable to conduct their work (NORAD, 1990). With Mozambique's current stability, it is now possible to initiate protected area management activities.

The Wildlife Department has been limited in its ability to fulfill its responsibilities due to limited amounts of funding, information, and technical capability. There is currently minimal information on the status of wildlife and protected areas in Mozambique. The Wildlife Department has received a limited amount of support compared to the forestry sector. For example, of the sixteen programs supporting the National Directorate of Forestry and Wildlife, only one program has been directly related to wildlife (Wildlife Department, 1992).

The central office of the Wildlife Department consists of six wildlife officers (who have or are receiving training) and three veterinarians. The field staff consists of 50 anti-poaching guards, who received paramilitary training in South Africa, and fewer than 100 other field staff. The Wildlife Department estimates that it requires 2,000 staff to manage the country's 87,000 square kilometers of protected areas.

The anticipated return of refugees and displaced people (up to one third of the population) back to Mozambique's rural areas could result in increased pressure on protected areas and associated wildlife. Private entrepreneurs who are interested in commercial opportunities associated with the protected areas (e.g., tourism, hunting, wildlife trade) could also place pressure on these areas. In the absence of independent assessments by the Wildlife Department, there is a potential for undervaluing and mismanaging the protected area resources.

C. Private Sector

MOA/MSU/UA, LTC and other reports all emphasize that small-scale family farmers have incorporated themselves within the market economy, selling crop surpluses and other goods and services when opportunity exists. For this reason the PEA team has combined what GRM refers to as the family sector and the small-scale commercial sector. Such incorporation also emphasizes that the largest component of the private sector is the smallholder household.

Institutionally, smallholders are at a disadvantage in comparison to other private sector entities because of a lack of organization and empowerment. As a result, their importance as producers has not been reflected, for example, in the divestiture of state lands. Though various farmers' associations exist, they are newly formed and weak, which is one reason why the PEA team recommends that USAID prioritize institution building at local levels.

While rural traders and other off-farm rural entrepreneurs are also disadvantaged in comparison to urban entrepreneurs, their principal constraint is not so much institutional as lack of capital; hence the need for credit or other mechanisms for capital accumulation for investment.

Since cooperatives, larger Mozambican and expatriate farmers, and international corporations/joint ventures have been in competition with smallholders in regard to the divestiture of state lands, better planning is needed to ensure that different private sector participants also complement each other. Joint ventures and large-scale agribusinesses have benefited in Zambia (sugar) and Zimbabwe (cotton) by incorporating smallholders as outgrowers who can provide both the bulk of produce for processing and a pool of labor. With adequate legislation and legal systems, there will be opportunities in the years ahead for incorporating such outgrowers into large-scale agribusiness in Mozambique.

D. Private Voluntary Organizations

The PEA team visited and/or reviewed reports from several USAID-assisted PVOs and in all cases found that they were aware of environmental concerns; they were also sensitive to economic, social and cultural issues. They received adequate guidance from USAID project and environmental officers and from guidelines as set out in *Environmental Guidelines for PVO/NGO Field Use*, WASH guidelines, and other documents such as those dealing with environmental design.

USAID-assisted PVOs have the motivation, and in their areas of competence, the expertise to implement the transition and follow-up programs. For example, starting in 1986/87, WVRD distributed agpaks to 123,000 families for the 1992/93 season. Their target for 1993/94 is 200,000 families. In their area of operation in Gaza Province, Save the Children Federation has done a commendable job in establishing nutrition centers for children.

What such PVOs lack are the funds to recruit the necessary personnel and to manage the type of integrated operation that they need to implement. In regard to emergency activities, USAID/M summarizes PVO capabilities to implement food programs in their 2 November, 1992 cable to Washington:

"The ability of the various implementing PVOs to provide adequate management and monitoring of the relief commodities, and to carry out the increased distributions required as a result of the drought will be contingent upon their ability to be able to obtain funding for (A) commodity internal

transport, handling and storage expenses, and (B) management, monitoring and operational/administrative costs."

Since their expertise and agendas differ, PVOs also need guidance. This is especially the case as they move from relief to development since, generally speaking, development activities represent a relatively new area of concern as opposed to the provision of emergency relief. Additional funding has already been requested by several USAID-assisted PVOs as they move into reintegration, rehabilitation and development activities.

Current ad hoc attempts by PVOs at institution building should be more carefully coordinated so as to improve government sector capabilities in such areas as agriculture, water and sanitation, rural roads etc. Such PVO-initiated institution building also should not be restricted to government sector agencies, however. PVO expertise should be mobilized for community-based self help projects. As suggested by Rosemary Galli in a June 1992 memo, USAID-assisted PVOs should also be encouraged to work with local NGOs. In regard to agriculture she uses as examples womens' associations in green belt areas in Nampula and around Maputo which are producing vegetables for peri-urban and urban markets. With further training, some of those women could also be recruited as female extension workers.

E. USAID/Mozambique

As stated in D, above, USAID is providing adequate guidance to PVOs regarding environmental concerns. Further, a genuine concern for and sensitivity to the environment was evident among Mission personnel. The Mission is fully capable of sorting out and applying federal and agency requirements, at least with regard to current emergency, transition, and humanitarian activities.

F. Other Donors

Many of the activities of other donors that are related to USAID's Transition Program are briefly summarized in UNOHAC's Consolidated Humanitarian Assistance Programme for 1993-94. UNOHAC grew out of the office of the United Nations Special Coordinator for Emergency Relief Operations (UNSCERO). Though reporting to the UN Department for Humanitarian Affairs in Geneva and New York, UNOHAC staff have been drawn from a number of UN and bilateral agencies. These staff are playing a vitally important role in attempting not just to coordinate GRM and donor reconstruction efforts, but also to help with prioritization of activities and to provide assistance to the GRM in regard to data analysis. Granted the complexity of the reconstruction effort, and the tendency of donors to push their own agendas, such activities are essential. They should continue after UNOHAC is phased out following the elections.

None of these deal directly with environmental issues, including the natural resource base. There are several reasons for this, the main one being the urgency of the entire assistance operation. Another reason is that donors, other than USAID, apparently do not see the assistance program as an environmental issue. In their February 1993 staff appraisal

report, *Mozambique: Rural Rehabilitation Project*, the World Bank apparently accepted the conclusion of a GRM report that "the project will have no negative impact on the environment." (page 47)

How the reintegration and rehabilitation operation evolves, however, will have major impacts on its sustainability; this is why the PEA team has attempted to integrate environmental issues into USAID/Mozambique's activities rather than separate them into time, personnel, and fund-consuming environmental assessments.

The UNOHAC Consolidated Humanitarian Assistance Programme for 1993-94 deals with emergency and rehabilitation needs comprising 48 activities, each defining a target population, concerned agencies, time frame, objective, funds available and committed, and unmet needs. Though individual donors have objected to various aspects of this program by withholding funds from some of the activities, it is a precedent-setting attempt to provide essential coordination. While the PEA team only met with three of the NGOs (World Vision, Food for the Hungry, and Save the Children) that receive a major share of their funding from USAID, personnel in both were supportive of the role that UNOHAC has been attempting to play since early 1993.

Looking beyond the emergency and rehabilitation phase, the World Bank has outlined a program for dealing with the transition to sustainable growth (June 10, 1993). Appraisals of a number of specific projects dealing, for example, with rural rehabilitation and with agriculture, have been completed. Active in the establishment of donor - government working groups relating to key sectors, the Bank is also attempting to play the type of coordinating role for development activities that UNOHAC is currently playing in regard to emergency and rehabilitation.

Donor activities supporting reconstruction in Mozambique are thought to be highly fragmented, such that they may risk not being mutually positively reinforcing. The World Bank has outlined a program for dealing with the transition to sustainable growth (Section III.B), which suggests it is taking the lead in assuming a coordinating role among donors, similar to the role UNOHAC has taken in dealing with emergency and rehabilitation needs. This relates to the role the NEMP/NEAP would play in developing the framework for integrated environmentally-sound economic development. Complementary activities are the Agricultural Sector Review initiated in the Spring of 1993, and the work of the Agricultural Environmental Consultative Group initiated by the World Bank.

The Mission should continue its involvement in these initiatives and seek opportunities to assume appropriate leadership. One specific area in which this might occur is in promoting the development of a deliberate approach to institution building at the community, locality, provincial district and national levels (see Section VIII Summary). Another need pointed out in the PEA is that of carefully monitoring where people go because of its direct relevance to prioritizing components of reconstruction planning (Section VI.C1)

**SECTION IV
ISSUES AND MITIGATING ACTIONS**

A. Potential Short-term Impacts of Transition Program Activities

There are no significant environmental issues associated with the transition program in the short-term.

B. Potential Medium and Longer-term Impacts of Transition Program Activities

B1. Dependency Syndrome

The transition program agricultural activities could produce a "dependency syndrome" among those people being assisted by the program; that is, the benefits from the Missions program could provide a disincentive for displaced people to return to their place of origin.

Potential environmental impact. The team observed that a large percentage of people returning to Mozambique following the signing of the peace accord are returning directly to their place of origin. However, some displaced people located in the Beira and Limpopo corridors have decided to remain there permanently. The increased concentration of people living in the corridors over a long period of time could increase deforestation and reduce agricultural productivity in the area.

Suggested mitigation measures. The Mission should implement a consistent policy regarding the provision of free food, agricultural packages, tools and survival packs. It should consider the influence of this activity on producer prices. The Mission should also establish a program which monitors movements and their impact on the environment.

B2. Road Improvement

Road improvement activities could reduce deforestation by facilitating the movement of people from densely populated assembly areas to their original lands. However, road improvement activities could also increase the movement of rural populations into areas which were previously less accessible.

Potential environmental impact. The increase in the movement of rural populations into areas which were previously less accessible could potentially increase deforestation and negatively impact protected areas. This could result from an expansion of agricultural activities, increased fuelwood consumption, and wildlife poaching.

Suggested Mitigation Measures. Policies should be established which provide people returning to their land with incentives to manage their land sustainably (e.g., secure

land tenure). Also, as stated above, the movement and activities of rural populations should be monitored to determine their distribution and activities.

B3. Agricultural Activities

The transition program agricultural activities are designed primarily to provide assembly-area farmers with seeds and other basic inputs. It will also provide farmers returning to their land with agricultural packages which consist of farming tools and supplies (e.g., hoes, machetes, watering buckets).

Potential environmental impact. The transition program agricultural activities could have either positive or negative impacts on deforestation and protected areas in the long-term. If not managed sustainably, an increase in agricultural productivity could increase deforestation. However, the transition program agricultural activities could reduce deforestation by increasing farmer income.

Suggested mitigation measures. Farmer activities should be monitored and policies (and markets) established which provide people returning to their land with incentives to manage their land sustainably. There may be opportunities for USAID and the NGOs to link their agricultural extension to the sustainable management of forest resources and protected areas.

B4. Wildlife Management

According to the Ministry of Agriculture (1991), Mozambique's rural population has had insufficient involvement in wildlife management and access to wildlife related benefits.

Potential environmental impact. The result of poor relations between rural populations and protected area managers is often an increase in habitat destruction and wildlife poaching. These activities could also have a negative impact on threatened and endangered wildlife which inhabit protected areas.

Suggested mitigation measures. Alternatives must be found which provide Mozambique's rural populations with economic and policy incentives to sustainably manage their protected areas.

B5. Coordination of Activities

Uncoordinated activities among the donors, NGOs, and the government could result in an ineffective resettlement program.

Potential environmental impact. Uncoordinated activities could have far-reaching effects on the environment and international organizations. For example, contradicting policies and activities in the agricultural sector could prevent the use of agricultural technologies in a sustainable manner. Increased deforestation and reduced agricultural production could result.

Suggested mitigation measures. The Mission is already meeting with NGOs to define objectives for assistance activities. These meetings could be expanded in scope to include: environmentally sound interventions and policies; and lessons learned regarding the impact of NGO activities on the environment.

B6. Pesticides

Pesticides are presently being used by some NGOs as part of their agricultural activities. While pesticide use was not identified as being significant at this time, there is a likelihood of increased future use, which could have potential effects on the environment and on human health. Two separate supplemental Environmental Assessments (SEA) have been prepared to address this issue.

Potential environmental impact. The results of improper usage use of pesticides, herbicides and other agricultural chemicals are well known. They include damage to public health through direct contact and polluted aquifers, damage to wildlife reproduction (remember DDT), damage to wildlife habitat, including the world's oceans, and reduction of agricultural yields.

Suggested mitigation measures. Full discussion of the pesticide use issue can be found in the SEAs referred to above. In general, follow Integrated Pest Management guidelines which stress avoidance and/or biological control of pests. Chemical controls are used primarily to avoid damage or loss which places the enterprise below the economic threshold. Usage is according to strict USAID guidelines. Monitor the use and impact of pesticides on the environment.

**Table 2. USAID/Mozambique Transition Program
Potential Environmental Impacts and Mitigation Measures**

Sector	Activity	Potential Impacts		Mitigation Measures
		ST	LT	
De-mining		N	N	---
Agriculture	<ol style="list-style-type: none"> 1. Distribution of ag inputs. 2. Technical assistance. 	N	Y	<ol style="list-style-type: none"> 1. Monitor impacts on deforestation and other environmental considerations (water, soil, nutrients, pests). 2. Establish favorable policies and markets for sustainable agricultural production. 3. Monitor the use and impact of pesticides. 4. Link NGO agricultural extension activities to the sustainable management of forest resources and protected areas.
Rural Access	<ol style="list-style-type: none"> 1. Rural road improvement. 	N	Y	<ol style="list-style-type: none"> 1. Design for roads to consider water drainage, soil erosion, proximity to waterways. 2. Plan for social and economic impacts. 3. Establish maintenance and monitoring plan. 4. Establish policies which encourage sustainable use of natural resources. 5. Monitor population movement and activities.
Water and Sanitation	<ol style="list-style-type: none"> 1. Water well construction. 2. Latrine construction. 	N	N	<ol style="list-style-type: none"> 1. Design a water resources activity which considers proper siting of facilities. 2. Develop hygiene education program.

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Sector	Activity	Potential Impacts		Mitigation Measures
		ST	LT	
Resettlement Process	1. Facilitate the movement of displaced people to assembly areas and to their place of origin.	Y	Y	1. Monitor movement of people and impact of environment. 2. Facilitate donor and NGO coordination to determine lessons learned regarding environmentally sound interventions and policies.

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SECTION V
PROCEDURES AND CRITERIA FOR PVO PROJECT PROPOSAL REVIEWS

A. Introduction

Upon receiving a proposed new or amended activity, the Mission should determine if it could potentially induce significant negative impacts on the environment. The Mission Grant Management Project Officer should ensure that the PVOs participating in the transition program understand the Bureau's environmental requirements. These guidelines are presented in the AID publication entitled *Environmental Guidelines for PVO/NGO Field Use in Africa*.

Below is a procedure for ranking the potential environmental impacts of project proposals. This procedure is consistent with USAID Environmental Procedure (Reg. 16) and guidance developed by the Africa Bureau Environmental Office.

A1. Category 1

Category 1 includes subprojects or grants that would normally qualify for a categorical exclusion under Reg. 16. While this section should be referred to directly, some examples of activities which fall under this category include:

- Education and training programs
- Controlled experimentation and research
- Analyses, studies, academic or research workshop and meetings
- Programs involving nutrition, health care, or population and family planning services
- Support for intermediate credit institutions
- Institutional support grants which are provided to PVOs to assist them in financial management
- Studies, projects or programs intended to develop the capacity of recipient countries to engage in development planning
- Activities which involve the application of design criteria or standards and approved by AID

A2. Category 2

Category 2 includes all activities that are identified by Reg. 16 as having potential for some (but not significant) negative impacts. The activities could require changes in design and implementation and will be monitored to some degree during the life of the grant.

A3. Category 3

Category 3 includes all activities which are identified by Reg. 16 as having the potential for significant negative impacts. These activities will require a comprehensive review and a definition of necessary actions to mitigate the impacts, along with a responsible monitoring program that can be incorporated into the project. This specifically includes (but is not restricted to) actions having a significant effect on the environment.

While Regulation 16 should be referred to directly, some examples of activities which fall under this category include:

- Programs involving river basin development
- Irrigation and water management projects
- Agricultural land leveling
- Drainage projects
- Large-scale agricultural mechanization
- New land development
- Resettlement projects
- Penetration road building or road improvement projects
- Power plants
- Industrial plants
- Potable water and sewage projects
- Projects or programs involving the procurement or use of pesticides

According to Programmatic Environmental Assessment Scoping Statement (AID, 1993), the Mission should obtain clearance for project proposals by the following procedure:

- (1) Determine in which of the three categories the project proposal should be placed
- (2) Submit to the Regional Environmental Officer the project proposals which are placed in Category 3 (or Category 2 if the Mission determines the environmental impact threshold is close to Category 3).

It is anticipated that the majority of Mission's grants will fall within categories one and two and could therefore be approved by the Mission once the PEA is approved and delegation of authority is obtained from the Bureau Environmental Officer. According to Reg. 16, "subsequent Environmental Assessments on major individual actions will only be necessary where such follow-on or subsequent activities may have significant environmental impacts...where such impacts have not been adequately evaluated in the programmatic environmental assessment."

B. Environmental Impact Analysis

The PEA assessment team has reviewed the transition program activities for their potential environmental impact. This analysis is contained in Section II of the PEA. Figure

4 provides a summary analysis of the potential impact of the transition program activities on the environment. The analysis considers how each of the five program activities (de-mining, agriculture, roads, water supply and sanitation) could potentially have a negative impact on six environmental elements. These six environmental elements are:

- Land and soil
- Forest resources
- Water resources
- Land tenure
- Biological diversity (including protected area management and endangered species)
- Population dynamics

Below are the results of this analysis using the three category environmental assessment criteria contained in Reg. 16.

B1. Potential Short-Term Environmental Impacts

Based on the PEA team's analysis, none of the transition program activities is anticipated to have any significant negative environmental impacts in the short-term.

B2. Potential Long-term Environmental Impacts

B2a. Category 1

Based on the PEA team's analysis, de-mining and sanitation activities are not anticipated to have any significant negative environmental impacts in the short-term or long-term. Therefore, any de-mining or sanitation project proposals received by the Mission can be placed in category one. Activities placed in Category 1 can be considered for exclusion under Reg. 16.

B2b. Categories 2 and 3

The PEA team determined that the remaining three transition activities (agriculture, roads, water supply) could potentially have a significant environmental impact on four of the six environmental elements in the long-term. As shown in Figure 4, the long-term potential negative environmental impacts of the transition activities on the four environmental elements are (in order of potential severity): forest resources, biological diversity, water resources, and land and soil resources.

As recommended in the report, the Mission should monitor its activities to determine the environmental impacts of its activities.

C. Criteria For Review of New and Amended Proposals

The assessment team has developed environmental impact review criteria for the review of new and amended project proposals. These criteria are based on Reg. 16 and the

Africa Bureau's *"Environmental Guidelines for PVO/NGO Field Use in Africa"*. There are two criteria which will determine the place of a project proposal into one of the three environmental impact categories are:

- (1) Cost of project proposal
- (2) Size and environmental sensitivity of project proposal

C1. Cost of Project Proposal

The Mission has received Delegation of Authority to approve project proposals which request financial support up to \$500,000. Authorization from the Agency's Washington, D.C. office is required by the Mission for project proposals which request beyond this amount.

C2. Size and Environmental Sensitivity of Project Proposal

For the purpose of the PEA, project proposal size is correlated with the cost of the activity. It is assumed that a high cost activity may have a greater potential impact on people and the environment.

The Mission may place a project proposal in Category 2 because of minimum potential environmental impact. However, the Mission may decide to request authorization from the AID Washington office for the category 2 activity based on the project's size.

Below are suggested environmental classification questions which can be used by the Mission to determine whether a proposed project proposal should be placed in category 2 or 3. This information is based on information obtained from the Africa Bureau's *"Environmental Guidelines for PVO/NGO Field Use in Africa"* and the experience of the PEA team members.

C2a. Agriculture

Key Questions:

Will pesticides potentially be needed? If so, does the planned use of pesticides conform to guidelines set by the Bureau (Integrated Pest Management guidelines and list of proscribed chemicals)?

Does the activity promote dependency or encourage refugees to remain in the safe zones and refugee centers unnecessarily?

Will the activity result in an increase in area or intensification of cultivable land?

Will the activity result in damage to cultivable land?

If the livestock sector is to be a target, is the intervention likely to be major (involving more than 100 head of cattle)?

Potential Mitigation Measures:

Follow the principals and guidelines established for sustainable agricultural development, especially with regard to maintenance of soil fertility, prevention of soil loss, and maintenance of a reasonable rural standard of living. This means not exceeding the carrying capacity of the land (livestock or human) which in the long run requires population control.

C2b. Soil Erosion

Key Questions:

Will the activity directly cause or worsen loss of soil fertility?
Could the activity indirectly lead to practices that could cause soil loss or erosion?

Potential Mitigation Measures:

Plant cover crops and/or nitrogen-fixing legumes on or near affected area, utilize appropriate cultural practices such as contour planting, live barriers, mulching, etc; provide appropriate drainage; and convert road improvement borrow pits to other use.

C2c. Water Quality

Key Questions:

Could the activity cause deterioration of surface water quality either directly (by seepage) or indirectly?

Will substantial organic or toxic sewage (or other materials) be produced?

Potential Mitigation Measures:

Locate latrines or other construction sites away from potable water points or geologic formations which allow access to aquifers. Provide health care education to local resource users.

C2d. Aquatic Habitats

Key Questions:

Are there any aquatic ecosystems which are close to the activity (rivers, streams, lakes, ponds)?

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Is the aquatic unique, pristine, degraded?

Is the water resource used by the local people for drinking water, irrigation, livestock, washing, transportation or fishing?

Will the activity directly or indirectly affect a local water source through the production of toxic materials?

Potential Mitigation Measures:

Install culverts or bridges

Increase road elevation

Protect stream bank

Desilt channel

C2e. Forests, Wildlife and Habitat Management

Key Questions:

Will the activity cause an increase in the use of forest resources which may result in an increase in deforestation?

Are there ecosystems which will be affected by the activity?

Will the activity cause increased population growth in the area, bringing about increased stress on these ecosystems?

Will the activity require clearing or alteration of areas of land in these ecosystems?

Is the existence of endangered species in the activity area unlikely, likely, probable, highly probable or a documented fact?

Potential Mitigation Measures:

Identify an alternative site

Change project design

Change construction techniques

Change timing of construction

Maintain wildlife corridors between important habitats

C2f. Rural Road Improvement

Key Questions:

Will the activity require opening of borrow pits, spoil areas and brick quarries, and could these activities have a significant negative impact on the environment? How will you know?

Are the activities designed to manage water drainage and prevent soil erosion resulting from water runoff?

Are the rural roads in question in the proximity of tropical forests of protected areas identified by the Mozambique Department of Agriculture? Will the proposed activity contribute directly to improving the livelihood of the rural poor?

Does the proposed activity have a maintenance plan which will reduce the potential negative impact on the environment?

Will the activity cause increased population growth in the area, bringing about increased stress on these ecosystems?

Potential Mitigation Measure:

Ensure that road improvement engineering plans use standard environmentally sound methods.

SECTION VI
GUIDELINES AND PROCEDURES FOR ASSESSMENT,
MONITORING, EVALUATION, AND MITIGATION PLAN

A. Guidelines for Developing an Environmental Monitoring, Evaluation and Mitigation Plan

A1. Background

USAID Environmental Procedures (Reg. 16) provides the following guidance regarding monitoring requirements for environmental assessments:

"To the extent feasible and relevant, projects and programs for which Environmental Impact Statement or Environmental Assessments have been prepared should be designed to include measurement of any changes in environmental quality, positive or negative during their implementation. This will require recording of baseline data at the start. To the extent that available data permit, originating offices of AID will formulate systems in collaboration with recipient nations to monitor such impacts during the life of AID's involvement."

"Monitoring implementation of projects, programs and activities shall take into account environmental impacts to the same extent as other aspects of such project, program or activity, whether or not an Environmental Assessment or Environmental Impact Statement was originally required. If it appears to the Mission Director or officer responsible for the project, program or activity that it is having or will have a significant effect on the environment that was not previously studied in an Environmental Assessment or Environmental Impact Statement, the procedures contained in this part shall be followed including as appropriate, a Threshold Decision, Scoping and an Environmental Assessment or Environmental Impact Statement."

A2. Responsibilities

USAID believes that the potential costs of a poorly designed project far outweigh the additional expense required to design, construct, and maintain an environmentally sound project. The USAID/Mozambique Grants Management Project is the primary vehicle by which the Mission is supporting NGOs to implement the transition program.

It would not be practical to change the existing NGO grants. However, the Mission can assure that future grants and grant amendments are designed in an environmentally sound manner, using Africa Bureau-approved guidelines.

The NGOs are responsible for integrating environmental concerns into the initial NGO concept papers and proposals from the very beginning. However, it is the responsibility of the USAID Grants Manager to:

- Standardize NGO field methodologies
- Identify lessons learned from NGO activities regarding positive and negative environmental impacts (e.g., NGO workshops)
- Communicate how environmental concerns are to be integrated into the design of NGO proposals

The Africa Bureau's *Environmental Guidelines for PVO/NGO Field Use in Africa* (1993 revised) address NGO responsibilities for monitoring and evaluation as follows:

The PVOs/NGOs involved will be fully responsible for monitoring and evaluating all activities under each grant, and for sending to the Bureau and/or Regional Environmental Officer any evaluations, reviews, and/or mitigation plans. By planning for monitoring and mitigation in project designs, planners can assure that funding will later exist for such activities.

One advantage of providing funding for environmental impact monitoring in NGO grants is that the NGOs will have financial resources to hire staff to conduct monitoring activities. In the past, monitoring and evaluation has been seen as a burden which is conducted "as time allows."

The Government of Mozambique does not yet have the capacity to undertake the monitoring and evaluation of donor activities. In the long-term, however, the GRM will ultimately be responsible for monitoring and evaluating its development activities. With this in mind, the Mission should coordinate all of its monitoring and evaluation activities with the Government's National Environmental Commission. In addition, the Mission may wish to provide institutional support to this or other government institutions in the future. Coordination between a USAID Mission and the host country for the collection and analysis of data is consistent with Reg. 16.

A3. Monitoring and Evaluation as a Useful Tool

Monitoring and evaluation systems can be effective tools for project managers if they are integrated into the project design and implementation process. The chief merit of standardization is that it facilitates the accumulation of knowledge over a series of implementations at different sites and times. By providing a set of systematic, uniform, and formal procedures for collecting, analyzing, and interpreting data, effective M&E can assist project managers to establish priorities among program objectives, to evaluate program performance, and to communicate how the resulting information will be used (Wholey, 1985).

To be effective, a monitoring and evaluation system should include an initial formative analysis during project design. An important feature of a formative monitoring

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

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

A4. Monitoring and Evaluation of Policy Reforms

An M&E program should monitor the impact of selected policies on the environment. It will be useful for the Mission to know which policies are contributing to the adoption of sustainable practices by rural farmers.

The Mission is planning to implement a project entitled "Private Sector Support Program/Project" (656-0208/0218). The monitoring of activities to be conducted under the project should complement the monitoring of policy reforms which would be tracked under the Mission's transition program.

Some suggested key policy-related questions for monitoring and evaluation are provided below.

- To what extent are the Mission's transition activities facilitating spontaneous re-settlement? For example, is the establishment of water wells discouraging displaced people from returning to their land of origin?
- Are the policies and interventions associated with the transition program providing incentives for deforestation or encroachment into forest reserves and protected areas?
- How appropriate are the NGO agricultural interventions? Are the NGOs obtaining information from other AID researchers (e.g., Land Tenure Center, Eduardo Mondlane University) and sharing lessons learned?
- What influence are agricultural prices, market availability and land tenure having on farmer productivity?

- What is the most appropriate and effective form of institution building for the Mission's transition program (e.g., NGO workshops, government coordination activities, direct training activities)?

B. Ongoing USAID/Mozambique Monitoring and Evaluation Activities

B1. AID Monitoring and Evaluation Studies

A team of consultants provided assistance to the Mission during the period of June 3-23, 1993 to develop impact indicators for the Mission's transition program. The resulting document is entitled *Working Toward a People-Level Impact Monitoring System for the Transition Program*. REDSO/ESA also submitted a memorandum dated June 25, 1993 entitled *Draft Monitoring and Evaluation Plan—Demobilization/Reintegration Support Project (656-0235)*.

The Mission should combine these monitoring and evaluation initiatives into a single system. That system would have three primary objectives:

- Measure impacts for inclusion in the late 1994 Assessment of Program Impact (API) report.
- Act as an "early warning system" for identifying potentially adverse environmental, socioeconomic and cultural impacts.
- Obtain lessons learned from implementation which can be used for the modification of present activities and the design of future initiatives.

According to REDSO/EA, the consultants who assisted the Mission in June 1993 succeeded in highlighting the difficulties of relying on secondary data in Mozambique. The consultants field investigations also highlighted the pitfalls of conducting rural appraisals too quickly. It is desirable to spend more time in each location.

B2. NGO Monitoring and Evaluation Activities

NGOs are experimenting with monitoring and evaluation systems. Both WVRD and FHI, for example, have prepared their own benchmark surveys. These surveys are designed to enumerate households in impact areas and to collect demographic and other information on those households. These surveys are a step in the right direction for providing "baseline" information against which to compare subsequent impacts. Information gathered, however, should be standardized among the USAID-assisted NGOs. This will assure that some of the data collected can be used by the Mission for comparative purposes.

While the WVRD and FHI are proceeding with bench mark surveys, the PEA team found that they are uncertain as to how to proceed with follow-up surveys. REDSO/ESA has suggested that best results could be obtained through follow-up visits several times a year to the same localities and households. Using a relatively small number of households (perhaps

ten per district), this method is within the financial and staffing capacity of the NGOs. The survey results could produce policy-relevant information in a matter of months.

The PEA team also suggests that the NGOs select a relatively small sample of households from their benchmark surveys for longitudinal M&E. Those households should be carefully selected according to ethnicity, locality and wealth criteria.

Where displaced households are still located within the accommodation centers, the households selected for the NGO surveys should include:

- Households that intend to remain in the general vicinity
- Households that intend to return to their places of origin

In the latter case, the place of origin should be within districts where the enumerating NGO will continue to work. Two household income level criteria may be sufficient:

- Households with sufficient resources to return to their place of origin and at their own initiative and expense
- Households which require assistance

Repeated long-term interviews with a small sample of households selected from benchmark surveys is a controversial methodology which the Mission should first clear with AID/Washington (specifically CDIE and AFR/ARTS/FARA). These survey results are indicative rather than statistically significant because of the relatively small sample involved. For the purpose of policy development and measuring general impacts, however, such a methodology has proven satisfactory in assessing impacts of Sri Lanka's Accelerated Mahaweli Project.

In the Sri Lanka Accelerated Mahaweli Project, information gathered from a stratified opportunity sample of 40 households was used to generalize about impacts on a population of hundreds of thousands of settlers. Though some of the conclusions were controversial at the time, none were subsequently invalidated by more detailed studies (World Bank, in press). Basic to the methodology were repeat interviews with the same households over a ten-year period. By using a relatively small number of indicators (dealing with housing, household furnishings, water supply and sanitation, fuel and lighting and production equipment), it was possible at the time of each visit to tell within 30 minutes if living standards of the households had improved, remained the same, or gone down.

Although the June 1993 impact monitoring consult team suggested a number of indicators, a number of them require refinement and others need to be added. Under refinement, for example, increased land under cultivation will have different meanings at different times in the settlement process: it is a positive indicator during the first few years. but could indicate continuation of an unsustainable system of bush fallow agriculture later on.

Similarly, decreased importance of foods obtained from wildlands in the family diet could also be interpreted differently over time. It might be a positive development during the

initial years of settlement, but could later indicate a reduction of biological diversity (leaf relishes and wild fruits are an important source of vitamins, minerals and trace elements in the normal diets of rural Southern Africans). The need for additional indicators is especially marked in relation to natural resource management (e.g., distance to fuel sources).

C. United Nations Office For Humanitarian Assistance Monitoring Program

The United Nations Office For Humanitarian Assistance (UNOHAC) issued a report in June 1993 regarding post-war population movements in Mozambique. It is anticipated that additional reports will be available in the future. One recommendation of the Mozambique PEA is that the Mission provide financial support for this type of monitoring and analysis.

Where in Mozambique refugees, displaced people, demobilized soldiers and others choose to relocate will have a profound impact on the sustainability of the reconstruction process. Although there are estimates on the proportion of people who intend to return to rural areas (as opposed to remaining in or moving to the Beira and Limpopo corridors and urban and peri-urban areas), no one really knows what is going to happen. The PEA team believes that it is critically important that where people go be carefully monitored, in terms of location selected and reasons for the locations selected. Such information has direct relevance for prioritizing different components of the reconstruction planning process.

D. GRM Monitoring and Evaluation Capability

As indicated above, the Government of Mozambique does not yet have the capacity to undertake the monitoring and evaluation of donor activities. However, there are a number of ongoing GRM activities Mozambique which could potentially assist in the monitoring and evaluation of environmental and development activities. Some of these activities are described below.

National Environmental Commission (NEC) Geographic Information Systems (GIS) Training Program. The NEC began a GIS training program in 1992. The program is supported by the UNDP for a 14-month period. The GIS program began by training three Mozambicans at the GIS center in Nairobi, Kenya for three weeks in May, 1992. The GIS program fits well into the NEC's mandate to coordinate national environmental activities and to set environmental standards for sustainable development.

Forestry Department Biomass Energy Unit. As described above, the Forestry Department is conducting biomass and forest inventory surveys. The inventories provide information regarding who is cutting the forests and the specific species which are being used. Image interpretation, ground truthing, biomass quantification, mapping and report writing will be completed in August, 1993. The surveys will provide information for the development of a fuelwood management strategy in August 1993. Long-term information regarding biomass changes in Mozambique could be used by development organizations as an important program impact indicator.

Other institutions. Organizations in Mozambique also having experience using GIS systems are: Directorate of National Water (DNA); the National Center For Remote Sensing (CENACARTA); and the Institute of Agronomic Research (INIA)

E. Impact Monitoring Indicators

The June 1993 the impact monitoring consultation team suggested a number of people-level impact indicators which could be modified for use by the USAID-supported NGOs. The categories which we suggest for indicator development are listed below.

- Natural resource management
- Public health (including water and sanitation) and education
- Housing and household furnishings
- Income and expenditure (hence covering production and marketing)
- Community formation

The selection of tentative natural resources management impact indicators for the Mission's resettlement program is beyond the scope of this report. However, we have provided some initial information which we hope will stimulate the Mission's thinking in this regard.

The selection of impact indicators should be conducted at the project level as part of a long-term process. Feedback from implementation activities should be used to refine or re-design framework indicators as necessary. Only after obtaining lessons learned over time from the assessment of program impacts should a standard set of framework indicators be considered at the Bureau level.

Below are some examples of impact indicators which have been identified by a 1992 Africa Bureau publication entitled *Plan For Supporting Natural Resources Management in Sub-Saharan Africa*.

Agricultural Productivity

- Total amount of goods produced by farming, herding, or other resource-related operations.
- Yields (kg/ha, for example) of cultivated or pasture land.
- Adequacy of fallow length.
- Percentage of submarginal land being cultivated.

Water Quality

- Percent of population with access to safe drinking water.
- Effectiveness of wastewater treatment (where facilities exist).
- Multiple use/benefit distribution; equity of access, etc.

Forest Resources

- Percent forest/shrub cover over total area.
- Trends in degradation, deforestation and extent and success of efforts to counteract them.

F. National Protected Areas

The following indicators are taken from a 1992 USAID publication entitled *Performance Measurement For Strategic Management: Suggested Indicators For PRISM Clusters and Sub-Clusters*.

- Number and type of land users (farmers by gender, logging companies, etc., as appropriate) adopting management practices which increase the quantity and/or quality of vegetation cover.
- Percentage and total number of hectares under management practices which increase the quantity and/or quality of vegetative cover.
- Percentage of remaining natural forest brought under improved management practices.
- Number and type of land users (farmers by gender, logging companies, etc., as appropriate) participating in active management practices in support of the conservation of biodiversity.

G. Bibliography

Below are recommended sources of information regarding monitoring and evaluation.

- Booth, Greg. 1993. *Biodiversity Monitoring Indicators Within a Natural Resources Management Framework For Sub-Saharan Africa*. U.S. Agency For International Development. (125 pp)
- Brown, Michael and Barbara Wyckoff-Baird. 1992. *Designing Integrated Conservation and Development Projects*. Maryland: World Wildlife Fund Publications. (63 pp.).
- Forestry Support Program. 1993. *Scope of Services For Analysis of Biodiversity Indicators in the NRM Framework*. Washington, D.C., U.S. Forest Service. December, 1992. (4 pp.).
- Richardson, K. 1992. *Guidelines For Monitoring and Evaluation of Global Environmental Facility Biodiversity Projects* (Unpublished). Washington, D.C.: International Bank For Reconstruction, Office of the Global Environmental Facility Operations. (18 pp.).

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

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

SECTION VII

GUIDELINES FOR DESIGN OF ENVIRONMENTAL ACTIVITIES

A. Agricultural Development Projects

The decline in the overall stability and productivity of Africa's natural resources base is the result of a complex and interrelated series of resource degradation processes and inappropriate policies. Agricultural projects must be conceived in a way that responds to these complex interrelationships and to the site-specific social, economic, and institutional circumstances surrounding them.

According to the Africa Bureau's environmental guidelines for PVO/NGO's (1992), the most significant potential impacts associated with farming activities are:

- Conservation and erosion of soil
- Water supply and drainage
- Nutrient management
- Pest and pesticide management

A number of social, economic, and institutional factors have made it difficult for farmer in Africa to develop effective approaches to agriculture. Two examples of these factors include:

- Uncertainty associated with changing systems of land and tree tenure has altered traditional land management systems
- Centralization of political power has eroded the capacity of local communities to management their resources (USAID, 1992).

Sustainable agricultural practices and policies can often be used to reduce pressure on Africa's national parks and protected areas. Project planners should identify where there may be opportunities to link agricultural activities with protected areas. For example, there may be an opportunity to locate an on-farm agricultural demonstration in a village located near a protected area.

Below are recommended sources of information on this topic.

U.S. Agency For International Development. 1992. *Plan For Supporting Natural Resources Management in Sub-Saharan Africa*. Washington, D.C. (45 pp.)

U.S. Agency For International Development. 1992. *Environmental Guidelines For PVO/NGO Field Use*. Washington, D.C.

U.S. Office of Congress. 1987. *Appropriate Low Resource Technologies For Agricultural Development in Sub-Saharan Africa*. Office of Technology Assessment, Washington, D.C. (225 pp.)

B. Forest Resources

The natural forests in Mozambique have never been brought under proper management plans. Forest utilization has been practiced on a fairly ad hoc basis using only localized simple surveys.

Forest management planning is an effective means of accomplishing sustained forest utilization. The essential feature of forest management planning is the gathering and maintenance of forest resources information for decision making. A well-managed forest requires mapping, boundary marking, compartment designations, regular monitoring, staff supervision, and informed record keeping (Catterson, 1991).

The UNDP and FAO prepared a report in 1991 for the Ministry of Agriculture entitled *A Provisional Program For The Forestry/Wildlands Sector*. The report recommended priority implementation activities forest and wildlands management. These recommendations are indicated below.

- Contribute to the resettlement process and the establishment of proper land use practices.
- Support sustainable agricultural productivity and food security.
- Participate in the decentralization process.
- Generate and capture more revenues for the government.
- Promote community participation in conservation and management.
- Provide woodfuels to the urban areas.
- Provide sustainable supplies of timber for wood industries.
- Provide sector-based employment opportunities.

The potential increase in vegetation growth during the war in Mozambique may provide the GRM with an opportunity to implement a sustainable forest resources management program. Unless sustainable policies and interventions are established quickly, the rate of deforestation could increase over time.

A potential planning tool in Mozambique is the Ministry of Agriculture's biomass management strategy which is scheduled for approval in August 1993 (personal communication with Forestry Department staff, May 1993). The GRM has established a Biomass Energy Unit in the National Directorate of Forestry and Wildlife. The unit is responsible for the formulation of policy related to the use of biomass as a source of energy in the urban household, industrial, and commercial sectors.

Landsat imagery was purchased in 1992 through the World Bank Urban Household Energy project. The classification of forest types in Mozambique is now completed. Biomass surveys have also been completed for Maputo and Gaza provinces. The inventories

provide information regarding who is cutting the forests and the specific species which are being used. Image interpretation, ground truthing, and biomass quantification, mapping and report writing will be completed in August, 1993.

Below are recommended sources of information for on this topic.

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

Forest Management Guidebook For The Design and Implementation of Forest Resource Activities in Africa. U.S. Agency For International Development, Bureau For Africa. 1990. Developed by Associates In Rural Development.

C. Protected Area Management

As discussed above under forest resources, the potential increase in vegetation growth during the war may provide the GRM with an opportunity to implement a sustainable protected area management program which differs from most of Africa's protected areas, were established without much consideration of the surrounding rural communities. Conventional approaches to protected area management have generally not been sympathetic to the needs of rural communities. These approaches have relied heavily upon guard patrols and poaching penalties, both of which serve to exclude local people.

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

One of the recommendations from the Forestry Department's biomass strategy (discussed under forestry guidelines above) will likely be to work cooperatively with local communities regarding the use of forest resources (Forestry Department, personal communication). For example, the department may consider using the Zimbabwe Campfire project as a potential model for community participation. The strategy will also likely include a means to resolve policy issues which provide disincentives to sustainable management (e.g., land tenure).

One of the first steps in managing a protected area is to consider the development of a management plan. The purpose of a management plan is to identify:

- The needs of local resources users
- Protected area boundaries
- Policies in need of reform
- Land use categories (e.g., conservation, tourism, research)
- A process for long-term sustainable management

The protected area management plan should identify key management questions. These questions can be used by the manager to establish the type and parameters for information which is needed (e.g., biological or socioeconomic). Without a clear set of management questions, research and project activities may take on a life of its own.

In order to monitor the management plan activities, an appropriate monitoring and evaluation system should be developed. A monitoring and evaluation system should provide a set of systematic, uniform and formal procedures for collecting, analyzing, and interpreting data within the parameters of key questions.

A monitoring and evaluation system can be an effective tool for project managers if it is integrated into the project design and implementation process. An effective monitoring and evaluation system can help project managers to establish priorities among program objectives, to evaluate program performance, and to communicate how the resulting information will be used.

It is especially important that research designs, measurement procedures, and instrumentation be standardized to establish some basis of comparison. The chief merit of standardization is that it facilitates the accumulation of knowledge over a series of implementations at different sites.

Below are recommended sources of information on this topic.

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

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

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

U.S. National Park Service. 1984. *Integrated Regional Development Planning—Guidelines and Case Studies From OAS Experience*. Department of Regional Development Secretariat For Economic And Social Affairs Organization of American States. Washington, D.C. (230 pp.)

D. Rural Roads Development

There are many potential benefits associated with rural road improvements, including: access to improved health care and education, flow of agricultural inputs (including extension services) and a reduction in transportation costs

However, there are also a number of potential negative environmental impacts. The Africa Bureau's *Environmental Guidelines for PVO/NGO Field Use* (1992) indicate the potential impacts associated with different activities associated with rural road rehabilitation. Of particular concern are:

- The opening of borrow pits, spoil areas and brick quarries
- The maintenance of drainage facilities and the impoundment of water
- Soil erosion resulting from excess water run off

Further, plans for the improvement of rural roads should include support for the following activities.:

- Maintenance of road surface, bridges, culverts, and ditches
- Periodic training for maintenance crews
- Maintenance and precipitation runoff
- Monitoring vehicle numbers and size
- Maintenance of records and data in a national rural roads development database

The rural roads being improved under the Mission's transition program do not border ecologically sensitive areas. However, it will be necessary for the Mission to assess the potential direct and indirect impacts of any new road improvement activities which may be planned beyond the Mission's transition program.

New rural road improvements planned near tropical forests and protected areas are particularly important to access. The USAID Environmental Procedures (Reg. 16) provides some guidance on restrictions.

"Deny assistance under this chapter for the following activities unless an environmental assessment indicates that the proposed activity will contribute significantly and directly to improving the livelihood of the rural poor and will be conducted in an environmentally sound manner which supports sustainable develop (e.g., the construction, upgrading, or maintenance of roads which pass through relatively undegraded forest lands."

It is the PEA team's understanding that some of the initial road segments considered for improvement were in the general vicinity of the Gorongosa National Park area. The Mission should be alert to any new proposed rural road activities located in or near the Gorongosa National, the Marromeau Game Reserve, or other protected areas or forests. The Mission should also check with the Department of Agriculture periodically to determine the status of plans to expand these and other protected areas in the country.

Below are recommended sources of information on this topic.

Booth, Greg and Steve Daus. 1991. *Guinea Rural Roads Improvement Project —Environmental Assessment*. U.S. Agency For International Development and The World Bank. (125 pp.)

E. Water Resources and Sanitation

Construction of new water sources can encourage migration of the population and extension of displaced person camps. To avoid this possible negative impact, wells should be constructed in locations where the population currently lives or traditionally lived and are returning.

While latrines are important for the protection of water resources, they can be responsible for well and aquifer pollution if not developed properly. All latrines should be constructed according to government specifications. These specifications are established by the National Institute of Physical Planning, National Directorate of Water, and the National Directorate of Health. Particular care must be taken in the siting of latrines in areas close to water sources or in areas of high water table.

PVO water and sanitation technicians should obtain training in water resources management from the National Rural Water Supply Program (PRONAR). PRONAR provides training for well construction, pump installation, operation, maintenance and education. The PVOs should become familiar with the established latrine construction specifications. PVO water resource interventions should also be supplemented with a community sanitation education program.

Wells and water storage tanks should also be constructed and rehabilitated based on PRONAR's technical specifications. Well construction should include an analysis of the water resource to ensure its safety and to determine the maximum number of wells which the aquifer can sustain.

All wells should be properly sealed to prevent contamination entering into the well shaft. A concrete apron should be constructed to ensure correct drainage of wastewater away from the wellhead. Appropriate measures should be taken to minimize standing water caused by well use. Erosion is not a serious issue in well construction and utilization, but should be considered by the implementing PVOs.

The sustainability of water resource and latrine activities will depend on:

- Development of a user-fee system for water points and latrines
- Effective coordination of PVO water and health education programs with PRONAR's PEC program
- Development of an effective maintenance program

Maintenance is an issue, as water well moving parts wear out and the latrine structure must be maintained. Field observations made by the PEA team revealed that only one-fourth of the water pumps installed by the development agencies were operating. Some of these

wells had been installed only a year earlier. Due to absence of standardized pump parts, repair parts could not be scavenged from non-functioning pumps.

Water supply and sanitation projects realize their full potential when they are implemented as part of a comprehensive program that includes improvements to solid waste management and surface drainage. The components of a water supply system include the water source, storage facilities, distribution system and possibly treatment facilities. The components of a sanitation system include facilities for excreta collection, transmission, treatment and disposal or reuse.

Below are recommended sources of information on this topic.

Alan Wyatt, et al. 1992. *Environmental Guidelines For PVOs and NGOs—Potable Water and Sanitation Projects*. Water Sanitation For Health Project. U.S. Agency For International Development. Washington, D.C. (47 pp.)

National Academy of Sciences. 1974. *More Water For Arid Lands—Promising Technologies and Research Opportunities*. National Academy of Sciences. Washington, D.C. (154 pp.)

The World Bank. 1983. *Water Supply and Sanitation Project Preparation Handbook*. The World Bank. Washington, D.C. (172 pp.)

SECTION VIII SUMMARY AND CONCLUSIONS

A. Introduction

The stage is set for the reintegration and rehabilitation of people who were displaced as a result of Mozambique's war. With assistance from the Mission, this process is proceeding spontaneously and rapidly. The question is, will the reintegration and rehabilitation of Mozambique's displaced people result in positive or negative impacts on the environment.

A Programmatic Environmental Assessment (PEA) was undertaken in order to assess the environmental impacts of the Mission's transition program activities. The PEA was conducted according to regulations provided under USAID Environmental Procedures (Reg. 16). The 18-24 month transition program was designed to implement activities in support of the reintegration and rehabilitation of Mozambique's displaced people. These activities include:

- Drought-related relief and emergency assistance, including food distribution
- Support for the peace process, including de-mining, rural rehabilitation through PVOs and rural roads rehabilitation
- Institutional and private sector support, including commercial food aid

Based on the environmental impact scoping statement, the PEA team focused its efforts on those Mission activities which had the greatest potential to impact on the environment: de-mining, road improvement, agricultural production, water resources, and sanitation. Of special concern was the potential for these activities to produce negative impacts on important environmental resources: soil, water, forests, and biodiversity (e.g., protected areas, threatened and endangered wildlife).

B. Summary of Environmental Impact Analysis

The PEA assessment team has reviewed the transition program activities for their potential short-term and long-term environmental impacts. Reg. 16 contains three categories of environmental impact. These three categories were used by the team as part of their environmental impact analysis. The three categories are described below.

Category 1. Category 1 includes subprojects or grants that would normally qualify for a categorical exclusion under Reg. 16. Some examples of activities which fall under this category include education and training programs, controlled experimentation and research, and institutional support to PVOs.

Category 2. Category 2 includes all activities that are identified by Reg. 16 as having the potential for some (but not significant) negative impacts. The activities could require changes in design and implementation and will be monitored to some degree during the life of the grant.

Category 3. Category 3 includes all activities which are identified by Reg. 16 as having the potential for significant negative impacts. These activities will require a comprehensive review and a definition of necessary actions to mitigate the impacts, along with a responsible monitoring program that can be incorporated into the project. This specifically includes (but is not restricted to) actions having a significant effect on the environment.

C. Potential Short-term Environmental Impacts

Based on the PEA team's analysis, none of the transition program activities are anticipated to have any significant negative environmental impacts in the short-term.

D. Potential Long-term Environmental Impacts

D1. De-mining and Sanitation: Category 1

Based on the PEA team's analysis, de-mining and most sanitation activities are not anticipated to have any significant negative environmental impacts in the short- or long-terms. Therefore, any de-mining and most sanitation project proposals received by the Mission can be placed in Category 1. Activities placed in Category 1 can be considered for exclusion under Reg. 16.

D2. Agriculture, Road Improvement, and Water Supply: Categories 2 and 3

The PEA team's analysis considers how each of the three remaining program activities (agriculture, roads, water supply) could potentially have a negative impact on six environmental elements.

- Land and soil
- Forest resources
- Water resources
- Land tenure
- Biological diversity (including protected area management and endangered species)
- Population dynamics

The PEA team determined that the three transition program activities could potentially have a significant environmental impacts on four of the six selected environmental elements in the long-term. These are (in order of potential severity): forest resources, biological diversity, water resources, and land and soil resources.

Ranking criteria are provided in the PEA to help the Mission determine whether a proposed activity should be placed in Category 2 or 3. Consistent with Reg. 16, the two criteria which will be used to place a project proposal into one of the three environmental impact categories are: cost of project proposal; and size and environmental sensitivity of project proposal.

The Mission has received Delegation of Authority to approve project proposals which request financial support up to \$500,000. Authorization from the AID/Washington, is required by the Mission for project proposals which request more than this amount. The Mission may place a project proposal in Category 2 if it has minimum potential environmental impact. However, the Mission may decide to request authorization from Washington for the Category 2 activity based on the project's size.

The PEA also provides suggested environmental questions which can be used by the Mission to determine whether a proposed project proposal should be placed in Category 2 or 3. This information is based on information obtained from the Africa Bureau's *Environmental Guidelines for PVO/NGO Field Use in Africa* and the experience of the PEA team members.

E. Summary of Institutional Analysis

Throughout this PEA, sustainability has been defined in terms of a synergism between environmental, economic, and institutional components. Perhaps the greatest weakness of USAID's Transition program is the lack of a well thought-out approach to institution building at community, locality, district, provincial and national levels.

For example, PVOs supported under the Mission's transition program are coping with underdeveloped institutions in an ad hoc fashion. Save The Children Federation has on secondment from the Ministry of Agriculture one agricultural officer and six extensionists. While the Ministry has some good personnel, it does not have the capacity to keep them in the field. The Ministry is also more oriented toward assisting state farms and cooperatives than the smallholder rural farmer.

The GRM does not have the institutional capacity to work effectively with the Mission to implement the Mission's transition program. Because of AID and other donor requirements, there is a danger of overloading GRM institutions with assessment, monitoring, and evaluation requirements. Therefore, the PEA stresses the integration of environmental assessment and monitoring activities into the transition program implementation activities.

USAID/Mozambique is implementing its transition program activities mainly through NGOs. The primary reason for favoring NGOs is that they have the management capacity to deliver and monitor the type of assistance required under the program. In the long-term, however, it will be important for Mozambique's human and institutional resources to be improved in order to address the complex multi-sector problems and opportunities ahead.

To establish national environmental standards for economic development, the National Environmental Commission (NEC) was established in 1992. The purpose of the NEC is to coordinate with all appropriate Ministries and institutions to discuss environmental issues, establish environmental guidelines, and to store information on national environmental activities.

One of the tasks of the NEC is to develop a National Environmental Management Program (NEMP). The NEMP is intended to provide a framework for the integration of environmental concerns into Mozambique's overall economic development program. The GRM is planning to complete its program in March 1994. It is hoped that the NEC will eventually have the capacity to integrate environmental concerns into its development activities and to monitor impacts on the environment.

F. Conclusion

With assistance from the Mission, the process of reintegration and rehabilitation of Mozambique's displaced people is proceeding spontaneously and rapidly. As discussed above, the PEA team has examined the Mission's transition program within the context of the overall resettlement and rural development process. It has determined that there is not a potential for the Mission's transitional program to have a significant negative environmental impact in the short-term but that there could be environmental impacts in the long-term if not properly implemented.

The Mission has a unique opportunity in Mozambique. It has the opportunity to assist the government as it simultaneously develops both an economic development and environmental management program. This is being accomplished at a time when a significant amount of Mozambique's land has actually improved as a result of being abandoned during the war.

SECTION IX RECOMMENDATIONS

A. Proposed Alternative Approaches

The various components of the USAID/Mozambique program, including the transition program and other activities that relate to it, are well-conceived from an environmental point of view. While we do not recommend alternative approaches, we do recommend that the PEA environmental issues be incorporated within USAID/Mozambique's long-term CPSP program. Properly monitored and evaluated, the integration of environmental issues will reduce the need for more project specific environmental assessments in the future.

B. Proposed Supplemental Activities

B1. Support to Private Voluntary Organizations

The overall goal of the Mission's program is to move from relief to development through a sustainable process of reintegration, rehabilitation, and development. A large proportion of USAID assistance is channeled through PVOs. While the PEA team was impressed with the results achieved to date by PVOs, the Mission should play a more active role in assisting them to integrate, prioritize, and coordinate their activities.

USAID/Mozambique has already met with PVOs to define the parameters of its PVO grants management project. The scope of these meetings could be expanded to address the topics provided below.

- Provide assistance to standardize field methodologies (e.g., socioeconomic surveys, agricultural techniques).
- Identify lessons learned associated with PVO activities in Mozambique and other countries in southern Africa.
- Identify opportunities to integrate sustainable environmental interventions.
- Communicate policy initiatives which relate to PVO activities (e.g., tenure issues, traditional political authorities, marketing, institution building).
- Facilitate donor and GRM coordination.

B2. Facilitated Spontaneous Settlement

The Mission should place emphasis on helping displaced people to move to areas of their own choice instead of to areas dictated by the government. This approach will have more positive environmental, economic, and institutional impacts.

The Mission should be continually alert to the temptations government and donors face to revert to a more directed form of resettlement. Various resettlement plans have been discussed by the government and supported by donors such as UNHCR, UNICEF, and Italian Cooperation. Indeed, UNICEF and Italian Cooperation have already implemented resettlement projects in Manica Province. The success rate of such efforts in Africa is poor, while that of villagization schemes is even worse.

However, there may be a few exceptions to the policy of spontaneous resettlement. An exception may include smallholders (with secure land rights) and soldiers who prefer to settle adjacent to joint venture cotton and sugar cane farms. However, this exception should be at the request of the individual.

B3. Intensifying Production Activities of Spontaneous Settlers

Facilitated spontaneous settlement alone will not ensure sustainable development. If development is to be sustainable environmentally, Mozambique's farmers must increase their productivity without mining their resource base. The Mission may want to support research on the topic of sustainable agricultural systems.

An example of the type of research which may contribute to sustainable development is the Eduardo Mondlane University's agroecological research program on Inhaca Island. The research is targeted on improving the sustainability of cultivation on sandy soils. Though directly applicable to the relatively narrow coastal zone within the Tongaland/Pondoland vegetation complex, the results could also be relevant to areas in Mozambique where the Mission is supporting its PVO activities.

Adaptive research for sustainable production techniques will certainly be required in most of Mozambique's major ecosystems. The most detailed recent study of both sponsored and spontaneous settlement in Africa is the UNDP-funded and World Bank-executed Land Settlement Review (McMillan, et al, 1992). The study examines onchocerciasis (river blindness) control in eleven West African countries.

The study deals in detail with the dilemma posed by the type of extensive cultivation methods practiced by Mozambican farming households. According to the study, "the extensive land use system works as long as land is plentiful; it breaks down when land resources become scarcer. By the time a crisis occurs, levels of social conflict may be so high as to discourage the concerted community and household action needed for developing more sustainable land use systems."

B4. Pricing and Marketing

While the Mission is addressing pricing issues through policy dialogue, the Mission appears to be neglecting this subject in areas where it is assisting PVOs. For example, World Vision (which has the most impressive agricultural production program of the nine PVOs) is not directing attention to marketing issues.

Raising the productivity of existing household production systems is not sufficient when: prices are unfavorable; farmers cannot get their produce to market; or rural stores are poorly stocked (farmers reduce production if there is nothing to buy).

C. Options for Future USAID Assistance

Current USAID assistance to Mozambique falls predominantly in the category of short-term assistance for the transition to peace and stability. These and other USAID activities have been discussed in previous sections of this report. This section suggests directions and forms future USAID assistance might take to support sustainable development activities. This information is based on the PEA team's observations and discussions with the Mission and PVOs.

C1. Institution Building

We suggest that the Mission encourage PVOs to continue to coordinate with and provide on-the-job training for civil servants at community level. Examples of this type of local level institution building activity include PVOs working with:

- PRONAR in community well and pump construction and maintenance
- Ministries of education and health in the reconstruction of school and clinics (including housing for teachers and medical personnel)
- Department of Roads

Should the Mission decide to take a more project-oriented approach to agricultural production, we suggest that they consider institution building on a higher level and on a larger scale in the agricultural sector. While the World Bank has correctly emphasized extension as a prerequisite for rural reconstruction, there should be an appropriate extension policy (e.g., smallholder as opposed to state farm and cooperative emphasis) as well as something to extend.

The Mission is already financing research on specific topics through a number of land grant universities. We suggest that the Mission consider a more systematic way for building up Mozambican capabilities in the University and government departments which are of relevance to diversified community level production systems.

Perhaps most important to development in Mozambique, and more in accord with USAID priorities, is the development of institutions in the nongovernment and private sector. We recommend that USAID assist to the extent practical strengthening Mozambique's capacity to form NGOs and other institutions in support of the private sector and particularly village level self help.

C2. Agriculture

Once farmers have settled and stability is restored, there are a number of areas in need of assistance in the agricultural sector. These areas include: the promotion of sustainable agriculture and on-farm conservation; and the provision of inputs and utilization of outputs.

In simplest terms, this means agricultural extension and marketing. The PEA team does not recommend placing emphasis on expensive agricultural research during the initial stages of agricultural development. However, the PEA team does not wish to discourage on-farm adaptive research on a limited scale as part of agricultural extension. A considerable body of technology already exists for sustainable agricultural production, farm level conservation and natural resource management.

C3. Extension

Agricultural extension was largely neglected during the years of civil strife. The majority of agricultural development efforts were directed to production on state farms and cooperatives. Consequently, there is little expertise in assistance to smallholders who are and will continue to be the most important element in Mozambique's agricultural production sector.

A sensible approach is for USAID and other donors to develop extension projects, perhaps pilot projects in the beginning—and at the same time help develop the Mozambique's extension service through training and technical assistance. The extension service would promote sustainable technologies designed to increase family incomes, wean producers from the predominant shifting agriculture, and promote sound conservation and NRM practices.

C4. Marketing

During the war, Mozambique's marketing system deteriorated along with the public and private institutions. The system for providing agricultural inputs to farmers and managing agricultural surplus must be re-established as soon as possible.

Mozambique must rely on the private sector almost entirely to re-establish this marketing sector, at least in the immediate future. However, there will be inefficiencies in the system which may be addressed by policy measures, subsidies, marketing information, projects, or other interventions. The Mission may want to assist in the development of the agricultural marketing sector. Assistance might also be appropriate in international market development.

C5. Monitoring and Evaluation

The PEA team stressed the importance of monitoring the movement of displaced people during the resettlement process. It also emphasized the importance of monitoring the long-term impacts of the transition program activities on forests, protected areas, and water resources. For this reason, the Mission should consider the alternatives provided below.

- Procure short-term technical assistance to develop, test, and integrate monitoring and evaluation into the Mission's PVO grant management project and the Private Sector Support Program (PSSP).
- Procure a long-term environmental monitoring advisor to develop and implement a monitoring and evaluation strategy and system for the Mission's transition program and beyond.

C5. Wildlife and Protected Area Management

Protected area management activities could contribute to the development of Mozambique's economic development, commercial wildlife utilization, and community wildlife utilization.

In a 1992 document entitled *Wildlife Resources of Mozambique—A Portfolio of Priority Projects*, the Wildlife Department summarizes its opinion regarding the potential for protected area management to contribute to Mozambique's economic development:

"The potential for wildlife resources to contribute to development in Mozambique is as high as in any other country in the region—and possibly higher given the low rural population density and the 75 percent of land infested with the tsetse fly. Protected area management needs to be recognized and sufficient technical and funding resources provided to evaluate the resource base, and improve the capacity to manage and implement wildlife programs."

The Wildlife Department is interested in developing pilot integrated conservation and development projects (ICDP) based on the Communal Area Management Project for Indigenous Resources (CAMPFIRE) and Administrative Management and Design (ADMAD) community development projects in Zimbabwe and Namibia (Wildlife Department, personal communication). AID has significant experience implementing policies and interventions associated with ICDPs in Africa—particularly in east and southern Africa.

With few exceptions, AID has not linked its on-farm agricultural projects or policy reform programs to protected area management. The Mission may want to identify opportunities where its present or planned programs (e.g., private sector, PVO grants, policy reform) provide sustainable alternatives to rural farmers living adjacent to protected areas. For example, these sustainable alternatives could be in the form of:

- Incentives to use sustainable agricultural practices (e.g., land tenure)
- Off-farm employment opportunities resulting from training
- Increased revenue sharing associated with future tourism and trophy hunting (presently being conducted in the Maromeau Game Reserve)

The Mission should consider following the lead of other USAID Missions and request AFR/ARTS/FARA to design and conduct a sector-wide country assessment using the Bureau's impact monitoring framework. The assessment results could be used to focus NGOs, identify regional training, and provide a consistent framework to monitor future impacts.

C6. Forest Management

Deforestation is not a national problem. Due to the recent security problem in the rural areas, deforestation resulting from agricultural expansion has not been a major concern. However, deforestation is a localized problem which is seriously affecting some areas of the country. The areas where major deforestation has occurred are around the large urban centers and where the displaced populations have concentrated (Olivares, 1991).

The Beira corridor was an area visited by the assessment team which has a significant deforestation problem. The other areas visited by the assessment team appeared to have adequate fuelwood sources available.

The Beira corridor extends from the town of Beira on Mozambique's coast to the city of Harare in Zimbabwe. A railroad and highway provide an important trade route between the two countries. The protection of the corridor by both countries has created a safety zone for displaced persons during the civil war. As a result of the influx people into the area, deforestation has increased along the corridor. An increase in the population in Beira from displaced people has also increased the demand for fuelwood and charcoal in Beira.

The Marromeu and Quelimane assembly areas appear to have adequate fuelwood resources. People in the assembly area located outside of Marromeu reportedly have access to woody vegetation from sugar cane fields and those in the assembly area east of Quelimane have access to fuelwood resources located in nearby forested areas.

There are a number of forestry initiatives being developed by the donors and Mozambique Forestry Department. At this time, it is recommended that the Mission track the development of two forestry activities described below. These activities may influence the design of any future involvement that the Mission may have.

Fuelwood Management Strategy. The Forestry Department is in the process of developing a fuelwood management strategy for Mozambique. One of the recommendations from the strategy will likely be to work cooperatively with local communities regarding the use of forest resources. For example, the department may consider using the Zimbabwe CAMPFIRE and Zambia ADMAD projects as potential models for community participation.

The strategy will also likely include a means to resolve policy issues which provide disincentives to sustainable management (e.g., land tenure).

United Nations Development Program's Pre-Program to Support the Management of Forestry and Wildlands Resources. The United Nations Development Program approved a project in 1992 to support the National Directorate of Forestry and Wildlife. The project is entitled "Pre-Program to Support the Management of Forestry and Wildlands Resources." The project began in May, 1993 and will be implemented over an 18 month period by the Food and Agriculture Organization.

The objective of the UNDP project is to increase the institutional capacity of the government for sustainable and integrated management of forest and wildland resources. Community participation in sustainable forestry management and agroforestry will be promoted.

The Mission could eventually consider following the lead of other USAID Missions and request AFR/ARTS/FARA to design and conduct a sector-wide natural resources country assessment using the Bureau's impact monitoring framework. The assessment results could be used to focus NGOs, identify regional training and provide a consistent framework to monitor future impacts.

C7. Integrate Environmental Concerns Into the PVO Grants Management Project

The Mission's PVO grant management project is the principal vehicle for the implementation of its transition program. The Mission could establish the integration of environmental concerns as a priority for the PVO grant management project. Some suggestions for integrating environmental concerns into the project are indicated below.

- Conduct national PVO grant management project workshops
- Communicate the PVO grant management project strategy to PVOs in order to encourage the submission of collaborative PVO proposals which address the environment.
- Establish a consistent methodology for ongoing and planned socioeconomic and environmental impact monitoring surveys. Identify tentative impact indicators.
- Share lessons learned among PVOs and within the southern Africa region.
- Provide the opportunity for the National Environmental Commission to participate in the PVO workshops.

C8. Government Institution Strengthening

The government is presently in the process of developing a National Environmental Management Plan which will set the course for its activities in the sector. Within the context of this plan, the Mission could provide opportunities for the training of government staff in appropriate areas. Some suggestions for providing environmental training through the Mission's human resources development program are indicated below.

- Provide support for appropriate National Environmental Commission staff and NGO staff to participate in SADC regional environmental activities and training.
- The U.S. Department of Agriculture Office of International Cooperation and Development conducts training courses on environmental assessment and project monitoring. The Mission could provide support for appropriate government and NGO staff to participate in these Africa-based courses.
- Conduct an NGO and government staff needs assessment in the future before investing in significant environmental or impact monitoring training activities.

C9. Other Activities

Alternative agricultural development opportunities. Although the smallholder sector will continue to be responsible for the majority of agricultural production, there are other important opportunities in Mozambique. Irrigated agriculture (both small- and large-scale), plantation production of industrial crops, and specialized production of high value crops all have high potential. AID assistance might well be appropriate in small-scale irrigation development and high-value crop production.

Agricultural policy reform. Mozambique is in the process of changing from a Marxist-oriented centrally-planned state to a free market economy. This involves monumental changes in policy as well as practice. The Mission could provide technical assistance for agricultural policy reform as part of an institutional strengthening program.

Mozambique journalist workshop. The Mission could consider support for an environmental awareness workshop for Mozambican journalists within the context of its democratization and governance program.

ANNEX A
WILDLIFE AND PROTECTED AREA MANAGEMENT

A. Background

The wildlife management sector is administered by the National Directorate for Forestry and Wildlife within the Ministry of Agriculture. The Wildlife Department was established to manage Mozambique's wildlife and protected areas. Multiple use areas are defined and managed by EMOFAUNA, a parastatal organization under the National Board For Forests and Wildlife. Coral reef management is the responsibility of local port captains (Gove, 1993).

There are five officially recognized types of protected areas in Mozambique: National parks, hunting reserves, special vigilance and defence zones, game reserves and wildlife utilization zones (NORAD, 1990). According to the Wildlife Department, there are four National parks, five game reserves and twelve hunting areas. These areas cover a total area of 86,906 square kilometers or 10.8 percent of the country's land surface (Wildlife Department, 1992).

All forms of protected area management have collapsed as a result of the war. It is estimated that over one-third of the population depend significantly on wildlife for food. Poaching by armed forces is widespread and access to the profits of the ivory trade is an incentive to certain parties in the conflict to continue the war (Munslow, 1992).

In response to the dramatic decrease in the wildlife population, particularly elephants, rhino, and cheetahs, national park and game reserves were established in 1960 to control poaching (Dejene and Olivares, 1991). An inventory of wildlife populations has not been undertaken in Mozambique.

Following independence, there was an exodus of the wildlife department's technical experts and a weakening of the ranger corps. However, in the 1970's the government initiated a number of activities in support of wildlife management:

- A national conservation education program on the value wildlife resources
- Support of wildlife department staff to attend wildlife management courses at Tanzania's Mweka Wildlife College
- Revision and updating of wildlife legislation
- Surveys of protected area resources

Wildlife management in Mozambique deteriorated over the course of the war. Facilities have been destroyed and field staff were unable to conduct their work (NORAD, 1990). For example, Mozambique suffered substantial losses to its African elephant

population over the last decade. There were less than 15,000 elephants in 1991 resulting from uncontrolled poaching associated with the war and insufficient funding for wildlife management agencies. Mozambique suspended elephant hunting in 1989 (Safari Club International, 1992).

Protected area management activities could contribute to the development of Mozambique's economic development. In other southern African countries wildlife has proven to be an important economic development activity through tourism, commercial wildlife utilization, and community wildlife utilization. For example, wildlife resources are estimated to generate annual returns of over U.S.\$100 million (Wildlife Department, 1992).

In a 1992 document entitled "Wildlife Resources of Mozambique--A Portfolio of Priority Projects," the Wildlife Department summarizes its opinion regarding the potential for protected area management to contribute to Mozambique's economic development:

The potential for wildlife resources to contribute to development in Mozambique is as high as in any other country in the region--and possibly higher given the low rural population density and the 75 percent of land infested with the tsetse fly. Protected area management needs to be recognized and sufficient technical and funding resources provided to evaluate the resource base, and improve the capacity to manage and implement wildlife programs.

B. Geographic Areas

B1. Gorongosa National Park

The park is located in the southern limit of the Rift Valley. Habitats in the area include afro-montane forests, riverine forests, dry forests, miombo woodlands, mopani woodlands, broadleaf savanna, Acacia savanna, floodplain and lakes. The park is considered the most unique in Mozambique in terms of its ecosystems and wildlife populations. Serra Gorongoso is the principle park watershed.

According to Catterson (1991), wildlife populations have been on the decline during the military conflict. Gorongosa has been the main operations base for RENAMO in the Sofala Province. Approximately 3-4,000 people are still living within the boundaries of the park (personal communication with EMOFAUNA, June, 1993).

Gorongosa National Park was the only conservation area in Mozambique fully developed for medium density tourism. Approximately 27,000 tourists visited the park in 1971 (Catterson, 1991). The park is surrounded by hunting areas (numbers 6,8,9,14,15) in which professional safari hunting is permitted.

The Ministry of Agriculture is presently considering an expansion of the park boundaries (UNDP/FAO, 1991). If approved, the boundary of the park would be extended westward and directly north to the Zambezi River.

B.2 Marromeu Game Reserve

The Marromeu Game Reserve is primarily a floodplain ecosystem which part of the Zambeze delta. The vegetation of the area is composed of mangroves on the coast, seasonally inundated grasslands, tall palm savanna and various forms of Miombo woodland and forest.

According to Catterson (1991), wildlife populations have been severely depleted since 1979 as a result of poaching by the military. The elephant population is stable because they occur in the wettest and most inaccessible part of the reserve.

The proposed extension of the reserve boundary would extend the reserve westward and directly north to the Zambezi River.

Hunting area blocks (block numbers 10,11,12,14) surround the Marromeu Game Reserve. Habitats in the hunting blocks are similar to the reserve, except for block 12, which is dominated by dry forest. The diversity of habitats supports a wide variety of wildlife. Wildlife species which are hunted in the areas include Buffalo, Waterbuck, Sable, Lichtensteins's Hartebeest, Reedbuck, Oribi, Lion and Leopard.

According to EMOFAUNA (personal communication, June, 1993), a safari hunting concession was established in the area in April, 1993.

C. Mozambique Government Activities

The Wildlife Department has been limited in its ability to fulfil its responsibilities due to limited amounts of funding, information and technical capability. There is currently minimal information on the status of wildlife and protected areas in Mozambique. The Wildlife Department has received a limited amount of support compared to the forestry sector. For example, of the sixteen programs supporting the National Directorate of Forestry and Wildlife, only one program has been directly related to wildlife (Wildlife Department, 1992).

The central office of the Wildlife Department consists of six wildlife officers (who have or are receiving training) and three veterinarians. The field staff consists of 50 anti-poaching guards, who received para-military training in South Africa and less than 100 other field staff. The Wildlife Department estimates that it requires 2,000 staff to manage the country's 87,000 square kilometers of protected areas.

The anticipated return of refugees and displaced people (up to 40 percent of the population) back to Mozambique's rural areas could result in increased pressure on protected areas and associated wildlife. Private entrepreneurs who are interested in commercial opportunities associated with the protected areas (e.g., tourism, hunting, wildlife trade) could also place pressure on these areas. In the absence of independent assessments by the Wildlife Department protected area legislation, there is a potential for undervaluing and mismanaging the protected area resources.

The Wildlife Department has prepared a detailed description of seven priority projects which require support from the international community. The projects fit within the identified priorities of the "Provisional Program For The Forestry/Wildlands Sector" which was developed in cooperation with the United Nations Development Program and the United Nations Food and Agriculture Organization. The projects are divided into those requiring immediate implementation in early 1993 and those which can be implemented in the future. These projects are listed below.

C1. Immediate Implementation Required

- Rapid assessment of the status of protected areas
- Reconnaissance survey of the wildlife resources of Mozambique
- Wildlife resources legislation and policy
- Demobilization of soldiers and staff training for wildlife management

C2. Long-Term Projects

- Training for wildlife resources management
- Integrated conservation and rural development program
- Capacity building for wildlife management

Of the seven proposed activities listed above, only the Demobilization of Soldiers and Staff Training For Wildlife Management project is presently being implemented. The British government began support for the activity in 1993 and additional funding is anticipated from other donors. The Wildlife Department is also interested in developing pilot projects in the Tete and Niasa provinces based on the Campfire and ADMAD community development projects in Zimbabwe and Namibia.

C3. International Assistance

In addition to the proposed activities indicated above, wildlife management policies are in need of revision. The Wildlife Department is interested in obtaining support from the World Bank to conduct protected area management policy studies through the Global Environment Facility. The wildlife department staff are also coordinating with the International Union For The Conservation of Nature to procure consultants to assist the department in drafting a new wildlife management policy and associated legislation (personal communication with Ministry of Agriculture, June, 1993).

C4. Threatened and Endangered Species

Below is a list of U.S. Fish and Wildlife Service threatened and endangered wildlife species for Mozambique.

	Endangered	Threatened
Cheetah (<i>Acinonyx Jubatus</i>)	x	
African Wild Dog (<i>Lycaon pictus</i>)	x	
African Elephant (<i>Loxodonta africana</i>)	x	
Red Lechwe (<i>Kobus leche</i>)		x
Leopard (<i>Panthera pardus</i>)	x	
Pangolin (<i>Manis temmincki</i>)	x	
Black Rhinoceros (<i>Diceros bicornis</i>)	x	
Roseate Tern (<i>Sterna dougallii dougallii</i>)	x	
Nile Crocodile (<i>Crocodylus niloticus</i>)	x	

ANNEX B
MOZAMBIQUE FORESTRY SECTOR

A. Background

The forestry sector is administered by the National Directorate for Forestry and Wildlife within the Ministry of Agriculture. The Forestry Department was established in 1967 to protect and regenerate forest resources. It is being supported assisted by the United Nations Food and Agriculture Organization.

Eighty percent of the land area in Mozambique is covered with some form of vegetation--16 percent of that area is classified as being composed of forest resources. About two-thirds of the country's high forests are located in the Sofala province. Low elevation forests are found in the Sofala, Zambezia, Manica, Nampula and Capo Delgado provinces. The extensive areas of scrub and savanna forests in Mozambique are used as a source of building poles and fuelwood.

Deforestation has been identified as the main environmental issue in Mozambique. Logging, fuelwood collection and clearance for agriculture are the major causes of deforestation (World Bank, 1983). Fuelwood supplies account for approximately 83 percent of the total energy consumed in the country and 99 percent of the domestic energy. All of this wood comes from natural forests--the country's 7,500 hectares of fuelwood plantations have not yet been harvested (Fraser and Karkari, 1987).

There is a serious scarcity of fuelwood in and around major urban areas (e.g., Maputo, Beira, Nampula, and Quelimane). The clearing of forests for fuelwood and charcoal near these areas has resulted in deforestation. For example, fuelwood supply for Maputo comes from a distance of over 100 kilometers. Beira receives its fuelwood from an average distance of 30 kilometers. The annual average wood demand in urban land is estimated to be 0.7 cubic meters to 0.75 cubic meters per capita (World Bank, 1991).

Attempts to develop fuelwood production have achieved little success, as a plantation model was adopted rather than an agroforestry model (O'Keefe and Munslow, 1989). In the Nampula plantation, only one-third of the intended planting was achieved in 1988 and only 20 percent of the intended planting was achieved by the Forestry Experimentation Center. There is more reason for optimism in the case of small holder production of farm trees, which more closely follows a model of agroforestry. A gradual change from fuelwood to kerosene by Mozambicans would reduce pressure on the wood resources (O'Keefe, et al, 1991).

B. Important Geographic Areas

During the war, deforestation as the result of agricultural expansion was not a major concern. However, deforestation is seriously affecting some areas of the country. The areas where major deforestation has occurred are around the major urban centers and where the displaced populations have concentrated (Olivares, 1991).

The Beira corridor was the only area visited by the assessment team which has a significant deforestation problem. The other areas visited by the assessment team appeared to have adequate fuelwood sources available.

The Beira corridor extends from the town of Beira on Mozambique's coast to the city of Harare in Zimbabwe. A railroad and highway provide an important trade route between the two countries. The protection of the corridor by both countries has created a safety zone for displaced persons during the civil war. As a result of the influx people into the area, deforestation has increased along the corridor. An increase of displaced people located in Beira has increased the demand for fuelwood and charcoal.

The urban population of Beira receives its fuelwood from an average distance of 30 kilometers (Olivares, 1991). In the Macharote village assembly area (located east of Beira), villagers reported that women routinely walk over six kilometers to the nearest source of fuelwood.

The Marromeu and Quelimane assembly areas appear to have adequate fuelwood resources. People in the assembly area located outside of Marromeu reportedly have access to woody vegetation from sugar cane fields. Those people in the assembly area east of Quelimane have access to fuelwood resources located in nearby forested areas.

C. Mozambique Government Institutions and Activities

The Forestry Department is primarily concerned with providing fuelwood to communities on a sustainable basis. In order to obtain information for the management of Mozambique's forest resources, the Government of Mozambique has established a Biomass Energy Unit in the National Directorate of Forestry and Wildlife. The unit is responsible for the formulation of policy related to the use of biomass as a source of energy in the urban household, industrial and commercial sectors.

Landsat imagery was purchased in 1992 through the World Bank Urban Household Energy project. The classification of forest types in Mozambique is now completed. Biomass surveys have also completed for the Maputo and Gaza provinces. The inventories provide information regarding who is cutting the forests and the specific species which are being used. Image interpretation, ground truthing and biomass quantification, mapping and report writing will be completed in August, 1993.

The forest and biomass inventories will be used to develop a fuelwood management strategy for Mozambique. The strategy is planned to be completed in August, 1993. One of

the recommendations from the strategy will likely be to work cooperatively with local communities regarding the use of forest resources. For example, the department may consider using the Zimbabwe CAMPFIRE and Zambia ADMAD projects as potential models for community participation. The strategy will also likely include a means to resolve policy issues which provide disincentives to sustainable management (e.g., land tenure).

The Forestry Department is planning to conduct a number of other studies. Some of these studies are indicated below.

- The Effects of Slash and Burn Farming Techniques
- Woodfuel Market Structure and Dynamics
- Cooking Technology Research
- Traditional Charcoal Production Methods
- Sustainable Use of Natural Woodlands For Woodfuel Supply
- Woodfuel Conservation Strategies

The Forestry Regulation and Hunting Regulation of 1965 provide the sector legislation. These two regulations originated from the Soil, Flora and Fauna Protection Law of 1960. In September, 1991, a new Forestry Strategy Paper was developed which portrays sector policies under the national economic and social development objectives. The strategy paper has been endorsed by the Ministry of Agriculture and now awaits submission to the Council of Ministers.

D. International Assistance

According to the United Nations Development Program (UNDP)(1992), international assistance to the forestry sector in Mozambique began shortly after independence in 1975. The assistance has been characterized by intensive efforts in institutional building and human resources development. Until recently, the assistance has been predominantly multi-lateral, mostly through the United Nations system and from the Nordic countries.

Below are some examples of donor activities in the forestry sector as identified by the UNDP (1992).

- United Nations Development Program (UNDP) and the United Nations Food and Agriculture Organization (FAO)

The UNDP and FAO has been conducting forestry sector activities since 1978. During that period, five projects have been implemented in the areas of institutional building and human resources development. One of the results of these activities has been the taking over of the administration of the Forestry Department by trained Mozambicans.

The United Nations Development Program has approved a project in 1992 to support the National Directorate of Forestry and Wildlife. The project is entitled "Support to Management of Forestry and Wildlands Resources--Pre-Program." The project began in

May, 1993 and will be implemented over an 18 month period by the Food and Agriculture Organization.

The objective of the UNDP project is to increase the institutional capacity of the government for sustainable and integrated management of forest and wildland resources. Community participation in sustainable forestry management and agroforestry will be promoted.

Nordic Agriculture Program (NONAP). In concert with the UNDP/FAO projects, NONAP financed a series of forestry projects as a part of its larger contribution to the agriculture sector in Mozambique. These projects have included:

- Assistance to the government Forest Plantations for the Supply of Fuelwood to the Urban Areas project.
- Creation of the Forestry Research Center.
- Establishment of the Integrated Wood Industry Complex in the Manica province.

World Food Program Support (WFP). The WFP has been providing assistance to the sector since 1980. This assistance has consisted of providing subsidized rations for the labor force (food-for-work) in the plantation projects and in the saw milling industry. The present phase of the project is entitled "Development Through Forestry Activities" in the provinces of Manica, Maputo, Sofala and Inhambane.

Finland Donor Organization (FINNIDA). FINNIDA is providing assistance to the training of middle level forestry technicians through its project at the Agricultural Institute of Chimoio.

The World Bank. The World Bank/Energy Sector Management Assistance Program is providing support for the establishment of the Biomass Energy Unit in Forestry Department. It is also providing support for related studies and activities as part of the Urban Household Energy Project. The Urban Household Energy Project will also supply funding for the rehabilitation of existing fuelwood plantations around Maputo, Beira and Nampula.

The World Bank is also providing support to forestry extension through the Rural Rehabilitation Program in 40 priority districts in the Maputo, Gaza and Nampula provinces.

Opportunities for potential future donor support. The Mozambique Forestry Department staff could participate in regional projects sponsored by SADC. The Forestry Training Center and the Forest Industry Training Center are located in Mutare, Zimbabwe. FINNIDA and the Italian Government are providing support to these centers.

Three industrial wood plantations are under preparation in the southern part of Mozambique in joint ventures between South African Pulp and Paper Producers and the government.

**ANNEX C
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**ANNEX D
REFERENCES**

- Belayneh, Y. 1993. Supplemental Environmental Assessment for Locust and Grasshopper Control Operations in Mozambique. USAID Africa Bureau, Disaster Relief Coordination Office, Washington, D.C.
- Catterson, T., et al. 1991. *A Provisional Programme For The Forestry/Wildlands Sector*. United Nations Development Program. Food and Agriculture Organization. Maputo, Mozambique. (81 pp.).
- Commonwealth Secretariat. undated. *Institutional Development in the Agricultural Sector - Mozambique*.
- Dejene, A. and J. Olivares. 1991. *Integrating Environmental Issues Into A Strategy For Sustainable Agricultural Development*. The World Bank. Washington, D.C. (32 pp.)
- Direccão Provincial de Agricultura e Visao Mundial, undated. *Guiao Provincial do Campones Mozambique*.
- Fisher and Patricia Matteson. 1993. Supplemental Environmental Assessment for Pest and Pesticide Management in Connection with the Transition Program of USAID/Mozambique and AID/ARTS/FARA. Maputo, Mozambique and Washington, D.C.
- Galli, Rosemary. 1992 (August). Draft Memorandum on "Who will Rehabilitate Agriculture in the Post-War Period? Notes from Reading Christian Geffray, Signe Arnfred and Others."
- Gove, D. 1993. *Report on Mozambique Coastal Zone Management*. Mozambique presentation at the Workshop and Policy Conference on Integrated Coastal Zone Management in East Africa and Island States at Arusha, Tanzania during the period of April 21-23, 1993.
- KBN Engineering and TR&D. 1991. *Programmatic Environmental Assessment of the USAID/Bangla Desh Integrated Food for Development Program*. USAID/Dhaka.
- Knausenberger, W. 1993. *Scoping Statement and Background Paper: Programmatic Environmental Assessment*. U.S. Agency For International Development, Mozambique. (32 pp.).
- Kumar, Krishna (editor). In Press. *Innovative, Low Cost Data Collection Methods in Development Settings: International Case Studies*. Baltimore: Johns Hopkins University Press for U.S. Agency for International Development and the World Bank.

- Makanya, Stella Tandai. 1992. "Mozambican Refugees: Preparing for Repatriation." Pilot Study funded by the Ford Foundation through the University of Zimbabwe's School of Social Work.
- McMillan, Della, Thomas Painter and Thayer Scudder. 1990. *Settlement Experiences and Development Strategies in the Onchocerciasis Control Program Areas of West Africa*. Land Settlement Review, Binghampton.
- Ministry of Agriculture/Michigan State University/University of Arizona Research Team. 1992 (March 9). "Reflections on Relationships between Food Aid and Maize Pricing/Marketing in Mozambique."
- Mozambique Wildlife Department. *Wildlife Resources of Mozambique--A Portfolio of Priority Projects*. Maputa, Mozambique. (25 pp.).
- Munslow, Barry. Undated manuscript. "Mozambique: Sustainable Livelihood Rehabilitation and the Peace Process."
- Munslow, B. 1992. *Environmental Profile of Mozambique*. The Swedish International Development Authority. (48 pp.).
- Myers, Gregory W. 1993. *Land Tenure Issues in Post-War Mozambique: Constraints and Conflicts*. Madison: Land Tenure Center, University of Wisconsin.
- Myers, Gregory W. and Harry G. West. January 1993. *Land Tenure Security and State Farm Divestiture in Mozambique: Case Studies in Nhamatanda, Manica, and Montepuez Districts*. LTC Research Paper 110. Madison: Land Tenure Center, University of Wisconsin.
- Nunes, Jovito. 1992. "Peasants and Displacement: A study of displacement in Mocuba," manuscript of a study funded by SIDA.
- NORAD. 1990. *Mozambique--The Present Environmental Situation--1990*. A study financed by the Norwegian Agency For Cooperation for Development. (132 pp.).
- O'Keefe, P. and Munslow, B. 1989. *Understanding Fuelwood I: A Critique of Existing Interventions in Southern Africa*. *Natural Resources Forum*, 13 (1), pp. 2-10.
- O'Keefe, P. and I. Cherrett. 1991. *Mozambican Environmental Problems: Myths and Realities*. John Wiley & Sons. (18 pp.).
- Save the Children Federation. 1992 (March). *Mid-term Evaluation Survey*.

Scudder, Thayer. 1984. *The Development Potential of New Lands Settlements in the Tropics and Subtropics: A Global State-of-the-Art Evaluation with Specific Emphasis on Policy Implications, Executive Summary.* U.S. Agency for International Development Program Evaluation Discussion Paper No. 21. Washington, D.C.: USAID.

TAMS and Consortium for International Crop Protection. 1989. *Locust and Grasshopper Control in Africa and Asia, A Programmatic Assessment,* USAID.

Tanner, Christopher, Gregory Myers and Ramchand Oad. 1993. *Land Disputes and Ecological Degradation in an Irrigation Scheme: a Case Study of State Farm Divestiture in Chokwe, Mozambique.* LTC Research Paper 111. Madison: Land Tenure Center, University of Wisconsin.

U.S. Agency for International Development. 1993. *Toward a Sustainable Future for Africa.* ARTS, Washington, D.C.

U.S. Agency for International Development. Undated. "Trip to Capo Delgado-LOMARCO Operations in Montepuez 24 - 26 January 1993."

U.S. Agency For International Development. 1992. *Facing The Challenge of Water Supply and Sanitation Goals For Africa (1993-2000).* Washington, D.C. (38 pp.).

U.S. Agency for International Development. 1992. *Environmental Guidelines for PVOs and NGOs: Potable Water and Sanitation Projects.* WASH Project, USAID Bureau for Research and Development, Arlington, VA 22209

U.S. Agency For International Development. 1992. *Mozambique Primary Health Care Support.* Maputo, Mozambique. (29 pp.).

U.S. Agency for International Development. 1980. *Environmental Design Considerations for Rural Development Projects.* Washington, D.C.

U.S. Agency for International Development/Africa Bureau. 1982. *Environmental Environmental Guidelines for PVO/NGO Field Use.* Washington, D.C.

U.S. Agency for International Development. 1993 (April 26). Memorandum on "Meeting on Reform of Local Government and the Role of Traditional Political Authorities, Ministry of State Administration April 19-23, 1993 (J.Michael Turner).

U.S. Agency for International Development. 1993 (June 24). Memorandum on the "Demobilization of the first group of 16,000 soldiers" (Ruth Buckley).

U.S. Agency for International Development. 1992 (November 2). Unclassified cable (E.O. 12356) on "The Peace Process in Mozambique and U.S. Economic Assistance.

- U.S. Agency for International Development. 1993 (June 30). Memorandum on "Working Toward a People-Level Impact Monitoring System for the Transition Program" (Roy Thompson).
- United Nations Development Program. 1993. *Support to Management of Forestry and Wildlands Resources--Pre-Program*. Maputo, Mozambique. (29 pp.).
- United Nations Conference on Environmental Development, 1991. *Mozambique--Country Report For UNCED 1992*. Mozambique, Maputo. (177 pp.).
- United Nations Food and Agriculture Organization. 1987. *Forestry Subsector Study--Mozambique*. Rome, Italy. (68 pp.).
- Visal-Viak. 1992. *Surveillance and Control of Mozambique's Coastline and National Waters*. Maputo
- Visão Mundial. Undated. *A Tua Horta* (extension booklet) Mozambique.
- Wilson, Ken. 1992 (October). "Challenges for the Post-War Period in Zambezia: a field report on the current situation." Manuscript.
- World Bank. 1984. *The Experience of the World Bank with Government-sponsored Settlement of New Lands*. Report Number 2625. Washington, D.C.: World Bank (OED).
- World Bank. 1993 (February 25). *Staff Appraisal Report: Mozambique - Rural Rehabilitation Project*. Washington, D.C.: Agriculture Operations Division, Southern Africa Department.
- World Bank. 1993 (June 10). *Mozambique: Issues for the Transition from Emergency to Sustainable Growth*. Washington, D.C.: World Bank.
- World Bank. 1991. *Putting People First: Sociological Variables in Rural Development*. Edited by Michael M. Cernea. London: Oxford University Press for World Bank.
- World Bank. 1992. *Staff Appraisal Report - Mozambique Agricultural Services and Development Report*.
- World Bank. 1992. *Strategy and Program for Managing the Transition to National Reconstruction*, Consultative Group Meeting, Paris.
- World Resources Institute. 1993. *World Resource: 1992-1993*. Washington, D.C. (378 pp.).
- World Bank. 1991. *Mozambique--Urban Local government and the Environment Sector Review*. Infrastructure Operations Division of Southern Africa Department. (42 pp.).

- World Bank. 1990. *Mozambique--Population, Health and Nutrition Sector Report*. Washington, D.C. (113 pp.).
- World Bank. 1991. *Fisheries and Aquacultural Research Capabilities and Needs in Africa*. Technical Paper 149, Washington D.C.
- World Bank. 1992. *Mozambique Staff Appraisal Report--First Roads and Coastal Shipping Project*. May 6, 1992. Southern Africa Department. (222 pp.).
- World Bank. 1988. *Mozambique--Country Environment Issues Paper*. Washington, D.C. (86 pp.).
- World Vision of Mozambique. Date unknown. *Food Security Initiative For Returnees in Central Mozambique*. (36 pp.).

ANNEX E
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT TEAM MEMBERS

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ANNEX F

SCOPING STATEMENT AND BACKGROUND PAPER

Issues not to be addressed include demobilization, health services, and education. Other activities may be adequately covered by existing review procedures.

Environmental Monitoring, Evaluation and Mitigation. The PEA should outline for the GRM, PVOs and other implementing partners, a monitoring and evaluation plan/program, by which significant negative environmental impacts can be discovered and reviewed. The PEA would also identify specific environmental indicators to be used by the GRM, and it should indicate which of the responsible GRM institutions or PVOs will be providing the data that could be used to monitor performance in the environmental sector. Further, a listing of appropriate actions needed to mitigate impacts should be drawn up, and actions indicated as needed from the responsible GRM agencies and in-country organizations and community-based institutions.

The PEA should also identify opportunities for introducing appropriate and inexpensive environmental information systems (EIS), as a means of providing for a "tracking system" and the collective oversight over transition activities in the GRM, while also serving Mission monitoring needs. What are the spatially-related baseline data and data-gathering activities already available or planned? For example, what is the relevance of the FEWS data and sampling capacities?

Training and Environmental Education. The PEA should scrutinize the main collaborating institutions involved in USAID's Transition Program, and identify training needs and attempt to match them creatively with opportunities, either bilateral, regional A.I.D., AID/W, or other donor programs. Very appropriate at this stage of the transition process would be environmental awareness building exercises, including at the school level, for the general public through different media. Several ideas raised during the scoping are reflected in the discussions under Human Resource Development, the Democratic Initiatives Project, and in Appendix IV.B, and include: a Workshop for Journalists on Environmental Issues, to promote public dialogue during electoral debates; Civic education sessions to link democracy and environmental awareness; Mozambique Workshop on Rehabilitation of Protected Areas and Conservation Networks (planned for Oct. 26-29, 1993).

An illustrative suggested format for the PEA document is presented, as is extensive appendix material reflecting the results of the scoping process which occurred during a three-week period during the month of March 1993.

BACKGROUND AND RATIONALE FOR PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA)

Mozambique Country Situation

After suffering repeated civil war conflicts for nearly two decades and a sequence of natural disasters including the century's worst drought in 1991/1992, Mozambique appears to be emerging at last from the internationally-declared disaster status it has been in since 1987. The cease-fire and comprehensive Peace Accords between the FRELIMO (Government of the Republic of Mozambique) and RENAMO, signed in October 1992, represented a much-welcomed breakthrough, and appear to have stabilized in a major way the prospects for economic, social and environmental recovery. In addition, the drought appears for all practical purposes to be over¹.

Thus, the stage is set for the re-integration and return of the nearly one-third of the Mozambican population that has been displaced or forced to migrate to neighboring countries due to the continued insecurity. An estimated 3.6 million persons were internally displaced or affected by the drought, many of them moving into peri-urban areas. An additional 1.3 million were thought to be refugees in neighboring countries, with the majority in Malawi. Added to this are the demobilized soldiers and their families, up to 320,000 persons. This implicates on the order of 4 to 5 million people in the reintegration, resettlement and rehabilitation process. The distribution of the internally displaced and refugee population is represented in Figure 1. This process is proceeding spontaneously and apparently rapidly, despite remaining deficiencies, such as civil insecurity (e.g., mined roads), food insecurity, lack of human and physical infrastructure, and a stagnant economy.

This spontaneous resettlement has called for immediate remedial action, in the form of food and humanitarian assistance, on the part of GRM, the NGO and donor community. With the assistance of the UN Office of Humanitarian Assistance Coordination (UNOHAC), detailed plans are being formed and implemented to facilitate the process of repatriation and return, to improve the returnees' capacity to participate fully in long-term developmental activities. USAID/Mozambique is participating actively in this process.

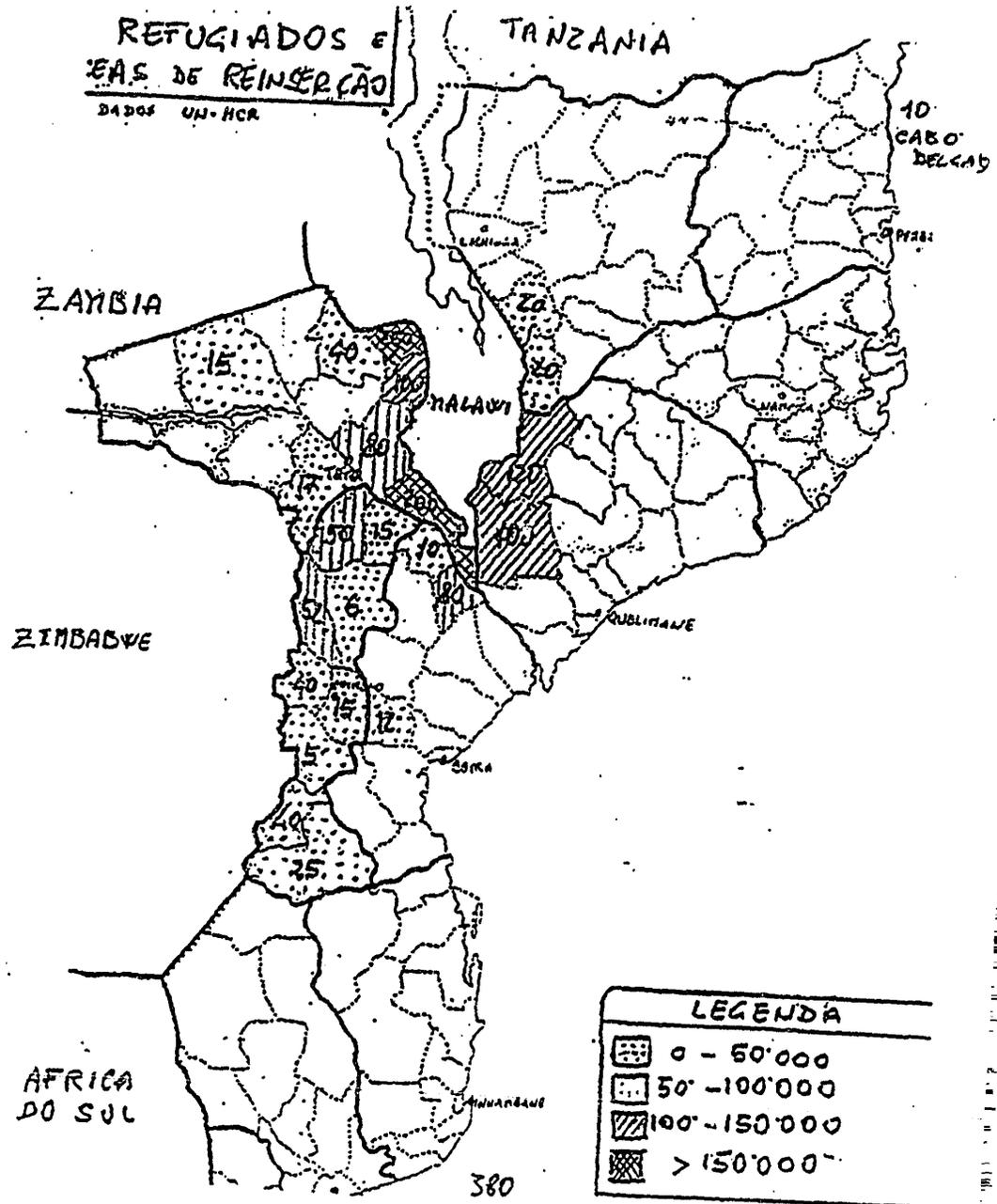
A GRM transition strategy envisages moving from short-term rehabilitation, supporting the peace process, to longer-term national reconstruction. It is capsulized in three programmatic thrusts:

- a) demobilization of the armed forces and families.
- b) resettlement and re-integration of the displaced and refugee populations, focussed on facilitating the immediate recovery of productive capacity. This includes programs for food aid, basic health and human services; basic household goods; basic transportation infrastructure; basic education services.
- c) a democratization program, giving priority to the electoral process, as agreed to within the peace treaty.

While Mozambique has been committed to, and is making progress under, its Economic and Social Rehabilitation Program (see below), the government does not have a comprehensive framework for linking these objectives with sustainable environmental and natural resources management. This raises the real possibility that economic rehabilitation efforts could have the unintended result of increasing degradation of these resources, which constitute the life support base and foundation of productivity. In turn, this would lead to resource depletion, further increasing the vulnerability of the poor.

¹ Although some pockets of dry conditions still existed as of March 1993.

Figure 1. Approximate density of refugee and uprooted populations, by Province in Mozambique, as of October 1992. Per UNHCR data (best available map).



While Mozambique is well endowed with renewable natural resources, they have been undergoing degradation due mainly to the distortions of war and the concentration of people in the few secure areas. A full accounting of the state of the natural resources is not available², but it is apparent that the increased stress on the poor has led to a "predatory" use of resources and abandonment of traditional conservation measures. The war reclaimed some designated protected areas, and valuable timber and wildlife resources were depleted to finance the war. Any effective rehabilitation and reconstruction program must tackle the issue of sustainable natural resource use, conservation and restoration. The resilience of the population and its ability to restore productivity will be impaired unless serious commitment is given to environmental sustainability.

Mozambique's National Environmental Management Program (NEMP), described below, is ideally placed to assist in guiding the rehabilitation and reintegration of the nation's natural and human resources, in a fashion fully linked to social and economic rehabilitation and growth. A number of significant initiatives are underway which will be supportive of this process, and should be linked as closely as possible with the NEMP. The most important of these include (described below):

- ▶ National Reconstruction Plan/Program (GRM)
- ▶ National Family Sector Agricultural Development Program (GRM/FAO/UNDP)
- ▶ Agriculture and Environment Consultative Group / World Bank
- ▶ Agricultural Sector Review (GRM/FAO/donors)

USAID's Transition Development Program

USAID/Mozambique has committed itself to an 18-month program to support Mozambique's transition from short-term relief through rehabilitation to long-term development. Its main elements include, in brief:

- ▶ Drought-related relief/emergency assistance (food, water, seeds and tools)
- ▶ Support for the Peace Process
 - o Demobilization (transportation, care to children, handicapped, women, grants to PVOs, monitoring)
 - o Demining
 - o Elections (civic education, air transport)
 - o Rural rehabilitation and recovery (through grants to PVOs)
 - o Rural roads rehabilitation

A substantial portion of this assistance is drawn from the so-called Sub-Saharan Africa Disaster Assistance (ADA) account, which are emergency funds not subject to most of the normal USAID Environmental Procedures. Nevertheless, emergency funds are used in a highly responsible manner, and are subject to rigorous monitoring and management criteria.

² Note: the Environmental Working Group (GTA) has produced an excellent literature review entitled "Mozambique: The Present Environmental Situation" in two volumes. See Appendix V.

- ▶ **Maintenance of a Core Development Program**
 - Policy dialogue
 - Grants to PVOs
 - Legal sector reform
 - Primary Health Care Project
 - Long and short-term training
 - Commodity Import Program
 - Commercial food aid
 - Land tenure and traditional authority research

In part, the above development assistance is reprogrammed in support of humanitarian efforts related to the peace process.

In addition, the mission is preparing for a new long-term country development strategy plan (CPSP).

USAID Environmental Procedures and Natural Resources Programs

The purpose of an environmental assessment is to provide A.I.D. and host country decision makers with a full discussion of the "reasonably foreseeable" significant environmental effects of a proposed action or class of actions. It includes alternatives which would "avoid or minimize adverse effects or enhance the quality of the environment so that the expected benefits of development objectives can be weighed against any adverse impacts on the human environment or any irreversible or irretrievable commitment of resources" [22 CFR 216.6(a)]. Collaboration and consultations between A.I.D. and host government (GRM) are indispensable features of the assessment, beginning in the early stages of preparation. For activities funded by the Development Fund for Africa, involvement of the local private and voluntary community, including women, is also essential.

Programmatic environmental assessments (PEAs) are undertaken to assess the environmental effects of a number of individual actions and their cumulative environmental impact in a given country or geographic area, or the environmental impacts that are generic or common to a class of actions. The form and content of the PEA is essentially the same as, or analogous to, project EAs. Programmatic evaluations of classes of actions are also conducted to better define the nature of actions to be taken and establish criteria for additional categorical exclusions or negative determinations and conditionalities, and/or to establish criteria for program implementation which will minimize the adverse effects of such actions.

Subsequent, or supplementary, environmental assessments (SEAs) on major individual actions will only be necessary where such follow-on or subsequent activities may have significant impacts which could not be or were not adequately evaluated at the time of the PEA. The intent is also to reduce the amount of paperwork and time required for subsequent analyses and actions associated with the program, in this case, the USAID/Mozambique Transition Program.

Another option, recently introduced, and applicable to threshold decisions regarding long-term potential for environmental consequences, is the development of an Environmental Impact Review. The purpose of this review is to provide a baseline study on the present state of the natural resource base and its management, and to allow effective monitoring in the future, particularly as related to deterioration of the inherent quality of the media being affected, and the consequent impact on productivity of the resource (especially in agriculture, forestry and fisheries).

The 1992 U.S. Foreign Assistance Act (FAA)(Sect. 496, H.R. 5368), which sets out the terms of the Development Fund for Africa (DFA), specifically requires that institutional and policy reforms "shall also include provisions to protect...long-term environmental interests from possible negative consequences of the reforms." It will be a challenge to meet this requirement, because little is definitely known about either the impacts of policy reform on the environment or about how to assess those impacts. This requirement of the FAA calls for an analytical consideration of the kinds of policy reforms which are likely to have an impact on the management of the environment in the long run.

Examples include reforms influencing:

- ▶ privatization of public and parastatal enterprises;
- ▶ conditions enabling improved access to credit;
- ▶ the forms of land tenure which are permitted by law or tradition;
- ▶ how land is used, and how its use responds to economic change;
- ▶ structures for marketing and pricing agricultural products;
- ▶ trade policy and the terms of trade between agriculture and industry.

Achieving Sustainable NRM-based Economic Development under DFA

The Development Fund for Africa recognizes that sustained and broad-based economic growth is inextricably linked to responsible stewardship over the natural resource base. The Africa Bureau's Plan for Supporting Natural Resources Management reflects this perspective, and merges support for stewardship of the natural resources base with support for development of the rural economies of African nations where A.I.D. has natural resource management programs. Increasingly, it is essential that donors move beyond reviewing development activities for potential environmental impacts to supporting programs which are primarily focussed on environment and development linkages sustaining and restoring the productive capacity of NRM base. The multiple linkages among the environment, population growth, poverty, public health, market, public and non-governmental institutions, and social culture require a coordinated, geographically-specific approach to build on the positive and break the negative linkages between development and the environment.

PEA's Relationship to USAID/Mozambique Transition Program

USAID/Mozambique is requesting that a Programmatic Environmental Assessment of its Transition Development Program be conducted because:

- ▶ a potential exists for environmental impact of the various programs and activities, in their aggregate, but the nature and scale of this impact cannot be assessed adequately on a case-by-case or projectized basis;
- ▶ the immediate and long-term environmental implications of the relocation of millions of people needed appraisal;
- ▶ conclusions from the assessment are expected to be useful to inform programmatic decisions about sustainable development strategies which the mission could support.
- ▶ the PEA is expected to be supportive of the GRM's and mission's need to integrate environmental concerns into the country's economic and social development plans and strategies; and

- ▶ mitigation measures specifically applicable to USAID's Transition Program, implementable both immediately and in the medium- and long-term, are needed.

The PEA will serve as the necessary framework to ensure that all important issues are anticipated and addressed for the entire class of actions to be undertaken during the transition program in support of Mozambique's transition from emergency response to long-term development. Likewise, it provides an opportunity to involve the GRM, NGOs and other donors in a constructive process, and is expected to assist the process of launching a NEAP and perhaps of supporting ancillary activities, to the extent that the management and resources required of USAID would be minimal.

RELATIONSHIP OF PEA TO GRM, NGO ACTIVITIES AND OTHER DONOR INITIATIVES

The PEA needs to be conducted with full cognizance of major existing related initiatives and programs. The following discussion records many of these, for which further analysis may be appropriate by the PEA team.

Government of the Republic of Mozambique (GRM)

Economic and Social Rehabilitation Program (ESRP)

Since 1987, the GRM has embarked on an ambitious program to reform the country's economic and social policy so as to establish sustainable growth to overcome the extreme poverty which afflicts over half of the population. The ESRP provides the core framework within which the specific programs related to demobilization, elections, resettlement and rehabilitation are being developed to address the immediate needs arising from the October 1992 peace agreement. The primary means with which the objectives of the ESRP are being pursued consist of: (a) the fundamental restructuring of the economy, (b) rehabilitation of the economic and social infrastructure, and (c) the creation of an economic environment in which competitive and efficient production can be stimulated. Sound progress appears to have been made, for example in enterprise restructuring and privatization. The status of this multi-faceted plan is reviewed in the report of the World Bank Consultative Group Meeting of December 1992 (Paris).

National Reconstruction Plan (NRP)

The NRP is the set of specific programs and plans established to ensure a successful transition from emergency and rehabilitation to national reconciliation and reconstruction. Provincial authorities have prepared reconstruction plans, and the central government has assembled these into a coordinated national plan. The NRP has two phases:

- (1) short-term emergency response, rural resettlement and production recovery, which includes: a) demobilization of armed forces; b) national parliamentary and presidential elections by mid-1994; c) re-integration of refugees, internally displaced and affected households, with a focus on the recovery of the agricultural sector. This will occur through provision of basic inputs at the household level of agricultural production, and simple infrastructure and social services to allow communities to function again.
- (2) medium-term reconstruction and development program, consisting of larger integrated programs allocated according to the geographic distribution of population resulting from the first phase of the NRP.

National Environmental Monitoring Program (NEMP) and National Environmental Action Plan (NEAP)

Mozambique is now one of over 20 African countries which have launched NEAP processes, referred to in Mozambique as the National Environmental Management Plan (NEMP). A National Environmental Commission (CNA)³ has been established to spearhead and coordinate the NEMP process. While a seed grant has been provided by the World Bank to assist in launching the process, the planning process for developing the NEMP in Mozambique has been slowed down by the heavy demands on time and talent created by post-war rehabilitation needs and the economic and political transition.

The CNA has been called upon to develop ad hoc, rapid and action-oriented planning and guidance for sustainable development, all the while recognizing that the NEMP is needed to develop the framework for environmentally-sensitive, broad-based, consensus-derived and coordinated development initiatives in all social, economic and natural resources sectors. NEAPs help focus attention on sustainability and provide a longer-term plan, without which the risk is great of having an array of uncoordinated actions by the GRM and the many donors, which may end up working at cross-purposes and having adverse impacts on the most constructive rehabilitation efforts. The time is propitious for the NEMP to provide a much-needed framework for integrating environmental considerations into the nation's economic and social development.

The Director of the CNA envisions the NEMP as leading to sets of sectorial action plans and implementation actions by the various ministries; a NEAP would be the first -- the overall plan and strategy, to be completed by March 1994. Recognizing CNA's and GRM's dilemma of being stretched in dealing with the on-going transition programs, an April 1993 *Aide Memoire* between the World Bank and GRM sets out a revised and less ambitious process to launch the NEMP. This change divided the NEMP into two independent phases, with the first being the preparation of the NEAP (confirming the above statement by the Director), and a second, presumably partially concurrent phase, to replace the originally proposed Working Groups with a series of workshops and seminars at the local, regional and central levels. Clearly, an immediate need exists for training of various sorts. One priority for training should be on environmental assessment and monitoring methodologies.

Agriculture Sector Review

An effective agricultural development strategy needs to be developed and implemented by the GRM, to facilitate the rehabilitation of returning populations and restoration of agricultural growth. To this end, the World Bank is initiating, with the FAO and other major donors participating, a major Agricultural Sector Review in the Spring of 1993. This should help avoid a fragmented approach to agricultural development and maximize the effectiveness of the available managerial and technical staff, of which there is an acute shortage. The Agricultural Sector Review should be complementary to, and closely linked with, the development of the NEAP/NEMP.

National Family Sector Agricultural Development "Pre-Program" and the Land Tenure Issue

This is a comprehensive two-year introductory agricultural development program also being launched in the Spring of 1993 by the Ministry of Agriculture, assisted by the FAO, and funded by UNDP. As suggested by

³ Comissão Nacional do Meio-Ambiente. The CNA is expected to be accorded ministerial rank, but it will have mainly coordinating functions.

the term "family-sector", the program is strongly based on the principle of promoting community participation in agricultural production decision-making. It combines three main components, 1) land evaluation and assessment of land potential, 2) agricultural research and extension, and 3) agricultural statistics and socio-economic characterization. Land tenure, credit access and other issues will be addressed at the village and district levels, with government representatives as equal partners in the dialogue. In this way, the program seeks to promote decentralized and objective participatory land use planning and rural development.

The USAID-funded Land Tenure Center project has successfully promoted the establishment of Land Boards and Land Tribunals to address and resolve land access issues. This is a critical issue for the PEA as well. For example, large numbers of requests from investors and officials are being received for concessions and other access to land; these affect particularly forest, wildlife and coastal resources, especially in the absence of an established and well-demarcated protected areas system.

NGO/PVO Community

International PVOs and domestic PVOs/NGOs, as agents of the GRM, donors and public at large, are the major players when it comes to addressing the basic requirements of people returning to repopulate rural areas. An overview of the activities and accomplishments of many PVOs and NGOs operating in Mozambique would be very informative, and could be done in the context of the NEMP/NEAP.

Donors

The activities of the international donors in Mozambique are many, but the support pattern is widely thought to be highly fragmented, so the activities risk not being positively reinforcing. Donors' activities need to be better characterized, and coordinated to the extent logical. It is urgently necessary that a national framework for integrated conservation and development across a broad social, economic and environmental front be established to maximize the effective use of resources available. This is a role the NEMP/NEAP would play, as mentioned above. Important complementary efforts to this include the Agricultural and Environmental Consultative Group (AECG), established as a forum for collaboration among donors involved in these two intersecting areas. The Agricultural Sector Review described above is an outgrowth of this AECG initiative. The World Bank has established a small secretariat to coordinate the agriculture and environment activities of these donors in the major countries of southern Africa, similar to the Mult-donor Secretariat which exists for the coordination of the preparation of NEAPs.

DESCRIPTION OF USAID PROGRAMS AND PROJECTS TO BE ADDRESSED BY THE PEA

As explained above, two separate sets of activities are in the portfolio of the USAID Mission, directly and indirectly supportive of the transition and peace process. They are basically distinguished as to whether they are funded by Disaster Assistance accounts, food assistance accounts, or by the Development Fund for Africa (DFA). The DFA sets out unique dispensations mandating a long-term focus on sustainable resource management. The Environmental Procedures strictly apply only to the DFA and other development assistance programs. However, prudence and responsible implementation of the disaster account-funded activities call for accountability and routine monitoring systems to be in place. How these systems relate to guidance which may be provided by the PEA remains to be determined.

Mission Transition Programs

These are by definition short-term, rapid activities funded by the ADA emergency account.

Demobilization Support Program

With the cessation of the hostilities following the peace agreement, restoring conditions which permit a lasting peace is a high priority. It is of paramount importance that the armed forces be rapidly disarmed and demobilized. There are potentially between 70,000 and 107,000 thousand soldiers and paramilitary forces to be demobilized; with the demobilized forces' families, there could be up to 320,000 persons involved in demobilization. The process of demobilization and disarmament will run about six months, if it runs as foreseen (probably at least into October 1993), and will have two phases: (1) assembly in up to 49 areas of five-kilometer radius, centered on villages, and (2) free transportation of the ex-soldiers and their families to the location of their choice, and re-integration into civilian life, including provision of a re-establishment allowance equivalent to six-months' pay. The demobilization program is intended to pave the way for a smooth transition, to re-integrate demobilized troops, families, refugees and displaced people into productive economic activities in Mozambique. The program will feed into USAID and other donor programs to support the provision of seeds and tools (AgPacks and VegPacks); emergency relief, training and the rehabilitation and reconstruction of critical infrastructure.

Intended to last 7 months start to finish, the USAID Demobilization Support Program represents USAID/Mozambique's contribution to a multi-donor effort, and is funded at \$U.S. 15 million from Sub-Saharan Africa Disaster Assistance (ADA) sources. There are eight elements to the global multi-donor effort: (1) food, (2) health, (3) water and sanitation, (4) registration, (5) transportation, (6) civilian clothing, (7) special programs, and (8) a re-establishment allowance. USAID will support only item #5, transportation of disarmed soldiers and families, and #7, special programs directed at vulnerable groups -- war-affected women, children and the handicapped.

This will be implemented through the UN Trust Fund (ca. \$ 5 million); International Organization for Migration (ca. \$ 5 million); and WHO, UNICEF and NGOs such as Save the Children (ca. \$ 4.5 million). In addition, \$500,000 will be allowed for USAID monitoring and project management.

Demining Activity

Up to two million land mines on Mozambican territory are considered to constitute the most important constraint to the delivery of emergency assistance and reintegration of displaced persons and refugees. USAID expects to use about \$ 4 million of the Sub-Saharan Disaster Assistance (ADA) funds for the demining of priority roads and border crossings in Mozambique, both for drought-affected areas and demobilization assembly areas. Funds are expected to be made available to a UN Trust Fund or a private U.S. company subject to the guidelines established by the UN. The total cost of the program is estimated at over \$ 28 million, and will include the establishment of a national mine training school to train Mozambicans to manage the long-term demining of the country, which is estimated to be a 20-year operation. USAID expects the refugees and displaced, estimated to number between 4.5 to 5 million, to quickly take advantage of safety in the countryside to return to subsistence agriculture on traditional plots. The ability to return to the land thus is thought to immediately benefit millions of men, women and children.

Rural Access Activity (RAA)

USAID/Mozambique's Rural Access Activity (RAA) is designed as a 24-month activity to help open up all-weather road access to areas of high priority for emergency relief, reintegration, and recovery from the drought. The activity would provide direct access for (a) relief distributions to areas currently supplied by costly airlifts, (b) large numbers of refugees, displaced persons, and demobilized and their families returning to their homes, (c) pre-election activities, including voter registration, and (d) regenerating commercial activity which is critical to post-war social and economic reintegration. The intention is to bring additional resources to bear, through contracts with private construction companies, for the rapid reconstruction of essential physical infrastructure.

USAID carries out an emergency food distribution program that entails airlifting food at great expense into several sites along the Zambezi River. Since the October 1992 signing of the Peace Accord, many previously inaccessible areas can now be entered by road, yet most of these roads suffer from two decades of no maintenance as well as war related damage and some must be cleared of mines. This activity is expected to begin by June 1993, with a funding request at the level of \$US 17 million, of which \$ US 15 million would be under the current drought emergency relief and recovery project of USAID's Southern Africa Regional Programs (SARP), linked to SADC and managed by USAID/Harare), and the Sub-Saharan Africa Disaster Assistance Program (ADA).

The RAA proposes to undertake the following actions:

1. Quickly and simply rehabilitate up to 600 kilometers of gravel surfaced roads, thereby providing direct access to existing emergency relief distribution centers as well as to areas expected to be transited or re-entered by returning war and drought displaced, and refugees.
2. Carry out rapid temporary repairs on approximately 270 kilometers of paved road on the Beira-Tete-Malawi corridor where the pavement surface is being destroyed by the heavily increased traffic since the October 1992 cease-fire and movement of food supplies over the long unmaintained road. Rapid temporary repairs are needed for the roads to remain functional over the next three to four years.
3. Convert the existing rail bridge over the Zambezi River at Sena into a road vehicle bridge. This would involve replacing two spans, one on each end, with "bailey" type bridges and decking to provide a vehicle running surface.

This activity addresses the immediate needs of providing basic infrastructure and access for the returning population to the rural sector, access for civic and pre-election programs, and access for the return of commercial activity to a large, populous and productive region of the country. The GRM is committed to the development of a normalized road rehabilitation and maintenance system, through the post-war recovery program, the implementation of the UN Humanitarian Assistance Coordination program (UNOHAC), and the World Bank Roads and Coastal Shipping Project (ROCS) .

Food Aid, Food Security and Environmental Impact

At \$225 million in FY 1992, the USAID program in Mozambique was the largest U.S. assistance program in sub-Saharan Africa. An exceptionally large amount of food assistance was provided in response to the drought. Of that amount, 38% was programmed for emergency food aid for free distribution, largely

through PVOs, and 30% for imports for commercial market. In 1993, USAID plans to provide nearly \$200 million in development and food assistance to Mozambique. A major proportion of that (42%) is still expected to be food assistance in various forms.

Thus, given this level of investment in food security through food aid, it is appropriate that the linkage of food security and environmental and natural resources management be scrutinized. The "food security equation" is understood broadly as relating to availability of food -- assured by a combination of sources, including domestic production, security stocks, and imports; access to food -- assured by production for home consumption, markets and other mechanisms of transfer; and utilization of food -- processing, storage and consumption. While the primary purpose of emergency food relief is to alleviate hunger and erosion of human productive capacity, it should serve this role only in the short term.

Even in the context of drought/emergency aid, mitigation interventions should be provided as an alternative to direct relief. Interventions which permit increased agricultural production and create employment will directly combat dependence on food aid and improve household food security. For example, it is important to allow positive indigenous coping strategies to continue, not to usurp or erode them, nor to build dependencies upon uncertain external assistance/food aid. Food aid may inadvertently bring about environmental degradation by encouraging greater concentrations in given areas than would otherwise be able to be supported. It is a well-established fact that poverty causes environmental decline, so the focus must be on restoring productive capacity.

On the other hand, many mitigation interventions have the potential for unintended environmental impact, particularly those involving food-for-work/cash-for-work labor intensive interventions, such as crop production (e.g., seed banks, pest management measures); livestock management (e.g., destocking, feed provisions); natural resource management activities (e.g., agroforestry, soil conservation measures); or infrastructural development (e.g., wells, dams/ponds). The potential which these sorts of interventions have for contributing either to degradation or rehabilitation of the environment and natural resource base is not always appreciated or adequately understood. There is a need to avoid ad hoc mitigation measures that are not linked to other development and change. Also, there is a risk of pursuing programs in both NRM and food aid/FFW/CFW that do not positively reinforce each other.

Mission Core Development Programs Related to Transition

PVO Support Project

This project finances selected international PVOs working in Mozambique, to allow them to develop their capacity to manage and provide assistance to individuals and groups of people most seriously affected by food and civil insecurity, and to facilitate the transition from emergency relief to rehabilitation. Currently authorized at \$ 50 million, the PVO Support Project is the key component of the USAID program in Mozambique, which contributes to the mission objective of reducing dependence on external food aid, by using the skills and experiences of PVOs to help communities re-establish their productive capacity. Three main categories of activities are eligible for funding: (a) basic humanitarian assistance to those most seriously affected; (b) addressing social welfare needs of displaced persons; (c) dealing with economic needs of the intended beneficiaries.

The PVO community is generally fully engaged in an emergency relief mode, with some involvement in labor intensive food-for-work infrastructure improvements in connection with more general community

development. For example, the PVO community is engaged to support the road improvements required by a local community to gain access to the all-weather road network as well as to encourage local communities in road maintenance activities. However, local NGOs are not experienced in major construction activities, so the RAA activity will not draw on the PVOs.

PVOs currently operating in Mozambique mainly concentrate their development activities in parts of Gaza, northern Inhambane and Manica, Sofala, Zambezia, Tete and Niassa provinces. The types of activities funded include imparting technologies and knowledge to the displaced and re-integrating populations for:

- ▶ construction and maintenance of potable water supplies (construction of village wells, hand pumps, drilled wells, hand dug wells, rehabilitation of wells, etc.)
- ▶ in city of Chimoio, support 27 km of piped-in water, with pumping stations to city water supply
- ▶ construction and maintenance of latrines,
- ▶ rehabilitation of sanitation systems
- ▶ repair and rehabilitation of health clinics and schools
- ▶ renovation of orphanages and community centers
- ▶ food-for-work activities (needs to be better defined)
- ▶ provision of agricultural inputs (seeds and agricultural tools, fertilizers, pesticides)
- ▶ basic health care, including malaria control and immunization
- ▶ farm productivity and marketing activities
- ▶ microenterprise activities for income generation
- ▶ provision of nutrition and hygiene education
- ▶ population management services, family planning
- ▶ small-scale rural road rehabilitation

The scale, by individual project and in their aggregate, of these activities has not yet been well characterized or quantified. This could be a task of the PEA team. The PVO Support Project, and the proposals submitted for funding by it, will need to be augmented with a set of guidelines according to type (e.g., agricultural production, water and sanitation, rural infrastructure, etc.), size and scale of project to provide criteria for each type of activity which will trigger the need for Regional or Bureau-level review. In this way, presumably the great majority of projects proposed could be reviewed and approved by the Mission environmental officer.

Private Sector Support Project/Program

The Mozambique Private Sector Support Program (PSSP) is designed to stimulate greater production and marketing for domestic agricultural products. Components of the program include non-project assistance to support policy reforms which will be disbursed as a commodity import program and project-funded technical assistance. Most of the policy reform areas to be undertaken in the PSSP program will not have any direct adverse environmental impact, however there may be adverse impacts over the long-term in the areas of: a) Agricultural Pricing Policy (impacts on land use patterns, especially intensification at farm level, e.g., as a result of chemical inputs, or increased erosion on plots, and extensification, e.g., encroachment on forested areas, etc.); b) State Farm Divestiture (private sector farming practices could result in negative environmental impacts); c) Private Marketing Channels (where increases in market participation, privatization of major trucking fleets, and lifting fixed tariffs for private truckers, could result in long-term adverse impacts relative to urban traffic, protected areas and pressure on the sustainable resource base), and d) Commodity Import Program (which should be examined by the PEA).

Because of the potential of environmental consequences related to this program, however far downstream, the Initial Environmental Examination (IEE) granted the PSSP program a negative determination, providing that specific conditions as specified in the IEE were met during program implementation. These conditions included developing an environmental monitoring and mitigation plan and conducting an environmental impact review (EIR) early during the implementation of the amended PSSP (1992/93). The Transition Program PEA should take cognizance of and be consistent with the PSSP EIR and environmental monitoring plan.

Human Resource Development Projects and Activities

USAID/Mozambique supports institutional development objectives via long and short-term participant training, mainly through buy-ins with bilateral funds to two African regional projects based in AID/W, which together involve on the order of perhaps two dozen persons per typical year: (1) the Human Resources Development Assistance (HRDA) Project, which emphasizes the needs of the private sector and women, and uses in-country training as a major mode of skills delivery; and (2) the African Training for Leadership and Advanced Skills (ATLAS) Project, which emphasizes U.S.-based Ph.D., M.S., B.S., and short-term training. Other core projects in the mission also support modest amounts of training, including in workshops and conferences.

Funded by the USAID Southern Africa Regional Program (SARP), the regional Natural Resources Management Program (NRMP) conducts regular workshops and conferences around themes in community-based conservation and natural resource management programs. Thus far, USAID/Mozambique has not participated in this opportunity. Numerous central projects based in the AID/R&D AND Africa Bureaus offer training opportunities, for example the Environmental and Natural Resources Policy and Training (EPAT) project. Some of these regional training resources are listed in Appendix IV.B.

During the PEA scoping session, several ideas and opportunities for in-country workshops and training arose, and it would appear that targeted support to training would allow the mission to promote its transition goals in appropriate but creative ways. Some ideas raised included:

- ▶ Environmental Education initiatives

- ▶ Extension Workers Trained by NGOs (FHI, etc.)
- ▶ In-country training in NR/E management
- ▶ Workshop for Journalists on Environmental Issues, to promote public dialogue during electoral debates
- ▶ Teacher awareness training
- ▶ Civic education sessions to link democracy and environmental awareness
- ▶ Mozambique Workshop on Rehabilitation of Protected Areas and Conservation Networks (Oct. 26-29, 1993). A need for a Brazilian expert in community-based forest management and use has been identified. AID/AFR/ARTS/FARA is pursuing referrals through the Forestry Support Project.

Opportunities are arising to undertake innovative NRM activities, particularly in collaboration with NGOs/PVOs. While NRM activities compete for scarce human and financial resources, an effort should be made to identify local NGOs and GRM ministries which could benefit from technical assistance and training.

Primary Health Care projects

The mission's health care projects complement the focus on a food security strategy by giving attention to the rural health system and health problems among women and children. A PVO-implemented grassroots program carries out rehabilitation of infrastructure, training for health workers, immunization, diarrhea prevention, and the like.

A water component was added to the Primary Health Care Project during the drought in 1991/92. The project was specifically intended to help avoid migration to displaced persons camps. It is designed to meet the water needs of approximately 450,000 people through upgrading existing wells, drilling new wells, and replacing pumps is carried out by the national rural water program PRONAR with the technical assistance of UNICEF. This sub-component of the project was granted a categorical exclusion for training and the construction of rural water wells, based on the fact that USAID was a minor donor to a multi-donor water development project.

Democratic Initiatives Project

This project, designed to increase understanding of multiparty democracy, elections, an independent judiciary, and decentralization of government, involves provision of technical assistance, some training, commodity support, and studies.

Under this project, an interesting idea which should be explored for support, is that journalists and political parties could be educated as to environmental and development concerns and natural resource management issues, so as to promote a public dialogue and the development of platforms around such matters.

Prioritization of Implementation Actions and Environmental Impacts

The PEA should develop criteria for prioritization and ranking of transition program activities and the likely environmental impacts with respect to planned USAID interventions. Appendix II.C. presents a summary of

results of a questionnaire completed by USAID mission staff on priority activities for USAID transition programs. Examples of factors to consider include:

- ▶ USAID/Mozambique projects' comparative advantage, where they already are functioning, mainly where there is greatest concentration of "deslocados" and refugee movement (Fig 1).
- ▶ Geographic focal areas: Provinces of Gaza, northern Inhambane, northern Sofala, northern Manica, Tete, Zambezia,
- ▶ Approach: operate through PVO/NGO's in limited geographic areas where experienced NGO's are present;
- ▶ Relationship of USAID/M activities to other initiatives
- ▶ Access local community resource people
- ▶ Beneficiary participation and involvement
- ▶ Resource potential/land capability
- ▶ Avoid potential conflicts with protected areas
- ▶ Land capability classification/ soil fertility
- ▶ Availability of adequate water resources

ENVIRONMENTAL IMPACT ISSUES TO BE EXAMINED IN THE PEA

Identifying Significant Transition Program Development Activities

In the PEA, each activity of interest to the Mission should be briefly addressed. That is, a summary statement should be made, followed by a discussion of possible impacts and then possible mitigation measures to be undertaken by the GRM, PVOs or USAID. The table in Appendix II.A. presents a "first cut" at organizing illustrative environmental impacts and issues related to the transition program. Many of the elements and points raised therein were derived from the "brainstorming" meeting held during the scoping process. Elements 2, 9 & 10 are omitted for reasons explained in the appropriately-titled section below. ("Issues Not to Be Addressed")

Element 1. Demining

Element 1 (Appendix II.A), demining, is being launched more-or-less simultaneously with Step 2, demobilization. During the scoping session, little could be learned about the precise approach to be taken to demining, and one could only speculate about the possible impacts. This should be more fully explored in the PEA, such that possible impacts and mitigation steps and principles might be identified.

Element 3. Facilitating Re-settlement of Returning Populations

Element 3 (Appendix IIA) covers the shorter-term processes involved in assisting the spontaneous return of the uprooted populations and refugees, where the development assistance agents go to the areas of influx to help provide for the basic requirements (food, health and sanitation, household goods, transportation infrastructure, basic education services). In the context of the dynamics of the settlement process, it has been shown that populations involved in land settlement adapt to their new habitats in a patterned manner (see Appendix III). This phase is characterized approximately by two stages (2 and 3):

- ▶ initial infrastructure development, recruitment and installation;
- ▶ adaptation (settling-in: establishing food security, conservative stance)

The synoptic table in Appendix IIA. itemizes the sorts of interventions occurring during this phase. These justify some scrutiny.

Element 4. Re-integration of Returning Populations

It is in this phase where the longer-term impact issues must be raised and addressed. This is the settling-in phase, leading to adaptation and diversification of strategies to ensure livelihoods under the re-integrated conditions. Once food security is established, a willingness to innovate tends to become apparent, and resource conflicts are likely to appear.

Appendix III identifies in telegraphic form some of the key insights which should be brought to bear on the re-integration process, development planning, and environmental impact assessment.

Element 5. Stimulating Sustainable Agricultural Production

This element is really at the heart of the process of rehabilitation and reconstruction, namely bringing about economic growth through a sustainably productive agricultural enterprise. Appendix IIA. identifies a number of important components of an agricultural development program, some of which have greater implications for environmental impact and natural resources management than others.

For example, the importance of receiving an appropriate selection of seeds in the AgPacks and VegPack is evident, if the recipient families are to achieve self-sufficiency. These programs are executed in a highly professional manner by the experienced PVOs involved, such as World Vision Rural Development and Food for the Hungry, International. The seed selection is based on a results form a network of agricultural experiment stations, usually run by the PVOs, and assure an optimization of seeds to local requirements. The PVOs closely collaborate with the Mozambican MOA stations and the IARCs, such as ICRISAT, CIMMYT and IITA.

Less certain is the nature of the pest management measures supported through development assistance and emergency pest control measures undertaken. This is an aspect which must be better assessed by the PEA team.

Element 6. Repair and Rehabilitation of Infrastructure

Most of the infrastructural improvements to buildings (health clinics, schools, orphanages, etc.), water supply and sanitation facilities, and the like, do not have significant environmental consequences, and are adequately identified and mitigated by virtue of the existing IEE process. Use of the preliminary USAID "Environmental Guidelines for PVO/NGO Field Use", and other similar guidelines, helps proposers anticipate concerns.

With road construction or repair, the situation is somewhat different, because not only are there the direct impacts of the activities, which are usually readily mitigated. There is also the issue of facilitating the movement of the beneficiaries of improved access, leading to the potential for indirect impacts on the environment due to population movements. For example, the RAA activity will have its most important impact on the population along the Zambezi River, displaced persons currently needing access to relief assistance in centers along the river, and the population returning to and taking up productive lives through agriculture and commercial activities in rural areas.

Likewise, upgrading the Sena Bridge as planned will undoubtedly dramatically increase the traffic of an already important corridor from Malawi to Mutarara, Sena, the Zambezi River basin and points south in Mozambique. Already at Sena, there is a substantial older camp of dislocated persons (which has recently begun to reduce in size as people begin to return) and a new transit camp of refugees returning from Malawi. The condition of the "deslocados" camp is severely degraded, whereas the refugee camp is well vegetated and with much more space between houses. The population of Sena in mid-March 1993 was estimated at 34,000, of whom 30,500 had returned from Malawi. A recent survey showed that 26,500 intended to remain in Sena. The estimated population of Sena at its peak railroad days before civil war was 10,000. This gives an idea of the sorts of population pressures which could result from increased access once the roads and bridge are re-habilitated.

Element 7. Water Supply Rehabilitation and Services

Reference to Appendix II.A. will give an idea of the range of interventions included here. Most of these are carried out by PVOs or PRONAR, the national water development agency. Excellent guidelines exist to rationalize the interventions in this sector. A better understanding and overview is needed about the number, scale, distribution and nature of the many types of projects undertaken, so as to assess the potential for impacts, both individually and in the aggregate. The most significant potential for detrimental consequences relates to salinization, salt water intrusion near the coast, and aquifer depletion. Measures to guard against such consequences should be clearly identified in the PEA.

Element 8. Sanitation Projects and Services

Poor sanitation is a problem in Mozambique; only 17 % of the rural population is thought to have access to safe water. Especially in lower-lying areas, waterborne diseases risk causing elevated high death rates. Bilharzia (schistosomiasis), a waterborne parasitic disease vectored by snails, can also be a problem.

Only minor risks of environmental damage exist in this arena; some are identified in Appendix II.A.

Identifying Significant Environmental Quality and Productivity Issues Pertinent to the Transition and Re-integration

The over-all objective of the PEA is to help provide the support needed for a sustainable resettlement, expansion of productivity, including expanded economic activity, and improvements in the private and public sector infrastructure support systems. Most of the immediate relief efforts in which USAID will be involved are not expected to have direct significant environmental impacts, nor are they likely to have immediate impacts on threatened or endangered species or critical habitats.

Looking to the future, however, such generic classes of activities encompassed in the transition and rehabilitation programs are certain to have long-term impacts (positive and negative) on the natural resource base. The focus here is on the biophysical resource foundation and the associated environmental services which must be sustainably managed to ensure productivity.

One of the strategic objectives of the Development Fund for Africa is "sustainable increases in income and productivity through better management of natural resources". A tool to help achieve this which is being tested by the AFR/ARTS/FARA NRM group is the *NRM Indicator Catalogue*, prepared with the World Resources Institute. It is being used to help structure the assessment of the existing state of the natural resource base, and to cover practices, approaches and activities which are likely to change the state of natural resources in the future. The *AFR/ARTS/FARA NRM Indicator Catalogue* should be helpful in this assessment process, as should be the A.I.D. PRISM indicators.

The PEA should examine the key transition program activities in light of their potential for direct or indirect impact on the following clusters of resources and associated management factors:

Soil/Land	Fertility and Productivity Land Use Irrigation, Salinization Erosion - Wind/Water
Vegetative Cover	Deforestation/Reforestation Overgrazing
Biological Diversity	Habitat Loss Wildlife Threatened and Endangered Parks, Protected Areas
Water Resources Quality	Water Supply Sanitation & Drainage Pollution of Ground Water, Surface Water Siltation Salt Water Encroachment Fresh Water Fish Catch Aquatic biological resources

Scope of Activities/Processes to be Addressed

The synopsis of activities in Appendix II.A. provides illustrative points on the elements likely to be of relevance to this assessment, with regard to: duration and scale of the activity; some possible direct and indirect problems, environmental impacts and issues; attempt to establish their causes; possible mitigation measures; and comments regarding enhancing the sustainability of the activity. Many of the sustainability points arose out of the discussion in the brainstorming session.

The following list is organized around the principle of distinguishing direct or more proximate impacts (actual or potential) from medium- or longer-term impacts or issues relating to groups of activities. Given the likelihood of delegation to the Mission of the authority to approve some or all of the activities, on the strength of the PEA and existing and amended Initial Environmental Examinations (IEEs), the PEA team should examine these projects in light of the existing environmental guidelines and IEEs which apply to them, and determine their continued appropriateness. If needed, identify aspects, possible impacts and possible mitigation measures which may have been overlooked. The tentative ranking procedure proposed below for monitoring and mitigation of impacts should be evaluated by the PEA and modifications be suggested.

The PEA should determine whether the projects and activities individually, cumulatively over time, or in conjunction with other projects in the same area, could have a significant effect on the quality of the environment and on the sustainability of natural resources.

A. Direct and near-term impacts of rehabilitation activities

The discussion of these should be linked to the Mission's projects/programs, and activities (Elements 1, 3-8), discussed above. With respect to the PVO activities, although the precise nature of these activities is not yet fully characterized, it is likely that the environmental impact of these activities will be limited, warranting negative determinations. If in fact the activities turn out to be different from those anticipated, and have more serious environmental effects, then the Mission would need to update its examination in line with Section 216.3 of Reg 16. The PEA should address this possibility. In addition, the PEA team should be aware that the Mission and Regional Environmental Officer are planning reviews of the IEEs of the PVO Support and Private Sector Support projects this summer.

1. Roads repair and related infrastructure rehabilitation

The majority of the functions under this heading will occur in connection with the Rural Roads Activity (RRA) which, while being funded from disaster assistance sources, will nevertheless need to be evaluated by the PEA. As the activities to be carried out under this become better defined, it will be possible to render judgment as to impact. In addition to rehabilitation of secondary and tertiary access roads, repair and conversion of a major bridge, it is likely that culverts and piers will be rehabilitated; some dredging of river beds, rehabilitation of drainage ditches and irrigation systems may occur. It is likely that all the activities will be well within the normal range of experience of the contractor(s) and GRM public works units, but impact mitigation guidelines will need to be provided and put in place, at least to minimize of any soil and water degradation problems.

2. Water supply and sanitation projects

There are likely hundreds of individual interventions of a diverse nature in this sector (see project descriptions and Appendix II.A) found among many locations and projects facilitated by the PVOs. But their distribution in time and space, including proximity to other similar initiatives, is inadequately known. Nevertheless, the foreseeable direct impacts and how to prevent or minimize them, are well enough known.

3. Facilities rehabilitation

An accurate overview is needed of the number and scale of such rehab actions are being supported by the PVO, Health and other projects, and the extent to which environmental impacts are addressed and prevented.

4. Agricultural inputs supply and use (agpacks & vegpacks, pesticides, fertilizers).

Environmental contamination and human health hazards are possibilities with use of fertilizers and especially pesticides. The scale of use of these inputs, and likely risk, should be assessed by the PEA. The Commodity Import Program of the PSSP should be examined as well.

This also applies to any possible public health interventions (disease vector control programs, mainly). With respect to assistance for emergency pest control operations, always a possibility in many parts of Africa, particularly in areas affected by drought, the PEA team should be aware that there is a USAID "programmatic Environmental Assessment for Locust and Grasshopper Control in Africa and Asia" and that country-specific SEAs are being produced in several countries, possibly including Mozambique.

B. Indirect impacts and medium- and longer-term issues with respect to resettlement of populations and reconstruction

The below are among the categories of issues which relate to the possible longer-term implications of resettlement for natural resources management principles and processes. They must be evaluated in the socio-economic context.

1. Land degradation, soil resource depletion

Population densification and intensification of agriculture, such as through overgrazing and overstocking livestock, can cause denudation of vegetative cover and widespread soil erosion, encroachment of undesirable plants, drying up of springs, dam siltation and low animal productivity. Erosion can be high, causing extensive loss of soil every rainy season, and reducing the carrying capacity of the land. However, it is not likely that livestock overstocking will be a major issue for Mozambique for the foreseeable future. It is the human carrying capacity in areas of population growth and re-population, which must be considered by the PEA.

2. Woodland destruction, deforestation, fuelwood depletion

Threats to forest cover include slash-and-burn agriculture, particularly in communal areas, fires, expansion of shifting cultivation, and the growing demand for fuelwood. Forest fires are sometimes set deliberately to

drive animals into traps. Fires are also set to harvest honey or control grain-eating communally-nesting weaver birds (Quelea).

The fuelwood scarcity around Ulongué in Angonia District (Tete Province) is characteristic for areas with high refugee and dislocated person densities: it is considered the most significant natural resources concern there (field trip mid-March 1993) during scoping session. Women routinely walk 5 to 8 km to obtain a days' cooking fuel, and reforestation efforts are very limited. Attention to alternative energy resources would seem to lend itself well to PVO/NGO involvement, such as the organization of wood harvesting, provision of fuel wood and promotion of environmentally sound energy saving techniques and technologies.

Although possibly not an issue central to re-integration, one of Mozambique's more serious NRM phenomena is reflected in the fact that its mangrove forests have been reduced by 70 percent over the past 20 years; mangrove is exploited locally for firewood and fuel, esp. for the sugar industry. Loss of the coastal forests makes coastlines more vulnerable to erosion and destroys marine nursery habitats, adversely affecting marine populations and the country's important shrimp industry.

This PEA should pay particular attention to this issue and make recommendations, especially as regards the role PVOs could play in addressing the matter.

3. Water resources management

This covers the conservation of aquatic biological resources, relating to management practices, as well as the issue of water quantity and availability through improved conservation, treatment, or greater access. To what extent is this an issue of concern to the PEA?

4. Land tenure and stewardship of land

In this post-war, post-Marxist society, the insecurity of land tenure is a significant unresolved issue which undermines the sense of stewardship and investment for the future someone will show towards the land she or he inhabits. The relationship of this issue with respect to prudent natural resources management and the rehabilitation process will be explored in the PEA. It seems essential that a community-based participatory approach, with special attention to gender equity, be taken to natural resources management and use, and that NGOs/PVOs experienced in this sort of involvement be encouraged, to help inculcate stewardship ethics. Particular attention should be paid to the results of research carried out by the Land Tenure Center in connection with the USAID State Farm Divestiture and other initiatives.

5. Competition for land and water: agriculture and biodiversity (see Protected Areas item below)

It is unclear at this point to what extent the return of uprooted populations and refugees will lead to competition with the biodiversity endowment of a given region, such as through extensification or intensification of agriculture. Competition may arise for land and water between agriculture and wildlife needs. The PEA should examine this issue and make recommendations as to how it could be addressed (generically, as well as USAID options).

6. Endangered and threatened species of wildlife.

Mozambique's elephant herd is thought to be reduced to perhaps under 13,000 in 1991, down from over 55,000 in 1974. Other wildlife populations are greatly reduced as well, largely due to indiscriminate hunting by military forces, concessionary hunters, and poachers. The PEA should determine to what extent the transition, rehabilitation and reconstruction activities could impact endangered and threatened wildlife in the medium-term.

7. Protected and Conservation Areas at Risk

This issue is related to the preceding two, and they need scrutiny in the PEA with respect to the validity of the premise that the transition and resettlement process is substantially linked to the potential for impact on protected areas and biodiversity resources.

An extensive system of Protected and Conservation areas has been designated and proposed in Mozambique (see Figure 2). Many of the actual and potential protected areas have been neglected and their integrity has deteriorated during the civil war. Included are National Parks, game reserves, hunting areas, transfrontier parks, and multiple resources areas (integrated conservation and development projects). A Mozambique Workshop on Rehabilitation of Protected Areas and Conservation Networks is being planned for Oct. 26-29, 1993, with major support from WWF/Switzerland.

Some of the areas most likely to be at risk from returnee population growth and resettlement pressures are listed in Appendix II.D. (also see: Transborder National Parks and Institutional Strengthening Project, World Bank, Preparation Report 1992). Refugees are returning from South Africa, Swaziland, Zimbabwe, and especially Malawi. Displaced persons are moving away from Maputo, Beira and the coast. Zambezia is among the provinces likely to be most affected by resettlement processes (Fig. 1). The issue of wildlife damage may be most acute in the Gorongosa/Marromeu complex, an extensive conservation area in Sofala province around the Gorongosa National Park.

Important issues which bear examination in the PEA in this context include:

- ▶ extent to which transition program activities might be linked to promoting participatory integrated conservation and development and multiple use of protected areas as a means of resolving or avoiding land use conflicts;
- ▶ relevance to the resettlement process of transborder ecosystem management, particularly where protected areas span national borders in areas likely to be transited by returning populations;

8. Market development: long-run environmental effects

USAID support under the program should stimulate greater productivity within the agricultural sector of the economy. Some attention should be given to the possible impacts on the environment due to increased production, increased use of inputs, etc. See discussion under Private Sector Support Project and Environmental Monitoring.

Issues Not to be Addressed and Why

Demobilization

This element, set to be completed within seven months, is here interpreted as limited strictly to transportation and special assistance to war-affected women, children and handicapped people. Demobilization need not invoke the generic phenomenon of resettlement and the baggage of issues that resettlement carries with it. Demobilization is judged to be among the activities not to be addressed further by the PEA.

Any environmental impact to be assessed is not a direct, proximate result of the transportation A.I.D. will finance and relates more to the process of resettlement rather than to the demobilization being supported here. The direct environmental effects of the transportation, i.e., the increased traffic and consumption of fuel are likely to be relatively trivial. Even the indirect effects of resettlement of Mozambicans transported under A.I.D. financing will be relatively insignificant, because only on the order of 50,000 persons are expected to be transported from all the assembly points combined.

In any case, for demobilization, no project decision would be affected by the PEA. Of course, the assessment could influence any AID follow-on project assistance for the resettlement phase.

Health Services

The use of pesticides for vector control (mosquitoes, mainly) represents one of the more important potential sources of direct negative impacts from health interventions. Also, when it comes to rehabilitation of facilities, steps should be taken to prevent local impacts from construction activities.

The IEE of the Basic Health Services project identifies the significant issues and reached appropriate threshold decisions regarding categorical exclusions and negative determinations. However, the water supply services amendment of this project may bear some examination as to actual status and how the review process is conducted.

Unless pesticides are a notable element of the health services sector, which does not appear to be the case, this PEA will not need to further address health services.

Education

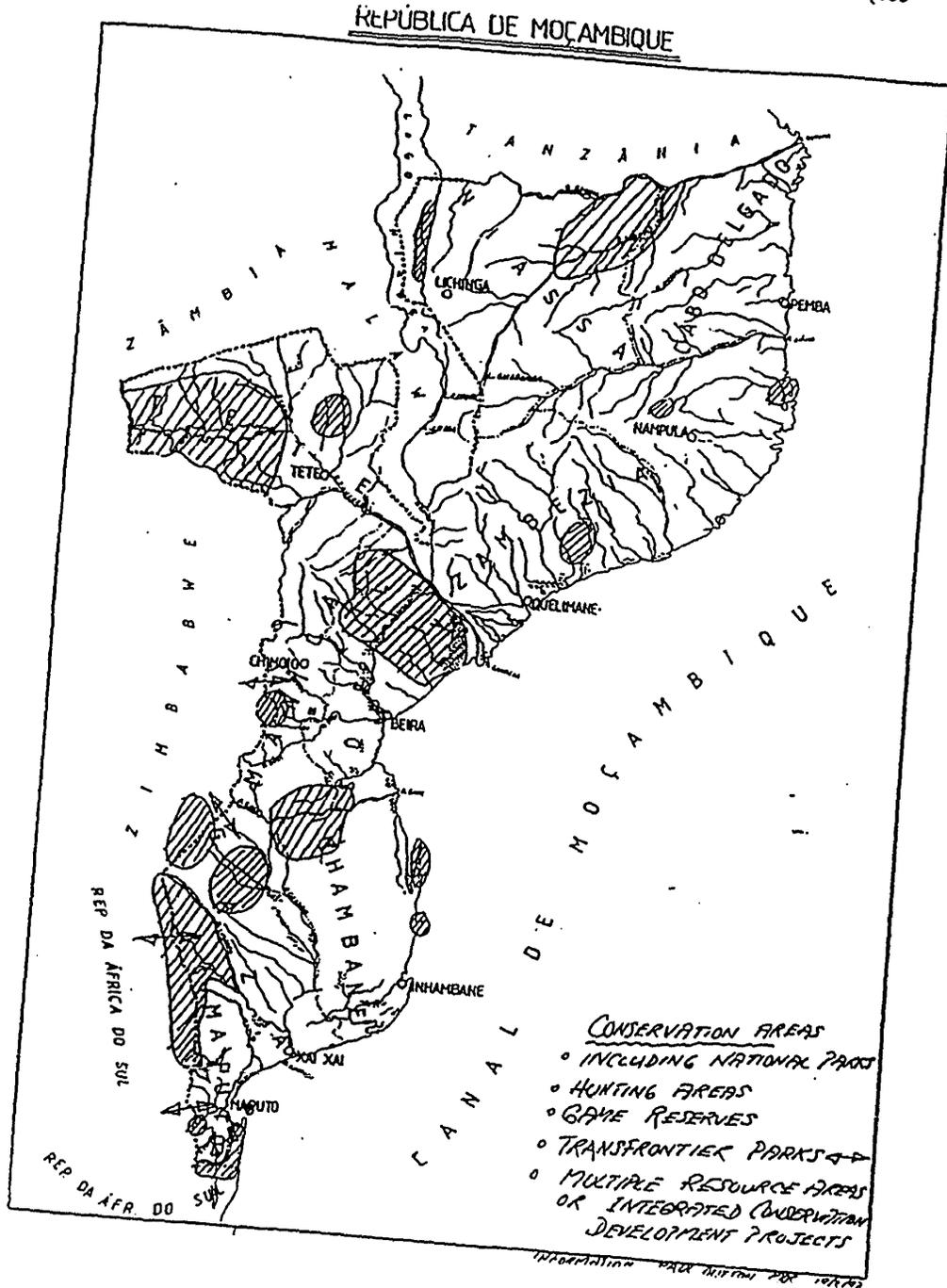
Minor construction activities are the only likely direct impacts from interventions in this sector. Otherwise, not to be further addressed in the PEA.

Activities adequately covered by existing review procedures

As has been stated, the majority of activities financed under the mission core programs (e.g., for the PVO Support Project, sub-projects under \$ 100,000 each) are not likely to have any significant impacts on the environment or endangered/threatened species, and should be covered under existing IEEs and Guidelines for environmentally sound design of small-scale activities. However, it is not possible at this point to exclude any activities specifically. Instead, the PEA should set out criteria for doing so, and provide refined guidelines as appropriate for categories of activities needing them, in light of the "EMEMP" process explained below. (NB: the Environmental Protection Unit of AFR/ARTS/FARA is in the process of redesigning its preliminary "Environmental Guidelines for PVO/NGO Field Use"; these should be available by the Fall of 1993.)

Figure 2.

Generic Map of Protected and Conservation Areas in Mozambique to be Rehabilitated and/or Established. Includes National Parks, Hunting Areas, Game Reserves, Transfrontier Parks, Multiple Resource Areas and/or Integrated Conservation and Development Projects. This map is a simplification of a larger scale map providing details prepared by Paul Dutton, c/o DNFFB, in connection with a process launched by the GRM to rehabilitate its protected area system. Note that a workshop on this is planned for October 1993 (See Appendix IV.B). Figure by Paul Dutton.



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ENVIRONMENTAL MONITORING, EVALUATION AND MITIGATION

The PEA will consider the environmental impact of the above activities on the natural resource base of the country, and should also outline for the GRM, PVOs and other implementing partners, a monitoring and evaluation plan/program, by which significant negative environmental impacts can be discovered and reviewed. This program is now being referred to as an "Environmental Monitoring and Mitigation Plan" (or "EMEMP"), and it should be outlined in the PEA. The PEA would also identify specific environmental indicators to be used by the GRM, and it should indicate which of the responsible GRM institutions or PVOs will be providing the data that could be used to monitor performance in the environmental sector. Further, a listing of appropriate actions needed to mitigate impacts, should be drawn up, and actions indicated as needed from the responsible GRM agencies and in-country organizations.

The intent of this PEA would be to demonstrate how information derived from environmental indicators and evaluation of performance can be fed back to the GRM and other partners in development. Perhaps this could be done during annual conferences or workshops put on by the CNA with different ministries or in-country organizations. At these sessions the latest data acquired could be compared to any existing baseline data to determine whether impacts are significant, and whether they are positive or negative. Alternatively, if baseline data are lacking, the PEA should recommend the depth and quality of baseline data needed. In this connection, it may be necessary and appropriate to recommend that one or more Environmental Impact Review(s) or Supplemental Environmental Assessments be conducted as a follow-on to the PEA, in line with the purpose described above under the discussion of A.I.D. Environmental Procedures. Normally, such a review is justified only if a specific new category of activities is expected to be supported, such as establishment of integrated conservation and development areas, exploitation of timber, ecotourism, or shrimp mariculture. Any such further assessment or review should be closely coordinated with the NEMP and Agricultural Sector Review mentioned above, particularly given the limited absorptive capacity which exists at present.

Finally, the PEA, the results of any conferences connected with it, and the Environmental Monitoring and Mitigation Plan (EMEMP) outlined in the PEA, will be presented to the CNA, as the Secretariat of the National Environmental Action Plan. This will help promote the objective that mitigation be taken up by the GRM (and other responsible parties), and should foster rehabilitation policies based on environmentally sound and sustainable principles. The PEA should identify opportunities for setting up appropriate EIS for the GRM including a perspective on related initiatives already underway in Mozambique.

Environmental Monitoring and Mitigation by PVOs/NGOs

The PEA will evaluate the IEEs and review process presently invoked for the existing projects. As mentioned, some of these projects (PVO Support, Private Sector Support) are already scheduled for a review by REDSO/ESA's REO with regard to meeting IEE conditionalities. The PEA needs to take those reviews into account, so as to not duplicate efforts, depending on the relative timing of these events.

It is taken for granted that the NGOs/PVOs, in drafting their proposals, will address the way in which their interventions will be monitored and evaluated during the course of the project. Indicators to be used in monitoring should be spelled out in the design of the grants, and an environmental review will be included in each proposal.

So that the individual interventions are designed in an environmentally-sustainable manner, the Mission Environmental Officer (MEO) and/or project officers should provide each of the NGOs/PVOs involved in the transition program with a copy of the AFR "Environmental Guidelines for NGO/PVO Field Use" and "Environmental Design Considerations for Rural Development Projects" (Harza Engineering). The proposals will also spell out how negative impacts will be mitigated, when and if they are detected during monitoring and evaluation. One concept which may be worth promoting for those PVOs involved in agricultural production is that they adopt a policy to encourage integrated pest management and other sustainable agricultural practices.

Inasmuch as most of the USAID projects funding PVOs receive a steady flow of proposals, the below streamlined procedure for ranking proposals is suggested as a "working model" approach, based on the above guidelines. Thus, the PVO grant manager could categorize the proposed interventions according to a schema such as that presented below. The PEA should scrutinize this schema and suggest improvements:

Category 1: sub-projects or grants that would normally qualify for a categorical exclusion under Reg 16 (e.g., community awareness initiatives, training at any level, provision of technical assistance, etc.). Construction or repair of facilities under 10,000 sq. ft. (approx. 1,000 sq. m.) would fall under this category.

Category 2: sub-projects or grants that would normally qualify for a negative determination under Reg 16 based on the fact that the grantee used an environmentally-sound approach to the activity design (e.g., the grant design followed, and the grant manager has access to and will follow, a series of guidelines for the design of small-scale environmentally-sound activities in forestry, agriculture, irrigation, water supply, rural roads, etc.). Extensive rehabilitation of facilities and construction of structures exceeding 10,000 sq. ft. would normally fall in category 2. Funding levels would normally also be in excess of \$100,000 per project.

Category 3: activities that have a clear potential for undesirable environmental impacts, such as those involving land development, forest harvesting, planned resettlement, penetration road building, substantial potable water and sewage construction, and projects involving the procurement and/or use of pesticides. Also, some light industrial plant production or processing (sawmill operation, agro-industrial processing of forestry products) could qualify. Finally, any intervention operating in a critical habitat for threatened or endangered species, or other similar activity where a possibility exists for significant negative environmental impact, must be placed in this category. All items on the Reg. 16 "black list" are automatically included (Sect. 216.2(d)(1)).

The following scenario for review and approval is envisioned:

The Mission Environmental Officer would review grants in all the above categories, and pass on any grants in Category 3, and possibly some from Category 2, to the Regional Environmental and Legal Officers (REDSO) for further review. These can then be passed to the Bureau Environmental Officer for approval.

It is assumed that the majority of grants will fall within Categories 1 and 2, and could therefore be approved locally. Mission will apply to the Bureau Environmental Officer for a Delegation of Authority (DOA) for this purpose. If the Mission applies for a DOA in this regard, the Mission Environmental Officer (MEO) and/or PVO grant manager would on a routine basis pass to the REO and Bureau Environmental Officer an up-dated list of grants, with summary of activity where necessary, in order to keep them apprised of the area and scope of activities involved.

Those sub-projects falling within Categories 2 and 3 will be required to carry out an environmental review, which will provide information that will be used to mitigate, change, or guide the course of the interventions in the grant during the course of implementation, if necessary. If the funding level is in excess of \$100,000, sub-projects in Categories 2 and 3 will be reviewed by the Regional and/or Bureau Environmental and Legal Officers.

The Bureau Environmental Officer will be asked to provide a Delegation of Authority to the Mission Director, that will allow for the local approval referred to above (see 1993 AFR/ARTS/FARA Delegation of Authority Study).

Policy Reform Relationships to Mitigation of Environmental Impact

To address medium- and longer-term impacts of transition and development activities, experience has shown that the most effective and least management-intensive approach is to build in capacity through policy reform, institutional support and strengthening of the NGO/PVO community, along with the participation and empowerment of the public through the political process. The object is to let the Mozambicans take charge of the environmental movement, esp. directly at the grass roots level. This will help evoke political support for environmental and natural resources management as governmental priority.

It is therefore recommended that some of the potential long-term impacts due to policy reform supported by USAID/M at least be identified through the PEA, which should be linked to the EMEMP described above. Our vision is that this effort should also be supportive of the NEMP/NEAP deliberations and be done in concert with counterparts in the GRM. The CNA, as the GRM's internal technical advisory and coordinating body in NRM/E matters, could pass on recommendations to the appropriate body within the GRM, which in turn will, ideally, ensure that corrective measures are taken as appropriate. This could also result in feed-back to the GRM regarding desired changes in policy reform and/or regulations.

Policy-related areas in which the mission is involved and which are likely to be most germane to this PEA include the those supported under the Private Sector Support (PSSP). The three issues identified earlier (agricultural pricing policy, state farm divestiture and land tenure, and private marketing channels) and the commodity import program, are the most important in connection with policy reform. As stated earlier, an Environmental Impact Review of the PSSP is planned in the summer of 1993. Thus, the PEA should only need to scrutinize the results of that review, and draw conclusions relevant to the transition program.

Also, the PEA could construct a generic policy/impacts matrix by major transition program activity sector, including the following elements (cf. WASH Water Supply Project Guidelines):

- ▶ Planning and Coordination Requirements
- ▶ Social Concerns Linkages
- ▶ Institutional Development
- ▶ Financial/Economic policies
- ▶ Technology Development and Transfer (ag research and extension)
- ▶ Environment and Natural Resources
- ▶ Private Sector Participation

ENVIRONMENTAL EDUCATION AND AWARENESS: PROMOTING A PUBLIC DIALOGUE

It seems self-evident that environmental education and training in NRM are essential elements of any effort to identify and address issues of development and environment. A.I.D. places high priority on human resource development, though USAID/M has very limited resources available to training in this field, particularly because NRM is not a component of its portfolio. Also, the absorptive capacity and depth of staffing is limited in the GRM and other local institutions, so that training initiatives must be very carefully assessed.

The PEA should scrutinize the main collaborating institutions involved in USAID's Transition, and identify training needs and attempt to match them creatively with opportunities, either bilateral, regional A.I.D., AID/W, or other donor programs. Very appropriate at this stage of the transition process would be environmental awareness building exercises, including at the school level, for the general public through different media (e.g., GREENCOM). Several ideas raised during the scoping are reflected in the discussions under Human Resource Development, the Democratic Initiatives Project, and in Appendix IV.B.

POSSIBLE APPROACHES FOR USAID/MOZAMBIQUE SUSTAINABLE DEVELOPMENT STRATEGY

Preparation of this Transition PEA presents USAID/Mozambique an opportunity to link the analysis to the Mission's preparations for its Country Strategy Plan (1994-2000). Natural resources management initiatives are logically linked to sustainable agriculture and economic development, and may present at least a Target of Opportunity for the Mission.

While a Biodiversity Assessment is required in any case for a CPSP, the PEA could be regarded as a precursor to the development of a CPSP NRM/E Strategy Assessment and Support Plan. Such a plan would provide a "menu" of options for the near-, medium- and long-term, including an analysis of management implications and of other donors' and institutions' involvement and interest. It also could provide an Alternative Growth Plan linking environment and development.

In this connection, the PEA should examine and make observations and recommendations regarding:

- ▶ How the PEA relates to USAID strategy development options
- ▶ Current Mission Strategic Objectives as related to NRM/E options
- ▶ Opportunities for local consultation/participation in DFA Activities
- ▶ National Environmental Management Plan/NEAP linkages

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT PROCEDURE

The Scoping Process

This PEA is unusual in its broad scope, covering as it does a class of actions generically related to the re-integration and spontaneous resettlement of four to five million internally displaced people and refugees, and all the assistance being mounted in support of rehabilitation of these people, their support systems and bases of productive life. It presents a special challenge because, while the primary mandate of the PEA is to examine the actual and potential impacts of the transition development program per se, an important *raison d'etre* of the PEA is the need to understand the medium- and longer-term implications of the resettlement phenomenon.

It is the latter aspect which preoccupied the participants in the "brainstorming session" held during the scoping process. The participants represented a wide array of institutions, including line ministries, PVOs, donors and academic (see Appendix I.A.). The issues were discussed around an outline developed in advance, covering the main elements of the transition program (Appendix II.A & B.). Special meetings were held with several organizations, including the National Environmental Commission, Forestry and Wildlife staff, World Bank, FAO, etc. Extensive dialogues were conducted with Mission staff.

Of the range of activities and issues identified and considered (Appendices II.A-D.), relatively few were eliminated *a priori* from consideration (see above). While the general sense is that the proximate and near-term impacts of the transition activities are likely to be relatively minor, and that under the existing USAID environmental review procedures, most would qualify for a negative determination. However, one objective of the PEA is to examine the range of supported (mainly PVO-implemented) activities globally with respect to the possibility of cumulative and aggregate impacts through coincidence in time and space. Another is to assess the medium- and longer-term implications of the transition program and the processes it sets in motion, mainly with respect to the Mission's programs but also more generally, in the context of the need for integrated environmental and development planning in Mozambique. This is intended to be directly supportive of the NEMP/NEAP process.

Timing/Phasing of Preparation of Analyses

- ▶ The PEA Scoping and Background Statement should be made available to interested persons, such as those represented at the scoping session, for comment and possible expressions of interest in involvement.
- ▶ A local consultant or GRM staffer professionally familiar with the subject area of this PEA should be engaged about a month before the team's arrival, to provide intermittent and part-time preparatory services of the sort described below. At least 10 days of effort (FTE) are called for the preparatory phase, and another 20 days may be justified for participation in the actual assessment. The preparatory step has been proven useful in other FARA analyses.
- ▶ An expatriate team of experts in the disciplines identified below will be assembled in the US and attend a team-building session with AID/W participation in Washington, DC in the week before departure to Mozambique.
- ▶ Mozambican experts/resource persons will be identified and recruited for appropriate inputs and participation with the expatriate team. This identification will occur with the assistance of the mission.
- ▶ One month will be spent in-country by the team.

Data Requirements

- ▶ The local consultant or GRM staffer will assemble, organize and synthesize a representative set of background documents for use by the assessment team, covering relevant activities of key line ministries, donors, local PVOs/NGOs, university programs, and other institutions. A number of indications are provided within this scoping statement. Should capitalize on information which may already be assembled in connection with NEMP, Agricultural Sector Review and other major programs.
- ▶ A complete set of USAID/Mozambique project and program documents should be assembled in advance of the expatriate team's arrival. Should include recent research reports, program impact analyses, field trip reports related to resettlement, land tenure, and the like.

- ▶ A full set of applicable environmental guidelines will be made available by AID/AFR/ARTS/FARA.
- ▶ The expatriate team and supporting firm should conduct literature reviews as appropriate in advance to capitalize on the existing published literature and world-wide experience in analogous resettlement experiences.

In-country Analysis and Field Work

- ▶ On the first day after arrival, the team will meet with the CNA and key ministry representatives and identify expert in-country collaborators and data contributors, and to review status of related initiatives in the country.
- ▶ A strategy for efficiently meeting, and interacting constructively, with key representatives of other donors and institutions, will be submitted to the Mission within two days after arrival, for concurrence and assistance in setting up meetings.
- ▶ The team will establish a plan to conduct field visits (of 1-3 days' duration each) to various project sites and other key location, submit it to the Mission within a week of arrival, so arrangements can be made, with the approval of the Mission and US Ambassador.
- ▶ Individual and group meetings will proceed once all extant literature has been reviewed.

Illustrative Format of Assessment Document

Summary

- ▶ Stresses major conclusions; recommendations; areas of controversy; issues to be resolved; and areas of collaboration, and where others have a manageable interest and comparative advantage; relationship to NEMP, etc

Purpose

Background

Review of Programs and Activities

Affected Environment

- ▶ Succinct treatment of the natural and social environment affected by the Transition and beyond

Analyses as to Environmental Consequences

- ▶ Significant Environmental Quality and Productivity Issues Pertinent to the Transition and Re-integration process and beyond
- ▶ Prioritization of Transition Activities with respect to Environmental Impact and Sustainability

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- o Direct and near-term impacts of rehabilitation activities
- o Indirect impacts and medium- and longer-term issues with respect to resettlement of populations and reconstruction. Should include a discussion of such issues as food security and environmental impact.

▶ **Policy Reform Relationships to Mitigation of Environmental Impact**

▶ **Analysis of Existing Environmental Review Procedure**

Alternatives and Options for USAID and Other Development Agents

Compares the proposed actions of the Transition Program and the proposed mitigation measures regarding environmental impacts, with alternative approaches (including "no action") and activities of other development agents pertinent to environment and development in Mozambique

Environmental Monitoring, Evaluation and Mitigation Plan

Environmental Education and Awareness

Approaches to USAID/Mozambique Sustainable Development Strategy

Recommendations including follow-up, possible EIR or SEA needs

List of Preparers and Contacts

Appendices

Team Make-up

Focus Disciplines for Analyses and Assessment

The following are the disciplines identified with the scoping session participants as being most desirable for the assessment. The actual make-up of the team will depend upon the specific skill and experience mix, as well as on funds available:

- ▶ **Natural Resources Management/Sustainable Agriculture**
- ▶ **Tropical Forestry/Biodiversity**
- ▶ **Environmental Assessment/Civil Engineering**
- ▶ **Land Resettlement/Anthropology**
- ▶ **Economic Geography/Environmental Economics/Socio-economics**
- ▶ **Institutional Analysis/"Generalist"**

[with AFR/ARTS/FARA, WRI and/or WB, MDS participation as appropriate]

Outline of Terms of reference with illustrative task areas

The team will consist of the following members, who will:

- ▶ **Team Leader/Institutional Analyst**
 - have over 15 years of international evaluation experience
 - be a capable institutional analyst familiar with many types of institutions
 - be fluent in Portuguese
 - preferably have natural resources in professional background
 - be conversant with community-based participatory natural resource management
 - have demonstrated strong team management skills, including dealing with cross-disciplinary teams
 - have excellent writing skills

- ▶ **Natural Resources Management/Sustainable Agriculture expert**
 - be internationally experienced, with strong experience in sub-Saharan Africa, and preferably eastern/southern Africa
 - have strong training and professional experience in addressing biodiversity and tropical forestry/agroforestry issues
 - show accomplishment in promoting sustainable agriculture
 - be experienced in protected and conservation area issues, including integrated conservation and development initiatives
 - be conversant with natural resource accounting and environmental economics

- ▶ **Environmental Assessment Specialist**
 - have at least 5 years' international experience
 - be a recognized authority, preferably with strong publication record, in theory and practice of environmental impact assessment
 - have a civil engineering orientation, with skill in assessing a wide range of rural development projects
 - be intimately familiar with USAID Environmental Procedures and working familiarity with equivalent World Bank, OECD environmental guidance
 - be conversant in US and international environmental law as relates to environmental impact assessment

- ▶ **Anthropologist/Resettlement Specialist**
 - be an internationally-recognized authority in diversified resettlement/re-integration/refugee issues with extensive personal experience in the Third World, including in Africa, and preferably also Mozambique
 - be skilled in land tenure and access issues
 - be conversant in principles and applications of economic geography
 - preferably be able to communicate in Portuguese

- ▶ **Mozambican expertise areas needed**
 - Biological scientist
 - Women's and gender equity issues specialist
 - Professional conservationist with experience in participatory resource management
 - Land tenure expertise, esp. local laws and customs
 - Local institutions and legal systems expert
 - Geographer

Illustrative Budgetary Considerations

4 expats @ ca. 300/day/40 days (incl. 5 before and after Moz.)	\$48,000
4 expats per diem, travel	\$32,000
2-3 in-country experts, total 40 days	\$10,000
Domestic travel (aircraft, car rental)	\$ 8,000
Excess baggage, miscellaneous	\$ 2,000
	<hr/>
	\$100,000
IQC multiplier (ca. 100 %)	\$ 100,000
TOTAL	\$ 200,000

Prepared by: Walter I. Knausenberger: \moz\pea-scope.doc

APPENDICES

APPENDIX I. CONTACTS AND SCOPING PARTICIPANTS

A. Participant List -- Brainstorming Session for Scoping of Programmatic Environmental Assessment of Resettlement Activities -- USAID (8 March 1993)

<u>NAME</u>	<u>ORGANIZATION & ADDRESS</u>	<u>FAX/PHONE</u>
Walter Knausenberger	USAID Africa Bureau, AFR/ ARTS/FARA, Washington, DC	703-235-3826
Peter Argo	USAID/Mozambique	
Robin Mason	Caixa Postal 783	
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Julie Born		
John Hatton	Dept of Biological Sciences Univ. Eduardo Mondlane	492127
Celia Meneses	AUSTRAL, SARL	433445
Margarita Mejia	Mulher e Meio Ambiente (Women and Environment) CEA/Univ. Eduardo Mondlane	490828
Carimat Juma	Food for the Hungry (FHI)	420822
Carolyn Poteet	World Vision Rural Dev., Maputo	422922
Trudi Schwartz	Lutheran World Relief	492967
Joe Kessler	CARE/International	492064/6
Judite Ernesto	INDER, Av. Acordos de Lusaka, Maputo	465041
Mateus Samuel Chambal	African Elephant Specialist Group/SSC/IUCN-National Directorate of Forest & Wildlife Box 1406-Maputo (also rep. of EMOFAUNA)	460060 431105
Martin Whiteside	CNA: Comissão Nacional do Meio-Ambiente (National Environmental Commission) C.P. 2020, Maputo	Tel.:465851
Policarpo Napica	CNA	Fax: 456849

Francisco Mabjaia	CNA	
Shauna MacKenzie	CNA	
Gregory Myers	Land Tenure Center, c/o USAID/Maputo	
Bartolomeu Soto	Direccao Nacional de Florestas e Fauna Bravia (DNFFB), Maputo	460060
Afonso Madope	DNFFB, Dept. da Fauna Bravia, Ministerio da Agricultura	460036
B. Other Contacts:		
Milagre Cezerile	Director, Dir. Nacional do Florestas e Fauna Bravia (DNFFB), Ministé rio da Agricultura, CP. 1406, Maputo	460036 460096 Fax: 460145,460060
Bernardo P. Ferraz	Director-General, CNA, C.P. 2020 Maputo	465843 465848 465851 Fax: 456849
	Grupo de Trablho Ambiental Av. Karl Marx 1617 Caixa Postal 2020 Maputo, Mozambique	Tel. 425958 Fax: 427439
Paul Dutton	c/o DNFFB, Maputo Bazaruto Archipelago Project	460036
Mostafa K. Nosseir	Deputy Representative, FAO/Mozambique Rua Antonio Bocarro, 202 C.P. 1928, Maputo	744293 Fax: 491906
Jose Cotte	Ministry of Planning	
Marina Pancas	Plant Protection, Min. Agric.	491136 490557
Virgilio Ferrao	Dir. Nac.Geogr.Cadastr. (DINAGECA)	422078 420771
Gabriel Kenan	Sr. Progr. Officer World Bank. Maputo, Mozambique	492851, 492841, 496171

Magda Lara-Resende World Bank Environmental Task
Manager for Mozambique (met in
Maputo and Washington, D.C.) 202-473-5517

Roger Carlson, Director, USAID/Mozambique
Jack Miller Deputy Director, USAID/Mozambique
Cheryl McCarthy S/PROG, Program Office, USAID/M
Charles North Program Officer, USAID/M
Sidney Bliss, Program Development Officer, USAID/M
Susan Nelson Program Development Office, PVO Support Proj.

C. Field Trip to Tete [with Julie Born, USAID/Maputo, 14-17 March 1993]

Jonathan White World Vision, Maputo 422922

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22981

Caitano Chapamba Coordinator of Ag. Packs
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Bart van Straaten Irrigation Spec., WVRD, Tete

District Administrator Mutarara District, Mutarara, Tete

District Agricultural Repr. Sena District Post, Caia Distr, Sofala

Evaristo S. Wizulo Angonia District Administrator, Ulongué (Tete)

Pauline Cortesse UNHCR Rep., Ulongué (Angonia Distr., Tete)

Martinheu Samisone Farmer, Ulongué (Angonia)

Zacarias Passulane District Directorate of Agriculture, Ulongue, Angonia

Andre Mapas Distr. Dir. of Agriculture, Changara

APPENDIX II. TRANSITION PROGRAM DEVELOPMENT ACTIVITIES, IMPACTS AND ISSUES

A. Table of Transition Program Activities and Direct and Indirect Impacts Developed During Scoping TDY

Appendix
II. A.

Transition Program Development Activities Related to Re-Integration, Rehabilitation, and Reconstruction in Mozambique: Illustrative Environmental Impacts and Issues as Identified during the Scoping Process for the Programmatic Environmental Assessment (PEA) in March 1993. Grouped by major activity categories (which may overlap). Activities are not necessarily directly keyed to entries in adjacent columns; thus, impacts or causes may apply to more than one of the listed activities. [Not intended to be comprehensive]

ILLUSTRATIVE ACTIVITIES	DURATION	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS/ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/IDEAS RE: SUSTAINABILITY
<p>1. DEMINING: - Detonation of Mines</p> <p>- Neutralizing mines (Remove mines without detonating?)</p>	24 Months for Transition Program	Up to 2 million mines suspected. USAID supporting at \$ 4 million	<p>Holes, craters detonation; Disturbance of road surface, disruption of habitats, drainage systems</p> <p>Increased numbers of people moving into fragile & protected areas</p>	<p>Detonation effects</p> <p>Increased access</p>	<p>Fill in holes; Awareness campaigns as to mine avoidance; Personal safety education;</p> <p>Sequencing and coordinating removal and opening areas to access</p>	<p>Fill material may be needed from elsewhere: avoid causing excavation damage (borrow pits)</p> <p>Seat belts to promote personal safety on poor roads.</p> <p>Minimize impacts through anticipation - identify fragile areas</p>
<p>2. DEMOBILIZATION: Assembly areas receive demobilized soldiers and families (up to 49 areas, ea in 5 km diameter circle)</p> <p>Transporting some 300,000 former soldiers and families from assembly areas to villages or destinations of choice</p>	7 months start to finish	Up to 320,000 demobilized soldiers & family members.	<p>Air pollution, Water Pollution including siltation</p> <p>Increased pressure on natural resources - poaching, firewood harvesting</p> <p>Deteriorating roads</p> <p>Disruption of wildlife habitat</p>	<p>Erosion, dust, exhaust, fuel run-off</p> <p>Population concentrations in assembly areas; Siting military not based on economic or social criteria</p> <p>Heavy traffic, aged oxidized asphalt surfaces</p>	<p>Education about natural resources stewardship</p>	<p>Recruit potential candidates for warden/ranger positions from among demobilized soldiers</p> <p>Provide alternative sources of food & fuel in assembly areas</p>

ILLUSTRATIVE ACTIVITIES	DURATION	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS, ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/ IDEAS RE: SUSTAINABILITY
3. FACILITATING RESETTLEMENT OF RETURNING POPULATIONS						
Agpacks Distribution	1-2 years	ca. 640,000 Agpacks per year	Seeds may not be suitable for region setting in	Inappropriateness of combination of seeds/tools provided for some areas.	Buy seeds from local farmers; Use imported seeds for food aid	Re-establish trading post network
Vegpacks Distribution		Demobilized soldiers & families (up to 320,000); Internally displaced (3 - 4 Million); Refugees (up to 1.3 million), mainly from Malawi	Seeds distributed may not germinate and/or grow adequately	Poor seed quality, stored product, insect pests	Ensure selection of seeds provided are suitable to the agro-ecozones to which the recipients are returning; High quality seeds	NGO's provide for this based on local knowledge and access to research results and experience of knowledgeable people;
Fertilizer Inputs Increased			Loss of soil tilth "Burning" of seedlings; Contamination of surface water, non-target impacts	Inappropriate technique in application	Education about proper fertilizing technique	
Pesticide Inputs Distribution			Exposure of farmer or family to toxic products	Inappropriately stored or applied pesticides	Education; Avoid providing any but the least toxic products	Introduce IPM principles - knowledge of problem, when, and when not to treat. How to handle the stores, etc.,
Livestock sector Development & Rehabilitation		Focus on 10 districts (African Development Bank)	Potential for overgrazing and loss of vegetative cover, especially near boreholes	Unlikely over significant surface areas in near to	Land use planning should take this potential into account	Eradication of tse-tse fly eventually may lead to competition for land & water (10 years)
Return of refugees with livestock			Potential conflict with wildlife resources			NB: Livestock resource conflict unlikely in near future: livestock pop. seriously damaged by war, and much of the country is marginal for livestock. Much of the country north of Save River is infested by tse-tse fly.

ILLUSTRATIVE ACTIVITIES	DURATION	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS, ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/IDEAS RE SUSTAINABILITY
4. REINTEGRATION OF RETURNING POPULATIONS						
<p>Generic phenomenon of returning internally displaced population & refugees increasing density of people through migration, back to rural areas</p> <p>Removal of barriers to spontaneous movements/settlement (war, land mines disease, ownership conflicts)</p>	<p>Immediately to >5 years</p>	<p>Internally displaced: 3 to 4 million, mainly in 3 provinces nearest Malawi</p> <p>Refugees: up to 1.3 million, especially from Malawi</p> <p>Population Growth: Mozambique population projected by year 2000 to show 50% growth from 1990 base, to 22 million.</p>	<p>Degradation of NR base: Loss of vegetative cover Deforestation</p> <p>Loss of soil fertility</p> <p>Loss of productive capacity etc.</p> <p>Erosion</p> <p>Degradation of hydrological resources</p> <p>Deterioration of "critical" game & wildlife resources & biodiversity</p> <p>Sanitation concerns (See Item # 8 below)</p>	<p>Increased land clearing for Agricultural production and Shelter</p> <p>Overharvesting of fuelwood, use of fire for clearing, etc.</p> <p>Exposure of soil due to concentration of people in fragile areas (as river banks)</p> <p>Overpumping, etc. (see Water Resources)</p> <p>Poaching</p> <p>Disturbance of protected areas by overhunting and general human activity</p>	<p>Provide alternative fuel sources</p> <p>Land Tenure assured</p> <p>Reforestation could be promoted as CFW/FFW</p> <p>Education to options, need for care of NR base</p> <p>Reduce conflicts in resource use by modifying boundaries of current & proposed conservation areas</p>	<p>Land-use Planning - basic concept!</p> <p>Multiple use initiatives</p> <p>Land use planning to keep wildlife & agricultural areas distinct</p> <p>Introduce integrated conservation and development areas</p> <p>Increase of number of trained staff; Protected area management;</p> <p>Wildlife Farming, Ecotourism</p> <p>Sensitize people to biodiversity, stewardship</p> <p>Address roles of women & men in promoting conservation & improving relationships in cultural context</p> <p>Strengthened NGO/government cooperation</p>

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ILLUSTRATIVE ACTIVITIES	DURATION	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS; ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/IDEAS RE: SUSTAINABILITY
5. STIMULATING AGRICULTURAL PRODUCTION:						
Supply of Seeds	18 months	640,000 'agpacks' 1992/1993; 2,000,000 in 1993/1994	Seeds may not be suitable for region setting in	Inappropriateness of combination of seeds provided for some	Develop Ag Packs or basis of variety trials in region where seeds distributed	Need to coordinate with local communities, GRM, NGO's, donor agents, and IARCS
Supply of agricultural tools		Reduced there after	Seeds distributed may not germinate and/or grow adequately	Poor seed quality, stored product, insect pests	Buy seeds from local farmers; use imported seeds for food aid	Attend to ag extension by GRM, NGO's, with emphasis on gender equity & cultural participation
Pest control & Seed inspection				Inappropriately stored or applied pesticide	Effective seed inspection and quarantine should reduce incidence of bad seeds	
Irrigation			Erosion	Poor management, maintenance		
			Salinization	Re-use of irrigated water	Promote rainfed over irrigated agriculture	
Land Clearing	Immediate to 10+ years	Throughout agricultural areas	Excessive loss of vegetative cover, leading to erosion, etc.	Slash and burn practices	Extensive areas formerly irrigated could be rehabilitated	Provide assistance in developing alternative income generating options
Food Aid	Two years	Commercial food aid mainly in urban centers	Degradation of Natural Resources	Encouraging concentration of population in areas which otherwise could not support large number of people	Training in farm management 'good practices'	
Livestock Production			Unlikely over significant surface areas in near to medium term (10 years)			Establish animal traction program
Agricultural Marketing Initiatives and privatization			Potential for overgrazing & loss of vegetation cover, especially near boreholes			Training in animal husbandry
			Increased Use of ag inputs could have direct/indirect impacts			

ILLUSTRATIVE ACTIVITIES	DURATION	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS/ ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/ IDEAS RE: SUSTAINABILITY
6. REPAIR OF INFRASTRUCTURE						
Rehabilitation of access & Feeder Roads: grading oil-coating graveling sealing	USAID involvement: 18 months	Repairs to 600 km of gravel roads, 270 km asphalt roads Sens Bridge rehabilitation/reconstruction	Erosion; Siltation of streams; Pollution from oil, fuel	Inappropriate shoulder construction & stabilization; Disturbance of vegetative cover	Soil loss/erosion control measures during construction (bunds, gabions, etc.); Re-vegetate shoulders; Proper drainage provision etc.	Community participation in planning Use village brigades for repair work and maintenance.
Culvert Rehabilitation	18 months			Poor maintenance of equipment & roads		Choose labor over equipment where sensible
Piers/Bridges & Ferries Rehabilitation				Poor siting for pit		FPW/CFW may be problematic Build for climate!
Dredging of River Beds			Borrow pit excavation degrades environment physically & aesthetically Natural resources degradation			Build to maximize use of local materials, but sensibly
Irrigation system restoration			Pollution, erosion Degradation of soil and water	Bare soil No erosion control measures		
Reconstruction of Public Buildings - health posts - schools			Asbestos risk to human health Possible over-use of local materials: clay for roofing tiles; straw, etc.		Alternative construction materials-concrete, local tiles	Local practices taken into account

ILLUSTRATIVE ACTIVITIES	DURATION	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS, ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/ IDEAS RE: SUSTAINABILITY
7. WATER SUPPLY SERVICES:						
Drilling Wells	On-going to Indefinite Future	Mainly in drier areas and densely settled and peri-urban areas	Depletion of freshwater resources – groundwater aquifer drawn down	Underestimation of water demand	Designs based on sustained water yield	Rainwater catchments on buildings with cisterns
Surface Water Use systems and facilities installed	Significant aspect of PVO Support Project subactivities	Actual numbers of interventions (drilled wells, hand dug wells, distribution, etc., needs better characterization; for example, Primary Health Care Support Proj. and PVO Support Proj. undertaking many activities of this type)	Saltwater intrusion; Poor quality Water	Overestimation of water supply; Too dense placement of well in wells fields	Regulations of pumping when necessary with monitoring or use and withdrawal	Decentralize Water Supply Delivery
Small Scale Irrigation			Sanitization in irrigated areas;	Overpumping – excessive extraction;	User, consumer, operator education on good practices, water conservation; Realistic pricing schemes	Participatory design and community involvement in decisionmaking should be the norm.
Construction of related facilities			Creation of stagnant water	Improper siting of facilities		Encourage local contractors
Water Catchments Storm Drainage Laying pipes water pipe			Increased contamination; Soil erosion; Siltation	Inadequate drainage system	Avoid extractions for irrigation	
Dam Rehabilitation			Degradation of terrestrial aquatic habitat	Lack of user/operator concern	Water quality monitoring	
Pond Construction			Alterations in ecosystem structure	Excessive waste, leakage	Community participation in planning	
				Physical impact of increased traffic,		

ILLUSTRATIVE ACTIVITIES	DURATION & SCALE	SCALE	ILLUSTRATIVE POSSIBLE PROBLEMS, ENVIRONMENTAL IMPACTS/ISSUES (DIRECT/INDIRECT)	POSSIBLE CAUSES	POSSIBLE MITIGATION MEASURES	COMMENTS/IDEAS RE SUSTAINABILITY
8. SANITATION PROJECTS:						
Digging pit latrines	18 - 24 months	Several in Key Provinces (actual numbers and nature of activities need better characterization)	Contamination of surface, ground water, soil, food	Improper siting of facilities	Proper selection and design of sanitation facilities	Promote community participation in planning, design & execution
Drainage/collection systems			Increased/decreased transmission - diarrheas, parasitic	Re-use of waste water for irrigation; Disposal of excreta directly into sensitive areas without treatment		
Construction Activities			Degradation of stream and other aquatic habitats	Poor construction practices; High population densities taxing capacity of facilities	Promote local participation in maintenance	
9. HEALTH SERVICES:						
Communicable Disease Control	Throughout	Not routine but wide-spread need	Misuse of pesticides for vector control			Establish preventive health programs, bednet programs
Nutrition Assistance			Dependency on food aid			
Rehabilitation of Health Facilities		Several per province	Immediate construction impacts only; Minor risks from sanitation point of view	Medical, sanitary wastes		
10. EDUCATION:						
Rehabilitation of schools			Immediate site impacts - minor	Inappropriate construction practices	Follow standard guidelines for environmental mitigation	Civic education links politics, democracy and environmental awareness - make part of political process
Minor construction activities			Immediate site impacts - minor			Develop local contractor capacity Training of teachers including attitudes towards stewardship of NR Environmental Education Promote culturally sensitive training

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**SCOPING STATEMENT AND BACKGROUND PAPER:
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA)
OF THE USAID/MOZAMBIQUE
TRANSITION PROGRAM DEVELOPMENT ACTIVITIES
RELATED TO RE-INTEGRATION, REHABILITATION AND
RECONSTRUCTION**

PREPARED BY:

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AID/AFR/ARTS/FARA/ENV**

WITH:

**U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO MOZAMBIQUE
MAPUTO, MOZAMBIQUE**

MARCH 1993

Final Draft Version: - May 6, 1993

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EXECUTIVE SUMMARY

After two decades of civil war, and a string of droughts, including the century's worst drought in 1991/1992, comprehensive Peace Accords were signed in October 1992, and appear to have stabilized the prospects for economic, social and environmental recovery. In addition, the "mega-drought" appears to be over. The stage is set for the re-integration and spontaneous resettlement of about 35 percent of the Mozambican population that has been displaced or forced to migrate to neighboring countries due to the continued insecurity and drought. On the order of 4 to 5 million people are likely to be involved in the reintegration, resettlement and rehabilitation process. This is proceeding spontaneously and apparently rapidly, despite remaining deficiencies, such as civil insecurity (e.g., mined roads), food insecurity, lack of human and physical infrastructure, and a stagnant economy.

The Government of the Republic of Mozambique (GRM), the NGO and donor community, with the assistance of the UN Office of Humanitarian Assistance Coordination (UNOHAC), are implementing programs to facilitate the process of repatriation and return, to restore the returnees' capacity to participate fully in long-term developmental activities. USAID/Mozambique is participating actively in this process. The GRM transition strategy envisages moving from short-term rehabilitation, supporting the peace process, to longer-term national reconstruction. While Mozambique has been committed to, and is making progress under, its economic and social rehabilitation program, the government does not have a comprehensive framework for linking these objectives with sustainable environmental and natural resources management. This raises the real possibility that economic rehabilitation efforts could have the unintended result of increasing degradation of these resources, which constitute the life support base and foundation of productivity. In turn, this would lead to resource depletion, further increasing the vulnerability of the poor.

Mozambique has launched a National Environmental Action Plan process, termed National Environmental Management Program (NEMP), which is ideally placed to assist in guiding the rehabilitation and reintegration of the nation's natural and human resources, in a fashion fully linked to social and economic rehabilitation and growth. A number of significant initiatives are underway which will be supportive of this process, and should be linked as closely as possible with the NEMP. The most important of these include: 1) National Reconstruction Plan/Program (GRM); 2) National Family Sector Agricultural Development Program (GRM/FAO/UNDP); 3) Agriculture and Environment Consultative Group / World Bank; 4) Agricultural Sector Review (GRM/FAO/donors).

USAID's Transition Development Program. USAID/Mozambique is committed to an 18- to 24-month program to support Mozambique's transition from short-term relief through rehabilitation to long-term development. Its main elements include: 1) drought-related relief/emergency assistance; 2) Support for the Peace Process, namely demobilization, de-mining, elections; rural rehabilitation and recovery (through grants to PVOs); rural roads rehabilitation; 3) a Core Development Program, consisting of policy dialogue, legal sector reform, PVO Support, Primary Health Care, long and short-term training, Private Sector Support, commercial food aid, and land tenure research. In addition, the mission is preparing for a new long-term Country Development Strategy Plan (CPSP).

Environmental Procedures, Programmatic Environmental Assessments (PEAs) and Natural Resources Management at USAID. As central elements of USAID Environmental Procedures, PEAs are undertaken to assess the environmental effects of a number of individual actions and their cumulative environmental impact in a given country or geographic area, or the environmental impacts that are generic or common to a class of actions. Programmatic evaluations of classes of actions are also conducted to better define the

nature of actions to be taken and establish criteria for additional decision-making parameters, and/or for program implementation which will minimize the adverse effects of such actions. Collaboration and consultations between A.I.D. and host government (GRM) are indispensable features of the assessment, beginning in the early stages of preparation, with a scoping session. For activities funded by the Development Fund for Africa, involvement of the local private and voluntary community, including women, is also essential. The 1992 U.S. Foreign Assistance Act calls for an analytical consideration of the kinds of policy reforms which are likely to have an impact on the management of the environment in the long run.

The Development Fund for Africa recognizes that sustained and broad-based economic growth is inextricably linked to responsible stewardship over the natural resource base. The Africa Bureau's Plan for Supporting Natural Resources Management reflects this perspective, and merges support for stewardship of the natural resources base with support for development of the rural economies of African nations where A.I.D. has natural resource management programs. Increasingly, it is essential that donors move beyond reviewing development activities for potential environmental impacts to supporting programs which are primarily focussed on natural resources sustainability, and environment and development linkages. The multiple linkages among the environment, population growth, poverty, public health, market, public and non-governmental institutions, and social culture require a coordinated, geographically-specific approach to build on the positive and break the negative linkages between development and the environment.

USAID/Mozambique is undertaking a PEA of its transition Development Program because: 1) a potential exists for immediate and derived environmental impact of the various programs and activities, in their aggregate; 2) conclusions from the assessment are expected to be useful to inform programmatic decisions about sustainable development strategies which the mission could support; and 3) mitigation measures are needed which are specifically applicable to USAID's Transition Program, implementable both immediately and in the medium- and long-term.

The PEA will serve as the necessary framework to ensure that all important issues are anticipated and addressed for the entire class of actions to be undertaken during the transition program in support of Mozambique's transition from emergency response to long-term development. Likewise, it provides an opportunity to involve the GRM, NGOs and other donors in a constructive process, and is expected to assist the process of launching a NEAP and perhaps of supporting ancillary activities. So the PEA needs to be conducted with full cognizance of major existing related initiatives and programs. The present background paper records many of these, for which further analysis may be appropriate by the PEA team.

This PEA is unusual in its broad scope, covering as it does a class of actions generically related to the re-integration and spontaneous resettlement of four to five million internally displaced people and refugees, and all the assistance being mounted in support of rehabilitation of these people, their support systems and bases for a productive life. Of the range of activities and issues identified and considered (Appendices IIA-D.), relatively few were eliminated from consideration. While the general sense is that the proximate and near-term impacts of the transition activities are likely to be relatively minor, and that under the existing USAID environmental review procedures, most would qualify for a negative determination. However, one important objective of the PEA is to examine the range of supported (mainly PVO-implemented) activities globally with respect to the possibility of cumulative and aggregate impacts through coincidence in time and space. Another is to assess the medium- and longer-term implications of the transition program and the processes it sets in motion, mainly with respect to the Mission's programs but also more generally, in the context of the need for integrated environmental and development planning in Mozambique.

Critical environmental impact and natural resource sustainability issues for PEA.

Seven of the ten key elements of the transition program (Appendix IIA) will be examined by the PEA: demining; facilitating re-settlement; re-integration; stimulating sustainable agricultural production; repair and rehabilitation of infrastructure; water supply services; and sanitation services. The PEA will address each activity of interest to the Mission, and will examine the key transition program activities in light of their potential for direct or indirect impact on the following clusters of resources and associated management factors: soil/land productivity; vegetative cover quality/quantity; biological diversity; water resources quality.

The PEA will distinguish direct or more proximate impacts (actual or potential) from medium- or longer-term impacts or issues relating to groups of activities. Given the likelihood of delegation to the Mission of the authority to approve some or all of the activities, on the strength of the PEA and existing and amended Initial Environmental Examinations (IEEs), the PEA team will examine these projects in light of the existing environmental guidelines and IEEs which apply to them, and determine their continued appropriateness. If needed, identify aspects, possible impacts and possible mitigation measures which may have been overlooked. The tentative ranking procedure proposed herein for monitoring and mitigation of impacts should be evaluated by the PEA and modifications be suggested.

Direct and near-term impacts of rehabilitation activities. This analysis will be linked to the Mission's projects/programs and activities, most of which will be carried out by PVOs. The activities to be assessed for direct impacts fall mainly into the following categories:

1. Roads repair and related infrastructure re-habilitation
2. Water supply and sanitation projects
3. Facilities rehabilitation
4. Agricultural inputs supply and use.

The PEA should determine whether the projects and activities individually, cumulatively over time, or in conjunction with other projects in the same area, could have a significant effect on the quality of the environment and on the sustainability of natural resources. Other issues may arise. For example, given the high level of investment in food security through food aid, it may be appropriate that the linkage of food security and environmental and natural resources management be scrutinized.

Indirect impacts and medium- and longer-term issues with respect to resettlement of populations and reconstruction. Below are the categories of issues which relate to the possible longer-term implications of resettlement for natural resources management principles and processes. They must be evaluated in the socio-economic context:

1. Land degradation, soil resource depletion
2. Woodlands destruction, deforestation, fuel-wood depletion
3. Water resources management
4. Land tenure and stewardship of land
5. Competition for land and water: agriculture and biodiversity (see Protected Areas item below)
6. Endangered and threatened species of wildlife.
7. Protected and Conservation Areas at Risk
8. Market development: long-run environmental effects

**Appendix II. TRANSITION PROGRAM DEVELOPMENT ACTIVITIES, IMPACTS AND ISSUES.
(CONTINUED)**

B. Overview of the likely USAID/Mozambique Transition Program Development Activities, in the Context of the UNOHAC Consolidated Humanitarian Program for 1993/94

Synopsis of activities most likely to receive USAID support vis-à-vis options for repatriation, return, rehabilitation and re-integration of displaced persons and refugees¹. Listed in groups of likely chronological order or concurrent implementation.

DEMINEING

- 4.8.1 Mine Survey and Demining of Roads
- 4.4.1 Demining of Roads

RESETTLEMENT

- 1.0 Repatriation of Refugees
- 1.2.0 Returnee assistance kits ("survival kits") [see 4.1.0]

- 2.0 Demobilization
- 2.7.0 Transportation to home locations

- 3.0 Emergency Relief
 - 3.1.2 Food-for-Work Programs
 - 3.2.0 Logistics, transport and storage
 - 3.3.0 Internal Transport of displaced persons

REHABILITATION/RECONSTRUCTION

- 4.0 Restoration of Essential Services
 - 4.1.0 Agricultural Production [see 1.2.0]
 - 4.1.1 Supply of Seed for Family Sector
 - 4.1.2 Supply of Agricultural Tools
 - 4.1.3 Pest Control and Seed Inspection
(Impacts: 640,000 families to receive "ag packs", incl 15 kg seeds; misuse of chemicals?)
 - 4.1.6 Land Allocation for Returnee Families and Demobilized Families
 - 4.1.7 Rural Credit
 - 4.1.8 Extension Program

 - 4.2.0 Health Services
 - 4.2.3 Support to NGO Operations
 - 4.2.4 Support to Provincial Health Directorates
 - 4.2.5 Strengthening and Rehabilitation of the Health Network
(Activity: health posts rehab)
(Illustrative Impact: disposal of medical/contaminated wastes)

 - 4.3.0 Water and Sanitation
 - 4.3.1 Water Supply for Rehabilitation and Resettlement

¹ Adapted from: Consolidated Humanitarian Program for 1993-94, United Nations Operation in Mozambique (UNOHAC), Office for Humanitarian Assistance Coordination

- (water sources rehab)
 - 4.3.2 Sanitation for Rehabilitation and Resettlement
 - peri-urban (latrines - contamination of water supplies)
 - 4.3.3 Water Supply - Nampula/Niassa (MCD 2 -yr. proj. Niassa Water/sanitation - SN)
- 4.4.0 Repair of Physical Infrastructure
 - 4.4.1 Demining of Roads
 - 4.4.2&3 Access and Feeder Roads Rehabilitation
 - (Activity: re-seal core system of paved roads; oil-coating dusty roads likely to receive heavy relief-related traffic; grading?)
 - (Impact: erosion, interruption of animal migration patterns)
 - 4.4.4 Bridge and Culvert Rehabilitation
 - (incl. ferries)
- 4.5.0 Education
 - (schools rehab)
 - (Civic education -- politics, democracy)
 - (environmental awareness, education as part of political debate, incl. NGOs -- MT)
 - (Development of local contractor capacity)
- 4.6.0 Multi-sectoral support to re-integration
 - 4.6.1 Integrated programs at Community Level
 - 4.6.2 Support to returnees (including QUIPS) ((Quick Impact Projects)
- 4.7.0 Internally displaced in urban areas
- 4.8 Mine awareness and clearance
 - 4.8.1 Mine Survey and Demining of Roads
- 5.0 Balance of Payments and Budget Support
 - 5.1 Market food aid
 - 5.2 Seeds and tools program
- 6.0 Institutional Support
 - 6.1.0 Food Security & Early Warning
 - 6.2.0 Emergency Coordination
 - 6.2.4 Emergency seed multiplication
 - 6.2.5 National NGO's
 - (work with national NGOs, encourage "green-like" NGOs...)

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**APPENDIX II. TRANSITION PROGRAM DEVELOPMENT ACTIVITIES, IMPACTS AND ISSUES.
(CONTINUED)**

C. Towards Implementation: Prioritization of Activities & Geographic allocation of Effort, based on Summary of PEA Questionnaire Completed by USAID/Mozambique Staff.

A summary of results of questionnaire to USAID staff developed in preparation for Programmatic Environmental Assessment (PEA).

Resettlement [the process, expected to be mostly self-initiated, of demobilized or displaced Mozambicans and their families to their homes or destinations of choice, in the expectation that war-induced insecurity has ended.]

JBorn:

Through PVO/NGOs in limited geographic areas

Priorities: Tete, Zambezia, northern Sofala, northern Manica

Emergency food distribution, and distribution of other relief supplies; seeds and tools ("ag packs") distribution

LSantos:

--Emergency relief: Homoine, Funhalonra (?), Mabote, Chiabava

--Restoration of essential services: 1st Zambezia Province: Alto Moloare, Milange, Morrumbela

PArgo: FFW activities

SNelson: [for PVO activities] Ag Packs & returnee assistance kits; support of NGO operations, health post rehab.

Rehabilitation [the immediate repair of existing facilities, infrastructure and services]

LSantos:

Roads -- Maputo--Rassano Garcia

Schools -- Zambezia, Nampula, Inhambane

Hospitals

JBorn: Access, demining, clearing, grading, resurfacing roads; water supply, health post and/or school rehab/re-constr. through PVO/NGOs

PArgo: Re-seal core system of paved roads; feeder roads rehabilitation

SNelson: Support to NGO ops., rehab. of health posts, health networks; national rural water programs (4.3.1), rural sanitation, water supply Nampula/Niassa (MCD 2 yr proj.); rural roads access (4.4.2).

Reconstruction [the long-term process of building Mozambique's physical, political and economic infrastructure; some short-term activities may impact this process, while these activities may have longer-term and/or indirect impact]

LSantos:

-- Zambezi Bridges (Rail/Road) and Caia

-- Moatize coal -- rail connection through Malawi to Nacala port

-- Production of solar panels

JBorn:

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- PVO/NGO activities in agric.; commercial channels for trucking, distribution
- Private sector role: Commercial channels, transport, access to foreign exchange for inputs of investment goods (seeds, construction materials, equipment, etc. (JB)

PArgo: Continued feeder roads program

MTurner:

- As part of civic education, encourage public to hold political parties accountable for platform plank on environment and threats to natural resources by public and private sector; stimulate environmental issues as integral part of political debate and campaign.
- Work with national NGOs and encourage the few "green-like" NGOs that exist here that did participate in NDI workshop for NGOs on civic education
- UNOMOZ and EC coordinator for civic education can be sensitized to issues of environment and political behavior...

SNelson: basically same as rehabilitation; support immunization program

**APPENDIX II. TRANSITION PROGRAM DEVELOPMENT ACTIVITIES, IMPACTS AND ISSUES.
(CONTINUED)**

D. Synopsis of Additional Issues Raised at PEA Brainstorming Session

URBAN-DISPLACED & PERI-URBAN ISSUES

- o Dynamics of movement of displaced persons: how many will stay in cities, how many will return to rural areas?
- o Understanding socio-economic motives for returning/staying in rural/urban areas spontaneously.
- o Competition in land-use between residential, industrial, agricultural, and natural resources and biodiversity requirements.
- o Fuel wood depletion around cities.
- o Demobilized soldiers - what to do as former soldiers: labor, skills put to productive use (such as reforestation?)
- o Access to productive employment
- o Horticultural crop intensification
- o Garbage, landfills, sanitation, solid waste disposal
- o Air and water pollution
- o Public commuting options: Commuting daily to work in cities from rural areas -- is this to be encouraged? Public vs. private transportation to peri-urban areas.
- o Satellite centers of urbanization to distribute population pressure.
- o How to motivate return to rural areas -- dispersal

LAND - USE & LAND TENURE ISSUES

- o Land use planning/criteria - urgently need to normalize land ownership, title issues
- o Projects seeking to strengthen land use/access decision - making processes.
- o USAID: Land Tenure Center project: divestiture of parastatal enterprises
- o World Bank: Rural Rehabilitation Project (RRP)
 - FAO: National Family Sector Agric. Dev. Program
 - FAO: Land-Use Planning Project?
- o Traditional land use/land rights conflicts

NATURAL RESOURCES ISSUE AREAS/POINTS TO INCORPORATE

- o Indigenous forest management
- o Forest plantation development: plantation expansion may lead to conflicts with conservation interests
- o Ecotourism
- o Parks/Protected Area designation/management
- o Reforestation as opportunity for cash- or food-for-work
- o Blocking of migration paths/patterns
- o Set-aside areas for biodiversity conservation
 - a priori designation of conservation areas
 - involve communities in decisions as to designation of areas
 - give opportunities to get involved, help, sort out alternatives
- o Multiple use principle of conservation and development
- o Planning/land use - basic requirement
- o Community infrastructures need re-establishing social structures also need to be re-formed

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- o Decentralize control over NR: land-use allocation-done by consensus, involve district/province level people
- o Important NRM activities outside immediate scope of re-integration concerns:
 - Coastal zone management initiatives
 - Mineral extraction, mining, e.g in Zambezia Province

PROTECTED AND CONSERVATION AREAS AT RISK

An extensive system of Protected and Conservation areas has been designated and proposed in Mozambique (see Figure 1). This includes national parks, game reserves, hunting areas, transfrontier parks, and multiple resources areas (integrated conservation and development projects). A Mozambique Workshop on Rehabilitation of Protected Areas and Conservation Networks is being planned for Oct. 26-29, 1993, with major support from WWF/Switzerland.

Among the areas likely to be particularly at risk from returnee population growth and resettlement pressures include:

- Proposed and existing conservation areas south of Maputo city, esp. the Maputo - Tembe/Ndumu "elephant corridor": refugees returning from S. Africa, Swaziland; displaced persons from Maputo; prevention of poaching is a major concern.
- Limpopo R. Valley & Massingir Dam areas: previously inhabited, have livestock and agricultural potential. Returnees from Zimbabwe and South Africa.
- Competition for land and water between agriculture and wildlife needs.
- Gilé Game Reserve (Zambezia), Zambezia is among the provinces likely to be most affected by resettlement processes.
- Chimanimani Massif and associated forest (Manica province)
- Gorongosa/Marrromeu complex, extensive conservation area in Sofala province around the Gorongosa National Park
 - people moving away from Beira and from Coast
 - issue of wildlife damage particularly acute here

RESETTLEMENT ISSUES/PRINCIPLES/NEEDS

- o PEA needs to reflect understanding of de facto and de jure legal structures affecting options/decisions, land-property system, etc.
- o Policies needed to allow decentralized decision making on resettlement
- o Decentralize control over land-use allocation decision-making
- o Determine local system for land tenure/ownership rights
- o Training in participatory rural appraisal (PRA) and Rapid Rural Appraisal techniques is needed
- o Re-activate trading networks and markets
- o Creating conditions conducive of community development and involvement
- o Competition for resources

- o Donors' role in designing projects, mutual compatibility
- o Factors in decision-making in spontaneous resettlement are not well understood.
- o Role of Private Sector - (Commercial) in conservation and management of NR
- o Privatization of State - controlled operations

NGO/PVO INTERVENTIONS & AREAS OF EMPHASIS

- o Multiple resource-use at community level
- o Small-scale income-generating activities
- o Rehabilitation of social and productive infrastructure
- o Promote grassroots participation
- o Support to local institutions
- o CAMPFIRE - type projects - sustainable, community-based natural resources development

POLICY SECTOR INTERVENTIONS

- o Issues for Legal Review, Legislative Reform
- o Conservation, export, use of plants, wildlife, fisheries
- o Legal arrangements for coordination of water resource access Institutional arrangements for international river basis
- o Safe pesticide use; plant protection legislation and enforcement
- o Forestry legislation
- o Land tenure, land use decision-making process
- o Policy favoring private enterprise
- o Financial resource availability
- o Liberalize economy
- o Alternative NRM funding mechanisms for GRM:
 - o Donor investment
 - o Trust funds
 - o Endowment funds
 - o Debt-for-Nature swaps
 - o Global Environmental Facility

FOOD FOR WORK/CASH-FOR WORK

- o Replace outright food aid, relief actions where possible; food aid may be counterproductive; should be phased out as soon as possible after introduced
- o Community housing
- o Social infrastructure
- o "Ownership" in work accomplished must be established
- o Organize with full participation communities affected
- o Cash brings in resources, traders
- o Community builds housing as pre-requisite for the posting of teachers/health workers

INSTITUTIONAL SUPPORT ISSUES

- o Help develop environmental impact monitoring capacity!**
- o To coordinate or not to coordinate?**
- o Info liaison/access**
- o Decentralize process of re-integration!**
- o Emphasize community participation all points of planning; implementation/construction and operation.**
- o Strengthen indigenous NGO's, encourage local NGO's**

PRIORITIZATION ISSUES

Develop criteria for prioritization of USAID interventions, for example:

- o Focal Geographic Areas for USAID**
 - Provinces: Tete, Zambezia, Northern Sofala, Northern Manica, others?**
- o Approach: through PVO/NGO's in limited geographic areas**
- o Concentration of expected returnee populations**
- o Presence of experienced NGO's in area.**
- o Access local community resource people**
- o Beneficiary involvement**
- o Resource potential/land capability**
- o Activities - agricultural crops, livestock**
- o Avoid potential conflicts with protected areas**
- o Land capability classification/ soil fertility**
- o Availability of adequate water resources**

APPENDIX III. PRINCIPLES TO CONSIDER IN PROGRAMS WHICH ADDRESS RE-INTEGRATION AND REHABILITATION OF POPULATIONS.

A. Re-Integration Planning

This is equivalent to resettlement planning, except that with re-integration the process is less directed, more spontaneous, in which the development assistance agents go to the areas of influx to help provide for the basic requirements (food, health and sanitation, household goods, transportation infrastructure, basic education services). Provisions should be made for:

- ▶ Organizational responsibilities [e.g., CNA, NEMP, monitoring]
- ▶ Socio-economic survey
- ▶ Community participation and integration with host populations
- ▶ Policy and legal environment favorable to agricultural & rural development (e.g., usufruct, credit access)
- ▶ Valuation and compensation (for lost assets)
- ▶ Land access, acquisition and productive re-establishment
- ▶ Access to training and employment
- ▶ Shelter, infrastructure and social services

- ▶ Environmental protection and management
 - Natural resource degradation
 - deforestation (fuelwood, slash & burn, etc.)
 - overgrazing
 - soil erosion
 - water supply sustainability
 - irrigation (salinization, etc.)
 - sanitation, wastewater, drainage
 - pollution (fertilizer, etc.)
 - pesticide use (ag paks)
 - construction concerns
 - protected areas, parks, wildlife and people

- ▶ Implementation timetable, monitoring and evaluation

B. Lessons Learned from Resettlement Experiences Worldwide²:

1. Promote spontaneous, but NGO- and government-assisted settlement, as opposed to government-directed settlement
2. Promote rain-fed as opposed to irrigation-dependent settlement.
3. Encourage diversified production systems at the household and community levels that combine cropping systems, livestock management, and a range of non-farm activities, as opposed to a narrow emphasis on farming systems.

² Land Settlement Review, Institute for Development Anthropology, 1990.

4. Integrate host communities with settlers and pastoralists through land management associations that provide security of tenure and a foundation for management of the natural resource base.

5. Promote zoning of community-managed lands for village sites, cropping systems, livestock, forests, and other natural resources.

6. Give priority to development of less-isolated areas that spontaneous settlers prefer as opposed to remote areas having poor access to roads, services and markets.

7. Use existing government agencies for planning and implementation purposes as opposed to establishing special settlement agencies.

8. Actively involve local organizations at district, subdistrict, and community levels, and NGO/PVO community, promoting participatory diversification of options.

C. Dynamics of Settlement Process

Populations involved in land settlement adapt to their new habitats in a patterned manner, consisting of five major stages:

1. planning;
- *2. initial infrastructure development, recruitment and installation;
- *3. adaptation (settling-in: establish food security, conservative stance)
4. Economic and social development (adapt and diversify strategies to ensure livelihoods in new setting; willingness to innovate once food security is established)
5. handing over and incorporation

* -- main stages involved in rehabilitation and reconstruction

APPENDIX IV. ADDITIONAL INFORMATION

A. Illustrative List of PEA-related Resources, Institutions and Related Activities: National, Regional, AID/W

Government of Republic of Mozambique (GRM)

- CNA National Environmental Commission
National Environmental Monitoring Program
- NRP National Reconstruction Plan/Program (based on provincial-level reconstruction priorities)
- DNFFB Direccao Nacional de Florestas e Fauna Bravia, Ministério da Agricultura
Ministry of Planning
- DINAGECA Dir. Nacional Geographia Cadastral
- UEM Univ. Eduardo Mondlane, Dept. Biol. Sci, Women and Environment Prog.
- [etc.]

NGO/PVO

- Grupo de Trabalho Ambiental (GTA), a Mozambican NGO
Endangered Wildlife Trust (WWF)
World Vision, WVRD
Lutheran World Relief
Food for the Hungry, Inc.
Care International, Inc.

Regional

- SADC SARP Natural Resources Management Project
Emphasis: community-based natural resource management and utilization
LIFE: Life in a Finite Environment -- Namibia component of the SARP Regional Natural Resources Management Project
USAID/REDSO/ESA

USA, USAID/Washington

- Agriculture and Environment IQC's
PARTS project (AID/AFR/ARTS/FARA)
PVO/NGO NRMS Project (AID/AFR/ARTS/FARA)
Forestry Support Project (AID/R&D/ENR)
Biodiversity Support Project Research Mini-grants (R&D/ENR, AFR/ARTS/FARA)
Protected Area Conservation Strategy (PARCS) (R&D/ENR, AFR/ARTS/FARA)
READ: Reaching Out with Education for Adults in Development
GREENCOM, Environmental Education Project (AID/R&D/ENR)
Environmental and Natural Resources Policy and Training (EPAT) project (AID/R&D/ENR)
Environmental Planning and Management (EPM) Project (AID/R&D/ENR)
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Water and Sanitation for Health (WASH) Project (R&D/H)
Systems Approach to Regional Income and Sustainable Resource Assistance (SARSA) Project,
(R&D/EID)
Agricultural Policy Analysis Project (APAP), R&D/AGR
etc.

U.S. Environmental Protection Agency

Other Donors' Major Activities in Mozambique

World Bank Environmental Support Program
World Bank AECG: Agriculture & Environment Consultative Group
 Agricultural Sector Review (FAO, UNDP)

GEF Global Environmental Facility:
 Transboundary National Park &
 Institutional Strengthening Project/ World Bank

FAO National Family Sector Agricultural Development Program

United Nations
 UN High Commission on Refugees (UNHCR)
 UN Operations in Mozambique (UNOMOZ)
 UN Office of Humanitarian Assistance Coordination (UNOHAC)

APPENDIX IV. ADDITIONAL INFORMATION

B. Preliminary List of NRM Training Ideas and Opportunities for Mozambique

- USAID staff

A.I.D.'s Staff Strengthening Through Environmental Training (ASSET) courses

- Mozambique participants

- African Training for Leadership and Advanced Skills (ATLAS regional project)
- Human Resources Development Assistance (HRDA, regional project)
- SADC SARP NNRM Training

- ** - Environmental Policy and Regulation Seminar (5/11 to 5/22/93)

- Environmental Education initiatives
- ** - Environmental Education (International, Applied Program-GREENCOM? (May 16-June 4, 1993, Univ. Tennessee)
 - Extension Workers Trained by NGOs (FHI, etc.)

- EPAT Natural Resources/Environmental Management Training modules
 - Lusophone Training coordination
 - In-country training in NR/E management

- Workshop for Journalists on Environmental Issues, to promote public dialogue during electoral debates

- Mozambique Workshop on Rehabilitation of Protected Areas and Conservation Networks (Oct. 26-29, 1993) with WWF/Switzerland: possibly provide Brazilian resource person in community-based forestry?

- Protected Area Conservation Strategy (PARCS) Wildlife Training (AID/R&D Biodiversity Support Program)
- LIFE: Life in a Finite Environment (Nambian component of SARP NRMP)
- READ: Reaching Out with Education for Adults in Development

- ** participants identified by USAID/Maputo

APPENDIX V. LITERATURE

A. Literature Consulted

- Long, L. D. Survey of the Malawian Refugees' Repatriation for UNHCR. Dec. 1992. 29 p.
- USAID/Mozambique. Tete Trip Report. Jan. 10-13, 1993. 15 p.
- USAID/Mozambique. [many documents, project papers]
- Wilson, Ken. Repatriation and Development in Northern Tete: Peoples' Attitudes, Current Procedures and Post-war Planning. Preliminary Findings from Field Research in Angonia. Dec. 1991. 7 p.
- World Bank. Strategy and Program for Managing the Transition to National Reconstruction. Meeting of Consultative Group for Mozambique, Paris, Dec 1992. 38 pp.
- World Bank. Aide Memoire. National Environmental Management Plan. Environmental Support Project, Republic of Mozambique. Nov. 21, 1992.
- World Bank. Aide Memoire. National Environmental Management Plan/NEMP. Environmental Support Project/ESP. Transfrontier Conservation Areas and Institutional Strengthening/GEF. Government of Republic of Mozambique. April 1993.
- World Bank. Draft Terms of Reference for Preparation of the NEMP. Nov. 1992.
- World Bank. Mozambique Transborder National Parks and Institution Strengthening Project. Report from First Preparation Mission. 134 pp. March 24, 1992

B. Literature Provided to USAID/Mozambique during Scoping TDY

- Harza Engineering Co. Environmental Considerations for Rural Development Projects. USAID. Oct. 1980. ca. 100 pp.
- Elephant Conservation Plan. Mozambique. Dir. Nac. Florestas e Fauna Bravia. Maputo. Oct. 1991. [USAID AFR/ARTS/FARA supported]
- Falloux, F., L. Talbot and J. Larson. Progress and Next Steps for National Environmental Action Plans in Africa. World Bank. AFTEN. 35 p.
- Grupo de Trabalho Ambientale (Environment Working Group). Mozambique: The Present Environmental Situation 1990. Preliminary Survey. 140 pp. [Available from National Environmental Commission (CNA), Maputo. Financed by Norwegian Agency for Cooperation in Development, NORAD]. Annexes A to E separately bound.
- Grupo de Trabalho Ambientale. Mozambique: The Present Environmental Situation 1990. Annexes A to E (A: Climate & Soils; B: Vegetation; C: Geological Resources; D: Marine Pollution; E: Rural Women, Labor and Domestic Fuel) [Available from National Environmental Commission (CNA), Maputo. Financed by Norwegian Agency for Cooperation in Development, NORAD].

World Bank. Republic of Mozambique First Roads and Coastal Shipping Project. Staff Appraisal Report. World Bank, Southern Africa Dept. May 1992. 222 pp.

World Bank. Mozambique Urban Local Government and the Environment Sector Review. Infrastructure Operations Div., Southern Africa Dept. [Draft Confidential Report No. 9972-MOZ] Dec. 16, 1991.

Institute for Development Anthropology. Land Settlement Review. Settlement Experiences and Development Strategies in the Onchocerciasis Control Programme Areas of West Africa. Executive Summary. 37 pp. Dec. 1990.

Environmental Policy and Training (EPAT) Project literature

USDA Disaster Support Project literature

WASH/USAID. Facing the Challenge of Water Supply and Sanitation Goals for Africa (1993-2000). 5 Aug. 1992. 38 pp.

USAID/AFR/ARTS/FARA. Environmental Guidelines for PVO/NGO Field Use.

USEPA Technical Information Packages.

C. Pest and Pesticide Management Resources Left with Mission

Schaefer, George. A Review of Pesticide and Environmental Management Capabilities in East Africa. Report prepared for USAID REDSO/ESA. December 1992. 106 pp.

Sinopse sobre o Manejo Integrado de Pragas nos Países Tropicais em Desenvolvimento. IPM Working Group. Natural Resources Institute. 1991. 21 pp. [2 each]

[2 each] Synopsis of Integrated Pest Management in Developing Countries. IPM Working Group. Natural Resources Inst. 1991. 21 pp. [2 each]

SADCC. Review of the Status of Plant Protection and Migrant Pests, Grasshopper and Rodent Control in the Countries of the SADCC Region. SADCC/GTZ Progress Review of Proj.No. 1.0.13 (Strengthening and Coordination of Migrant Pest Control in the SADCC Region). June-Nov. 1991.

Nyirenda, Greenwell K.C. Review of the Status of Plant Protection and Migrant Pests, Grasshopper and Rodent Control in Mozambique. June-July 1991. 18 pp.