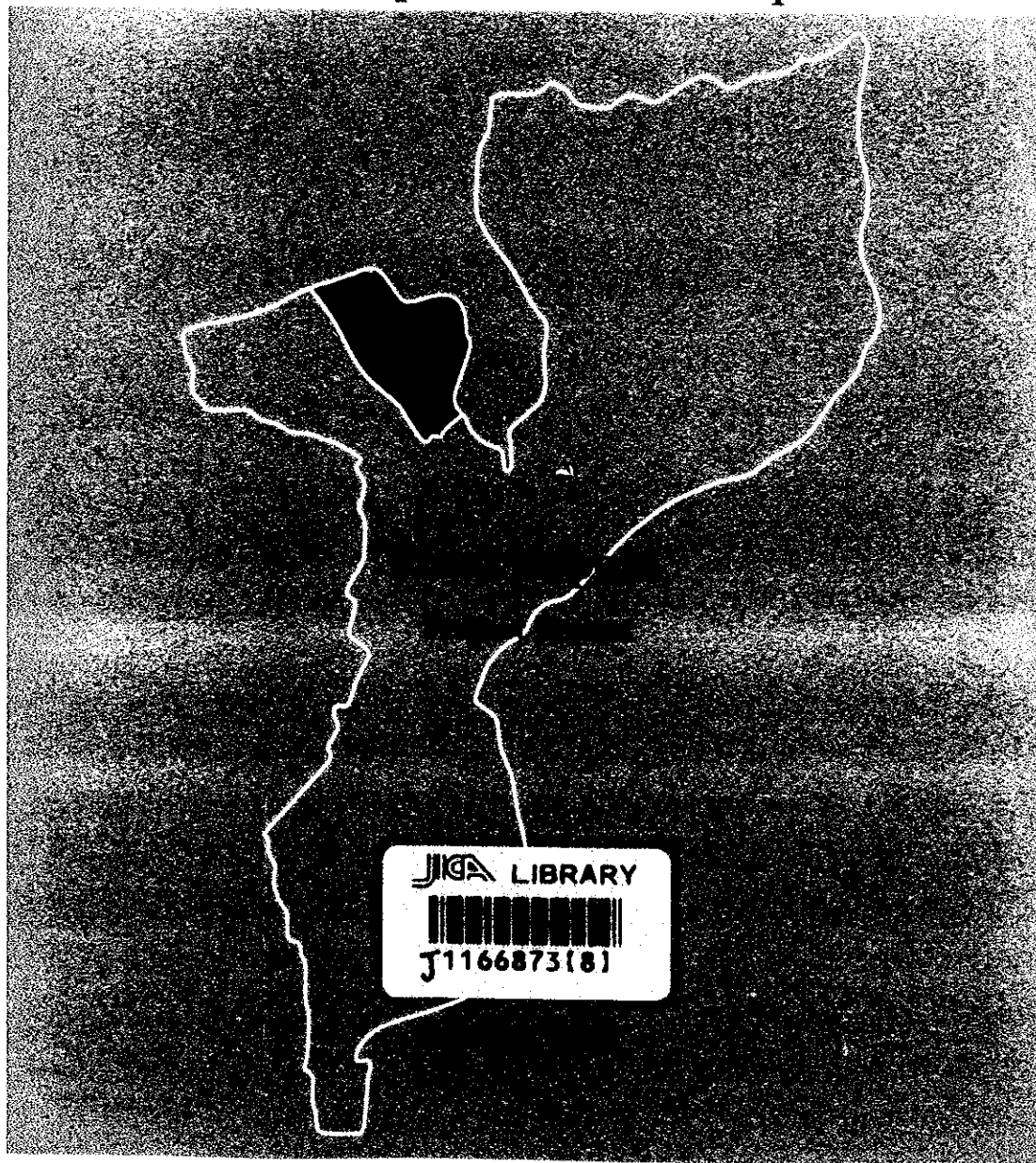


Japan International Cooperation Agency (JICA)

Zambezi Valley Development Authority

The Republic of Mozambique

The Study on the Integrated Development Master Plan
of the Angonia Region
in the Republic of Mozambique



RECS International Inc.
Sanyu Consultants Inc.

S S F

J R

01-142

Japan International Cooperation Agency (JICA)

Zambezi Valley Development Authority

The Republic of Mozambique

**The Study on the Integrated Development Master Plan
of the Angonia Region
in the Republic of Mozambique**

**Final Report
Project Report**

October, 2001

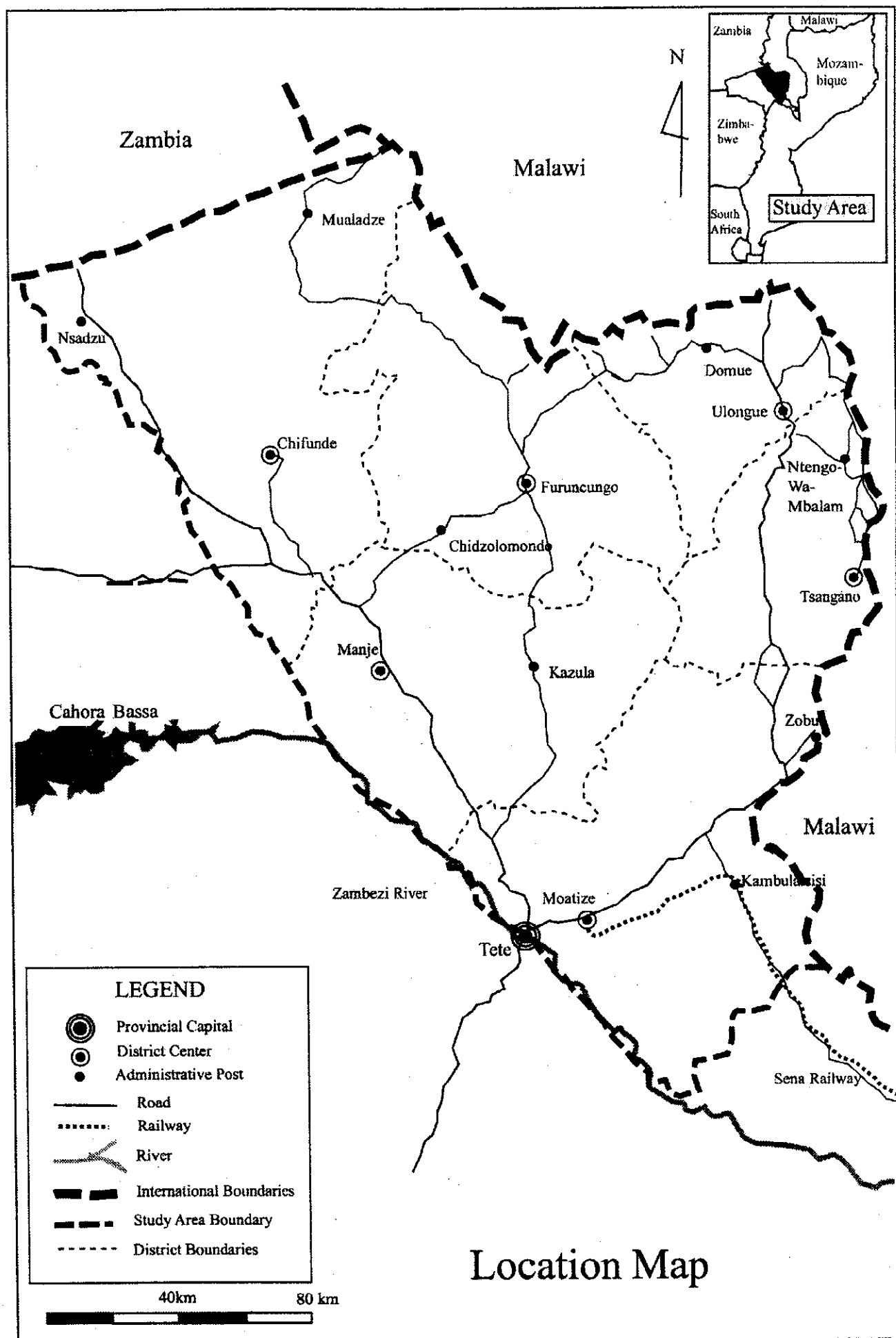
**RECS International Inc.
Sanyu Consultants Inc.**



1166873[8]

List of Reports

Volume I	Executive Summary Report
Volume II	Master Plan Report
Volume III	Sector Report 1: Economic Sector <ul style="list-style-type: none">(1) Agriculture(2) Mining(3) Industry and Small and Medium Business(4) Trade and Services
Volume IV	Sector Report 2: Social Sector <ul style="list-style-type: none">(1) Education and Training(2) Public Health Development(3) Community Development and Participatory Approach
Volume V	Sector Report 3: Environment
Volume VI	Sector Report 4: Infrastructure <ul style="list-style-type: none">(1) Transportation(2) Telecommunication(3) Energy(4) Water Resources
Volume VII	Sector Report 5: Administration, Finance and Institutions
Volume VIII	Project Report <ul style="list-style-type: none">(1) Project Profiles(2) In-Depth Studies



Project Report

Part 1: Project Profiles

Contents

	<u>Page</u>
URBAN DEVELOPMENT INITIATIVE	
Project No. 1.1 Tete-Moatize Core Urban Development	1-1
1.2 Tete City Water Supply Expansion	1-3
1.3 Urban Roads Improvement	1-5
1.4 Tete Corridor Power Supply Expansion	1-6
1.5 Tete City Telecommunications	1-7
1.6 Agro-industrial Zone Establishment	1-8
1.7 Business Center Establishment	1-9
1.8 Industrial Technology and Information Research Center	1-11
1.9 Moatize Coal Development	1-12
1.10 Institute of Mines and Geology Support Program	1-13
1.11 Moatize Coal-fired Thermal Power Plant	1-14
1.12 Small-scale Iron and Steel Manufacturing	1-15
1.13 Angonia Highland Integrated Urban Development	1-16
RURAL SOCIO-ECONOMY ENHANCEMENT	
Project No. 2.1 Integrated Rural Development Program	2-1
2.2 Small Irrigation Schemes Development	2-2
2.3 Integrated Farming Systems Development Program	2-3
2.4 Revuboe Multipurpose Dam	2-4
2.5 New Cash Crops Establishment Program	2-6
2.6 Livestock Development Program	2-7
2.7 Farmers' Associations Promotion Program	2-8
2.8 Grain Storage Development	2-9
2.9 District Water Supply	2-10
2.10 Rural Electrification	2-12
2.11 Mineral Resources Exploration Program	2-13
SPATIAL STRUCTURE STRENGTHENING	
Project No. 3.1 Rural Roads Self-help Improvement Program	3-1
3.2 Secondary Roads Improvement	3-2
3.3 International Highways Upgrading	3-3
3.4 Sena Railway	3-4
3.5 Zambezi River Transport Development	3-6
3.6 Bus Services Improvement	3-7
3.7 Inland Freight Terminal	3-8
3.8 New Zambezi River Bridge	3-9
3.9 Tete International Airport Upgrading	3-10
3.10 Rural Telecommunications	3-11
3.11 Border Facilities Improvement	3-12

LOCAL ACCOUNTABILITY ENHANCEMENT

Project No.	4.1	GPZ Strengthening	4-1
	4.2	Local Planning and Management Capacity Enhancement	4-2
	4.3	Zambezi River Basin Database Development	4-3
	4.4	Corporate Management Modernization	4-5
	4.5	Tete Provincial Hospital Upgrading	4-6
	4.6	Health Referral System Establishment	4-7
	4.7	Health Awareness Enhancement Program	4-8
	4.8	Distance Education Program	4-9
	4.9	Primary Schools Improvement	4-11
	4.10	Watershed Management Program	4-12
	4.11	Environmental Inventory	4-14
	4.12	Urban Environment Improvement Program	4-15
	4.13	Renewable Energy Center	4-16

SPECIAL PROGRAM FOR PARTICIPATORY DEVELOPMENT

Project No.	S.1	Enhancement of Extension Services	S-1
	S.2	Community Mobilization	S-2
	S.3	Adult Education on Land Ownership and Sustainable Agriculture	S-3
	S.4	Small Animal Husbandry Program	S-4
	S.5	Horticulture/Tree Planting Program	S-6
	S.6	Community Skills Center	S-7
	S.7	Small-scale Business Program	S-8
	S.8	Self-help Road Rehabilitation	S-10
	S.9	Water and Sanitation Technician Training	S-12
	S.10	Schools and Health Posts Construction	S-14

Abbreviations

ADM	Airport Authority of Mozambique
ADP	Accelerated Demining Program
ADPP/DAPP	Development Aid from People to People
AIDS	Acquired immune deficiency syndrome
ANE	Road Authority
ARA	Regional Administration of Water
ARC	Action for the Rights of Children
ASPS	Agricultural sector program support
BAD	African Development Bank
BADEA	Arab Bank for African Development
CAIA	Agro-Industrial Complex of Angonia
CCAP	Church of Central African Presbyterian
CCF	Cease-fire Commission
CFM	Port and Railway Authority
CIDA	Canadian International Development Agency
CIDAC	Centro de Informação e Documentação Amílcar Cabral (Amílcar Cabral Center of Information and Documentation)
CIDC	Canadian International Demining Center
CPI	Investment Promotion Center
DANIDA	Danish International Development Assistance
DAs	District Administrators
DNA	National Directorate of Water
EDM	Electricity of Mozambique
EIA	Environmental impact assessment
FRELIMO	Mozambique Liberation Front
GDP	Gross domestic product
GNP	Gross national product
GPZ	Gabinete do Plano de Desenvolvimento da Região do Zambezi (Zambezi Valley Development Authority)
GRDP	Gross regional domestic product
HALO Trust	Hazardous Area Life-Support Organisation Trust
HCB	Cahora Bassa Hydropower Corporation
HI	Handicap International
HIV	Human immuno-deficiency virus
IDB	Inter-American Development Bank
IDPs	Internally displaced persons
IMF	International Monetary Fund
INE	Institute of National Statistics
IRC	International Rescue Committee

ISCOS	Istituto Sindacale per la Cooperazione allo Sviluppo
IVA	Value added tax
JCI	Japan Consulting Institute
JICA	Japan International Cooperation Agency
LAM	Mozambique Air Lines
LWF	Lutheran World Federation
MARD	Ministry of Agriculture and Rural Development
mCel	Mozambique Cellular
MEDDS	Mechem Explosives and Drug Detection System
MIAF	Mozambique National Household Survey on Living Conditions
MICOA	Ministry of Environmental Action Coordination
MINED	Ministry of Education
MIPF	Ministry of Planning and Finance
MLTC	Mozambique Leaf Tobacco Company
MMRE	Ministry of Mineral Resources and Energy
MOH	Ministry of Health
MOTC	Ministry of Transport and Communications
MPF	Ministry of Planning and Finance
MPWH	Ministry of Public Works and Housing
MTLC	Mozambique Tobacco Leaf Company
NACP	National AIDS Control Program
NDI	National Demining Institute
NGO	Non-government organization
NHS	National Health System
NMCC	National Mine Clearance Commission
NORAD	Norwegian Agency for International Development
NPA	Norwegian People's Aid
NRC	Norwegian Refugee Council
OD	Origin-destination
ODA	British Overseas Development Administration
ONG	National Directorate of Geology
ONUMOZ	United Nations Operation in Mozambique
OPEC	Organization of Petroleum Exporting Countries
PAR	Participatory action research
PARPA	Action Plan for Reduction of Absolute Poverty
PHC	Primary health care
PLA	Participatory learning and action
PRA	Participatory rural appraisal
PROAGRI	National Program of Agrarian Development
RA	Rural appraisal

RENAMO	Mozambique National Resistance
RRA	Rapid rural appraisal
S/W	Scope of work
SAC	Survey Action Center
SCS	Special Clearance Services
SIDA	Swedish International Development Agency
SLP	Sena line program
TDM	Telecommunications of Mozambique
UNDAF	United Nations Common Development Assistance Framework
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNOHAC	United Nations Office for Humanitarian Assistance Coordination
WVI	World Vision International
ZMM-GT	Zambezi-Malawi-Mozambique Growth Triangle

Project No. 1.1

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Tete-Moatize Core Urban Development |
| 2. LOCATION | Tete city, Moatize town and vicinities |
| 3. IMPLEMENTING AGENCIES | Inter-agency; coordination by GPZ |
| 4. OBJECTIVES | (1) To create an urban core with high grade urban infrastructure to attract investments; and
(2) To provide high grade urban services for the central Mozambique and some center functions for the ZMM-GT. |
| 5. EXPECTED EFFECTS | Enhanced image of the Angonia region; more efficient urban-based production and services system; more balanced spatial development of Mozambique. |
| 6. PROJECT COSTS | US\$209.0 million |
| 7. IMPLEMENTATION SCHEDULE | Continuous implementation of various components through Phase 1 - Phase 3; implementing arrangements and detailed planning in Phase 1. |

8. PROJECT DESCRIPTION

Development of Tete city holds a key for the Angonia regional development as a whole in a few important ways. First, delivery of various social and urban services for the majority of local people can be effectively improved by upgrading service functions of the city and establishing service networks to cover other areas. Second, linkages with other regions can be strengthened effectively by improving transport and communication infrastructure in the city and by promoting trade and processing activities of commodities to be provided from outside. Third, Tete city may be equipped with some center functions within the context of the Zambia-Malawi-Mozambique Growth Triangle (ZMM-GT) initiative.

To serve these functions, accelerated urbanization is desirable for Tete city. Given the small population size at present, complementary development with the neighboring town of Moatize may be conceived to create a strong urban core. For manufacturing industries, one possibility is for Moatize to specialize in resources-based industries, and for Tete to develop more consumer goods industries based on inter-regional trade and existing agglomeration. Various urban infrastructure in these cities should be upgraded also in a complementary manner.

The project will improve the infrastructure in the area between the cities of Tete and

Moatize selectively to establish a high-grade corridor type urban area. This area will accommodate a large portion of incremental urban population in the Angonia region with a variety of industrial and service activities. The project will help Tete city with its productive hinterland to become a functional capital of the central Mozambique, capitalizing on its strategic location in the central Mozambique, on the Zambezi river, and at the nodal point in the regional artery system linked with neighboring countries as well.

The following components are included in the project:

- (1) continued improvement of urban water supply, electricity and telecommunications,
- (2) provision of a Tete city bus terminal and inland container depot,
- (3) development of industrial estate and/or free trade zone for export processing and other industries and related services,
- (4) upgrading of transport infrastructure including the Tete international airport and highways, and establishment of river transportation and railway services,
- (5) planning for urban development with amenities and higher order services, and
- (6) establishment of a management entity for integrated development and management of the corridor area.

In Phase 1, a detailed plan should be prepared for the corridor area covering not only physical facilities but also socio-economic activities to be accommodated in the area and implementing arrangements including GPZ, municipal governments, MOTC and other government agencies, and the private sector. In parallel with the planning, improvement of urban water supply, electricity and telecommunications will continue.

Profiles of some component projects are prepared as follows:

- No. 1.1.a: Tete City Bus Terminal,
- No. 1.1.b: Moatize Industrial Estate, and
- No. 1.1.c: Tete International Airport upgrading.

The following projects are also related to this project:

- No. 1.2: Tete City Water Supply Expansion,
- No. 2.4: Revuboe Multipurpose Dam,
- No. 3.5: Zambezi River Transport Development, and
- No. 1.4: TeteCity Telecommunications.

Project No. 1.2

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Tete City Water Supply Expansion |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | Ministry of Public Works and Housing, Agua de Tete |
| 4. OBJECTIVES | (1) To urgently relieve the stress on the existing water supply system in Tete city due to rapid population increase; and
(2) To improve the quality of city water supply continually to meet increasing demand. |
| 5. EXPECTED EFFECTS | Expanded population coverage by piped water supply; reduced risk of water-borne diseases; high quality water supply to attract investors and visitors. |
| 6. PROJECT COSTS | US\$15.6 million |
| 7. IMPLEMENTATION SCHEDULE | Urgent measure in Phase 1; continual improvement through Phase 1 - Phase 2 |

8. PROJECT DESCRIPTION

Population in Tete city is growing rapidly due to returned refugees and inflow of people from other regions, resulting in increasing stress on various urban infrastructure including water supply and degradation of urban environment by disorderly settlement patterns with squatters. The water supply for Tete city has been significantly improved by the DANIDA assisted project Phase 1 implemented during 1992-1995. Phase 2 of the project has been formulated for the target year 2010, but suspended for the decision by the Central Government involving, among others, institutional reform for the urban water supply sector.

Given the on-going rapid urbanization, urgent measures need to be taken to alleviate the stress on the existing water supply system, while a better development plan and institutional arrangements are prepared for continual improvement of the quality of the city's water supply services. Of the existing supply system with three sub-systems for the central, M'Padue and Matundo-Chingodzi areas, main part of the central sub-system cannot be expanded, and the Matundo-Chingodzi subsystem for newly expanding areas may be better planned. The M'Padue sub-system is small and independent. The Mutemba area considered as part of the central sub-system, may be chosen for urgent measures, as it is the most rapidly developing area with accelerated population growth. At present, Mutemba shares 25% of the city population and is supplied by a direct line from the

Nhartanda Valley pumping system.

Urgent measures for the Mutemba area may include the following:

- (1) two boreholes in the Nhartanda Valley with submersible motor pumps,
- (2) collection header with steel pipes from the new boreholes to a receiving tank,
- (3) receiving tank of 50m³ capacity and a booster pumping station,
- (4) rising main with ductile cast iron pipes from the booster pumping station to a hilltop reservoir
- (5) hilltop reservoir of 300m³ capacity at the hilltop of Mutemba,
- (6) primary distribution mains with ductile iron pipes,
- (7) 50 standposts, and
- (8) secondary and tertiary distribution network.

While these measures are implemented, the existing plan for Tete-city water supply expansion should be reviewed, and the projects for the central, M'Padue and Matundo-Chingodzi areas reformulated, reflecting recent developments and future changes expected according to the Angonia Master Plan.

Project No. 1.3

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Urban Roads Improvement |
| 2. LOCATION | Tete city, Moatize town |
| 3. IMPLEMENTING AGENCIES | ANE, Tete city, Moatize municipality |
| 4. OBJECTIVES | (1) To improve urban roads in Tete city and Moatize town to support urban-based economic activities; and
(2) To improve living environment of local residents. |
| 5. EXPECTED EFFECTS | More orderly urban traffic patterns and safety of local residents. |
| 6. PROJECT COSTS | US\$9.7 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 2 - Phase 3 following urban planning for respective urban centers |

8. PROJECT DESCRIPTION

Among the urban environmental problems emerging in the Angonia region due to the population pressure are inadequate urban road systems, squatters, and traffic accidents. At present, these are observed in Tete city and its vicinities. As Tete city and the town of Moatize are expected to grow into a regional center for the central Mozambique, they should be equipped with adequate urban road systems respectively.

The project is to improve the conditions of urban roads in Tete city and Moatize, covering newly developing areas as well. It will be implemented during Phase 2 - Phase 3 following the urban planning to be conducted under Project No. 4.2.

Project No. 1.4

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Tete Corridor Power Supply Expansion |
| 2. LOCATION | Tete city, Moatize and Zobue |
| 3. IMPLEMENTING AGENCIES | EDM |
| 4. OBJECTIVES | (1) To improve the power supply in Tete city;
and
(2) To expand the power supply along the
corridor up to Zobue. |
| 5. EXPECTED EFFECTS | Expanded and more stable power supply in
Tete city to support economic activities;
efficient and less expensive power supply for
Zobue. |
| 6. PROJECT COSTS | US\$56.7 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 and Phase 2 |
| 8. PROJECT DESCRIPTION | |

Tete and Moatize cities are served by electricity from the Cahora Bassa hydropower plant (HCB). In this area, Moatize coal mining companies are the largest customers, followed by a quarry company in Boroma. Two 6.3 MVAs serves the region. As the economy expands, the capacity will be over extended. Presently, EDM has a plan to expand its service across the river to Matundo, but the implementation of the project is slow, due to the lack of financing. This project will first support EDM Tete to expand its service into the suburban areas with additional line extension and substations.

The second stage of the project will expand the transmission line to Zobue, along the Tete corridor. The expansion will pave the way for further extension to wire the whole Angonia region. With the new connection, Zobue can be served with cheaper HCB electricity in place of import from Malawi.

Project No. 1.5

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Tete City Telecommunications |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | TDM |
| 4. OBJECTIVES | To strengthen the linkages between Tete city and countries and major cities in neighboring regions. |
| 5. EXPECTED EFFECTS | Tete city as a regional gateway in trade, transport and communications, and tourism. |
| 6. PROJECT COSTS | US\$65.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

At present, Tete city could be directly linked to Malawi and Zimbabwe through an 8Mbit-repeater at Carroeira, but the connections are not working due to technical and financial problems. The restoration of the linkage should be undertaken urgently.

A fiber optic cable has been laid along the coast from Maputo to Beira. There is no immediate plan to link Tete city to Beira. Since Tete city will be the regional development and inter-country trading center, effective telecommunications linkage will become increasingly more important. The current capacity of 8Mbits between Tete city and Maputo/Beira is not sufficient. Along with the installation of fiber optic linkage, the switch capacity should also be upgraded.

Project No. 1.6

1. PROJECT TITLE	Agro-industrial Zone Establishment
2. LOCATION	Moatize
3. IMPLEMENTING AGENCIES	MPWH, GPZ, private firms
4. OBJECTIVES	(1) To introduce simplified procedures concerning business activities including special incentive for the Zambezi Valley; and (2) To provide high grade infrastructure for investment promotion.
5. EXPECTED EFFECTS	Several medium and large scale agro-processing and other factories established as a driving force for the region's industrialization.
6. PROJECT COSTS	US\$11.5 million
7. IMPLEMENTATION SCHEDULE	Phase 1 for initial establishment; expansion in Phase 2

8. PROJECT DESCRIPTION

Administrative procedures, which are complicated and take a long time for approval, are business barriers against enterprises. The new industrial zone provides both functions of the support for administrative procedure and the high grade infrastructure. Special incentives for the Zambezi Valley are also effectively applied to industries established in the zone. Facilities of the zone include the following:

- Management center,
- Administration office (customs, tax office including one stop service),
- Technical center for training, research and information offering,
- Business center (bank, courier service, copy center, etc.),
- Housing for investors and workers, and
- Amenity facilities.

Among the industries expected to establish in the zone are the following:

- (1) Food processing industries:
 - cereal processing and confectionary,
 - soft drinks,
 - milk products,
 - non-perishables, canned food and bottle food, and
 - meat processing and frozen meat; and
- (2) Import substitution industries:
 - agricultural implements.

Project No. 1.7

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Business Center Establishment |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | MPWH, Ministry of Interior, private firms |
| 4. OBJECTIVES | (1) To create an institutional framework and establish a center that would allow private business initiatives to be smoothly and quickly processed and authorized at one location;
(2) To provide all kinds of information on Tete province to promote investment; and
(3) To support the aforementioned functions with advanced information technologies (IT) and audio equipment. |
| 5. EXPECTED EFFECTS | Activated local business activities through streamlined and time-efficient approval and authorizations process; increase in foreign direct investments; and increase in export of local products through information dissemination and campaign. |
| 6. PROJECT COSTS | US\$236,000 |
| 7. IMPLEMENTATION SCHEDULE | Phase 1
2001: Preparation of project
2002: Construction of the center and procurement of equipment; institutional rearrangement and human resources development for one-stop service provision.
2003: Opening of the center. |

8. PROJECT DESCRIPTION

A major constraint in initiating and expanding business in Tete province is time consuming and complex bureaucratic process for authorizing a business proposal. Improvement in administrative procedures would be as equally important as the development of physical infrastructure. The lessons learned in this project could be reflected in similar kind of schemes to be implemented in other parts of Mozambique. Computer and telecommunication technology, so-called "information technology (IT)" forms part of this project. This project could benefit from quick and timely communication between Tete

city and other places such as Maputo made possible by IT application. Another important component of the project is information dissemination on investment opportunities utilizing IT and advanced audio equipment.

The following are components to support these functions.

(1) Market promotion

(i) Provision of information

- Establishment of permanent exhibition hall,
- Support for participation in trade fairs, and
- Support for promotion of so-called "Tete brands."

(ii) Strengthening linkages

- Creation of databases for production technology and products of local enterprises, and
- Promotion of interchange among enterprises in the region and other regions.

(2) Investment promotion

(i) One-stop office

- Simplification of procedures for approval, custom clearance and taxation (branch of CPI, customs and tax office), and
- Support for investment application.

(ii) Provision of information

- Preparation of information for investors,
- Intermediary services for local enterprises and investors,
- Dispatch and reception of investment missions,
- Planning and hosting of investment seminars and symposia, and
- Solicitation of potential investors.

Project No. 1.8

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Industrial Technology and Information Research Center (ITIRC) |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | Public sector |
| 4. OBJECTIVES | To provide production technology and information necessary for business management. |
| 5. EXPECTED EFFECTS | Products development by applying new technologies; better business decisions based on appropriate information. |
| 6. PROJECT COSTS | US\$2.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |

8. PROJECT DESCRIPTION

Industrial technology and business information is essential for developing the industrial sector in the Angonia region dominated by small and medium enterprises. Existing enterprises are largely incapable of obtaining these on their own so that the government support is indispensable. The proposed Industrial Technology and Information Research Institute (ITIRC) has two main functions: technology development and business information services.

The ITIRC will conduct applied research for industrial technology and operate a laboratory with experimental facilities for developing new products and improving production technology. Focus may be placed on more promising industry in the region such as food processing and metal working. It may be instrumental in developing "Tete brand" for specialty products.

The ITIRC will collect business information related to socio-economy, domestic and international markets, and available technology, and also conduct researches. Such business information will be provided to existing enterprise to help them improve their corporate management.

Project No. 1.9

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Moatize Coal Development |
| 2. LOCATION | Moatize |
| 3. IMPLEMENTING AGENCIES | Private firms |
| 4. OBJECTIVES | (1) To expand production of Moatize coal;
and
(2) To diversify coal products through sorting
and pre-treatment as well as cokes and bio-
briquette manufacturing. |
| 5. EXPECTED EFFECTS | High level of industrialization with a variety
of related industries and services induced. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Immediate implementation and step-wise
expansion |
| 8. PROJECT DESCRIPTION | |

Moatize coal is potentially highly price competitive with the production cost of US\$15/ton at the site, while the international norm is US\$18/ton. With the restoration of the Sena railway, FOB price of US\$27/ton may be realized at the Beira port.

The total reserve of Moatize coal is estimated at 2.4 billion tons based on results of 659 wells survey. The Moatize coal is considered to be low volatile bituminous with good coking property in part, but high ash contents. Typical on site ash values are in the range of 20-34% with 0.5-1% sulfur. It can be washed up to a 10% ash content with acceptable yields.

Technically, it is possible to produce the Moatize coal at as large a scale as its huge reserve allows. In reality, however, the development scale of the Moatize coal mining is constrained by the capacity of the Sena railway. The production of 3-6 million ton/year is envisioned. Further increase in production is subject to development of domestic markets as well as increased export to neighboring countries. Promising domestic markets include coal thermal power generation, cement manufacturing, and bio-briquettes manufacturing.

Project No. 1.10

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Institute of Mines and Geology Support Program |
| 2. LOCATION | Moatize |
| 3. IMPLEMENTING AGENCIES | MINED |
| 4. OBJECTIVES | (1) To improve facilities at the Institute of Mines and Geology; and
(2) To expand subjects and curricula at the Institute. |
| 5. EXPECTED EFFECTS | Corps of highly qualified engineers and other experts to support mining and related manufacturing activities in the region; fame as a center of high technology in mining and related engineering. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

The existence of five professional/technical training schools and one teacher-training school is an advantage of the Study Area. One of the two agricultural training schools and one of the two teacher-training schools in Tete province are located in Angonia. There are four professional/technical training schools in or around Tete city. The Institute of Mines and Geology is a middle-level professional/technical school in Moatize, operated by MINED. These institutes should be further strengthened to support the Angonia regional development.

The Institute of Mines and Geology was established where the coal mining was once a core industry. It offers competitive 4-year programs to train geological engineers, and its students come from all over Mozambique. As the Moatize mine expands its operation in the near future and other mineral resources are further explored, demand for these engineers and experts in related fields will increase. The Institute will be instrumental in generating the corps of highly qualified engineers and other experts to support mining and related manufacturing activities.

The Institute should expand its subjects and curricula to cover general engineering and geology, metallurgy and metal works, remote sensing GIS and GPS. These subjects will find applications in a wide grange of developments including dam construction, construction materials industry, groundwater development, and basic metal and metal products industries. Its facilities including classrooms, library, laboratory, and dormitories should be refurbished and/or upgraded, and the laboratory should be equipped with state-of-the-art facilities and advanced computer system.

Project No. 1.11

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Moatize Coal-fired Thermal Power Plant |
| 2. LOCATION | Moatize |
| 3. IMPLEMENTING AGENCIES | Ministry of Mineral Resources and Energy,
EDM and the private sector |
| 4. OBJECTIVES | (1) To utilize effectively the large amount of
thermal coal to be generated by coking coal
production; and
(2) To contribute to making the Angonia
region a power export center in the Southern
Africa. |
| 5. EXPECTED EFFECTS | Stable and ample power supply in the
Angonia region, Mozambique and the
Southern Africa; more efficient operation of
proposed hydropower plants. |
| 6. PROJECT COSTS | US\$2,640 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 2 - Phase 3 |
| 8. PROJECT DESCRIPTION | |

An important component of the energy development strategy for the Angonia regional development, according to its Master Plan, is to make the region a power export center serving the entire country and the Southern Africa. Domestic power demand in Mozambique may reach 31,900GWh by the year 2025. Against this demand, three major hydropower plants are planned on the Zambezi mainstream for a total generating capacity of 3,550MW and annual energy of 16,657GWh, consisting of 1,960MW and 9,201GWh from the Cahora Bassa North Bank, 1,230 MW and 5,774GWh from Mepanda Uncua, and 360MW and 1,683GWh from Boroma. Additional power generation of at least 10,2000GWh would be required by 2025.

As the Moatize coal is developed to produce coking coal for export, as proposed, large amount of low quality thermal coal will be generated, for which transport costs for marketing outside would be prohibitive. This coal can be effectively utilized to generate the additional energy for export. Implementation schedule of the thermal power plant will depend on the preparation of the major hydropower plants and the Moatize coal development as well as the demand growth. Phased development is possible with initial units commissioned in Phase 2, followed by additional units in Phase 3.

Project No. 1.12

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Small-scale Iron and Steel Manufacturing |
| 2. LOCATION | Moatize |
| 3. IMPLEMENTING AGENCIES | Private sector |
| 4. OBJECTIVES | (1) To supply high quality steel products, utilizing local resources; and
(2) To introduce a leading industry for vitalization and strengthening of local economic linkages. |
| 5. EXPECTED EFFECTS | Industrialization drive at a high level; diversified and robust economic structure. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | |

8. PROJECT DESCRIPTION

The project utilizes direct reduction process that uses coal instead of natural gas and produces final products. A small scale plant may be appropriate with 20,000 ton to several hundreds of thousand ton annual production.

Generally, such a plant should be located near the consumer area so that transportation cost can be minimized. As the introduction of iron and steel factory requires huge investment and existence of human resources with developed skills, foreign investment is indispensable. A feasibility study should be done by the proposed ITIRC.

Project No. 1.13

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Angonia Highland Integrated Urban Development |
| 2. LOCATION | Ulongue and vicinities |
| 3. IMPLEMENTING AGENCIES | Inter-agency; coordination by GPZ |
| 4. OBJECTIVES | (1) To strengthen urban functions to support highly productive development through integrated development of agriculture, agro—industry and related services; and
(2) To create a high density area for effective provision of social services. |
| 5. EXPECTED EFFECTS | Spatially more balanced development of the Angonia region; more efficient urban-based production and services system; improved provision of various urban and social services. |
| 6. PROJECT COSTS | US\$69.7 million |
| 7. IMPLEMENTATION SCHEDULE | Continuous implementation of various components through Phase 1 - Phase 3 |

8. PROJECT DESCRIPTION

Ulongue is the only urban center, other than Tete city and Moatize town, located in otherwise all rural areas. At present, it serves as a support center for agriculture and related activities in its rural hinterland and also for some border trade. Its functions need to be much strengthened as high density and high productivity development is expected in the Angonia highland.

The Angonia highland has fertile but limited land for agriculture. Agricultural productivity needs to be further enhanced and related processing and service activities promoted to support further development. It has been affected by the market economy through border trade with Malawi, which allows the procurement of agricultural input on a commercial basis and marketing of surplus agricultural produce. These trading activities should be further promoted together with increased processing to be supported by various urban functions centering on Ulongue.

This program contains several component projects. Most projects to improve urban infrastructure may be implemented under other projects serving all the district capitals: (2.9) District Water Supply, (2.10) Rural Electrification and (3.10) Rural Telecommunications. Other projects will support agricultural development in the hinterland: (2.3) Integrated Farming Systems Development Program, (2.6) Livestock Development Program and (2.8) Grain Storage Development. Also the existing agricultural training school will be supported under this program.

Project No. 2.1

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Integrated Rural Development |
| 2. LOCATION | Zambezi lowland areas |
| 3. IMPLEMENTING AGENCIES | MARD in cooperation with MPWH, PDH, PDE, Água Rural etc. coordinated by GPZ |
| 4. OBJECTIVES | (1) To expand settlements in sparsely populated Zambezi lowland by improving rural infrastructure; and
(2) To create productive rural environment based on more intensive agriculture. |
| 5. EXPECTED EFFECTS | Creation of rural service centers; better rural-urban balance; reduction of slash and burn. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Creation of about 10 rural service centers in Phase 1, additional 15 in Phase 2 |

8. PROJECT DESCRIPTION

A major constraint to the development of Zambezi lowland areas is the lack of sufficient population in the vast territories. Extensive agriculture is practiced, dominantly in the form of slash and burn, without adequate land and water management. The main development theme for these areas is how to transform subsistence agriculture into market-oriented agriculture. The effective strategy is to concentrate efforts on limited areas of high potentials.

The project is to improve various rural infrastructure such as roads, water supply, electricity, health posts and primary schools in selected rural areas to create rural service centers, which will serve respective hinterlands for social services and marketing of agro-products. Areas with high agricultural potentials should be selected, and measures introduced to enhance the productivity and to organize local farmers.

Candidate sites may be selected by GPZ, in cooperation with district administrations based on the Angonia regional development master plan, and development plans prepared with local participation, possibly facilitated by farmers' associations, under the guidance of provincial and district offices of MARD. Implementation should follow with priority assessment on the basis of successful preparation of the plan.

Project No. 2.2

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Small Irrigation Schemes Development |
| 2. LOCATION | Along small tributaries of the six districts |
| 3. IMPLEMENTING AGENCIES | MARD, the private sector |
| 4. OBJECTIVES | (1) To convince farmers of effectiveness of irrigation in increasing production and yields; and
(2) To develop and accumulate experiences in irrigated agriculture and marketing of diversified crops. |
| 5. EXPECTED EFFECTS | Farmers' groups motivated for large-scale irrigation development; accumulated experiences in irrigated agriculture and promising crops for marketing; higher income of small farmers. |
| 6. PROJECT COSTS | US\$52.5 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

Irrigated agriculture is almost non-existent in the Angonia region. Farmers do not have any strong motivation to increase their production when they see limited marketing opportunities, limited access to agricultural credit, and thus high risks involved in investing into irrigation facilities. The first step to substantive introduction of irrigated agriculture in the region may be to implement small scale irrigation schemes to allow farmers to gain experiences in irrigation technologies and marketing of diversified crops and to convince them of the utility of irrigation.

The project will support the development of irrigated agriculture by small farmers through farmer organizing, technical guidance for designing and constructing irrigation facilities and selecting crops under irrigation, agricultural credit for farmers' groups and facilitation of marketing. Simple weirs may be constructed across small tributaries to raise the level of water, which would be introduced into contour canals and gravity irrigation. One possibility is to utilize gabions that can be produced by utilizing gravels and stones widely available in the region and skillfulness of local people. Bamboo may be used instead of steel wire if necessary to reduce costs. Local communities should be involved in the identification of sites for weirs and suitable agricultural areas as well as construction works.

Project No. 2.3

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Integrated Farming Systems Development |
| 2. LOCATION | Angonia highland areas |
| 3. IMPLEMENTING AGENCIES | MARD |
| 4. OBJECTIVES | (1) To establish various integrated farming systems by small farmers; and
(2) To increase production of both crops and livestock, and surpluses for processing. |
| 5. EXPECTED EFFECTS | Establishment of high productivity agriculture for higher income of small farmers; realization of high density development areas. |
| 6. PROJECT COSTS | US\$25.0 million |
| 7. IMPLEMENTATION SCHEDULE | Pilot implementation of various models in Phase 1; expansion of more successful models in Phase 2 |

8. PROJECT DESCRIPTION

The Angonia highland has most favorable conditions for agriculture with relatively high rainfalls and perennial flow of rivers, generally fertile soil, and moderately temperate climate. Agriculture in the area has been most affected by the market economy through the border trade with Malawi and early activities of the Agro-Industrial Complex of Angonia. The Angonia highland, however, now faces problems of land shortages and soil fertility reduction in some parts. To support the increasing population with limited land resources, agricultural productivity needs to be further enhanced, and more processing and related service activities developed.

This project supports dominant small farmers to increase agricultural productivity through establishing integrated farming systems of various forms and magnitude, depending on land holding. Lead farmers should be selected and extension services provided by MARD to experiment various integrated farming models. Such models will combine cultivation of vegetables and other crops with livestock raising for cattle, swine, goat, and chicken. Fruit trees may also be incorporated in some models. The project also encourages introduction of environmentally sound practices such as alley cropping, mulching, compost making, on-farm tree planting, and roof rainwater collection. The project provides small credit for animal sheds, agricultural implements, biogas digesters, rainwater collectors, and other facilities and improvements.

Project No. 2.4

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Rovuboe Multipurpose Dam |
| 2. LOCATION | Rovuboe river bordering Moatize and Chiuta districts |
| 3. IMPLEMENTING AGENCIES | MPWH, MARD, GPZ (coordination) |
| 4. OBJECTIVES | (1) To pioneer multi-purpose development and management of water resources in Mozambique; and
(2) To contribute to enhanced agricultural productivity, stable power supply, flood control, and water supply expansion for Moatize. |
| 5. EXPECTED EFFECTS | New era for water resources development and management in Mozambique; diversified economic activities; attractive change in rural landscape. |
| 6. PROJECT COSTS | US\$5 million for F/S and D/D; and US\$100 million (indicative estimate) for construction |
| 7. IMPLEMENTATION SCHEDULE | F/S and D/D in Phase 1; construction in Phase 2 |

8. PROJECT DESCRIPTION

Water resources development and management in Mozambique are still at an early stage of development. Modern concepts related to this sector such as a river basin approach, watershed management and multi-purpose development have not found much application yet. This is true for the Angonia region occupying an upstream basin of the largest international river of Zambezi in Mozambique.

The Angonia region is relatively well endowed with water resources. The annual average rainfall ranges generally in 600-1,000mm, sufficient for rain-fed agriculture. Tributary basins on the left bank of the Zambezi river have relatively rich groundwater and perennial flow. Reflecting less developed economic conditions, however, there exist practically neither substantive irrigation nor industrial water use. Hydropower has not been utilized even in a small scale. Service coverage by water supply is still very low, especially in dominant rural areas.

The project will pioneer multipurpose development and management of water resources in Mozambique. A medium size multipurpose dam will be constructed on the Revuboe river, a major tributary of the Zambezi, to provide irrigation water, hydropower for rural

electrification and flood control. Urban water supply for the town of Moatize may also be stabilized by the project.

A potential dam site is located tentatively along the lower reach of the Revuboe river constituting the border between the districts of Moatize and Chiuta. A few other potential dam sites are identified in the upstream. At this tentatively selected dam site, the catchment area is some 8,000km² and the average annual discharge may be about 60m³/sec. With a dam of some 80m height, storage volume of 200 million m³ may be obtained. Power generating capacity of 60-100MW may be installed to generate some 300GWh annual energy. Also several thousand hectares may be irrigated in downstream areas. Dimensions of the dam and reservoir and combination of uses should be determined by a more detailed study.

Project No. 2.5

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | New Cash Crops Establishment |
| 2. LOCATION | Chifunde and Chiuta for oil crops, Angonia highland for exotic vegetables, Moatize for tree crops |
| 3. IMPLEMENTING AGENCIES | MARD |
| 4. OBJECTIVES | (1) To establish/expand oil crops such as sunflower, soybean, groundnuts and sesame;
and
(2) To promote selected tree crops and vegetables. |
| 5. EXPECTED EFFECTS | Viable and market oriented agriculture with diversified crops, expanded base for agro-industries for more robust regional economy. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Establishment of a few new cash crops in Phase 1 |

8. PROJECT DESCRIPTION

At present, maize and potato are considered important cash crops in the Angonia region. In addition, tobacco is produced mainly in Macanga and Chiuta by contract farming organized by Mozambique Tobacco Leaf Company. The region should establish more cash crops to diversify agricultural activities and to expand the base for agro-processing and related industries.

The project should contribute to the increase in income levels of local farmers and the robust structure of regional economy to make both viable in the increasingly open and competitive market economy. Promising crops have been identified as oil crops including sunflower, soybean, groundnuts and sesame, exotic vegetables such as paprika, and some tree crops such as apple, coffee and cashew.

The project will support farmers organizing, provide extension services, conduct field experiments, and assist marketing of products. Suitable sites will be selected by the guidance of provincial and district offices of MARD, in line with the Angonia regional development master plan. Chifunde is suitable for sunflower. Soybean may be combined with maize under supplemental irrigation in land of high fertility in Chiuta. Cashew or other tree crops may be suitable for Moatize. Exotic vegetables may be expanded in Angonia highland areas.

Project No. 2.6

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Livestock Development Program |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | MARD |
| 4. OBJECTIVES | (1) To promote small and large animal husbandry by providing disease control and improved veterinary services; and
(2) To introduce improved breeds to increase productivity, including milking cattle. |
| 5. EXPECTED EFFECTS | Self-sufficiency in livestock products and much improved nutrition of local people; high growth of agricultural sector and high rural income. |
| 6. PROJECT COSTS | US\$35.0 million |
| 7. IMPLEMENTATION SCHEDULE | Improvement of present stock and introduction of intensive raising of small livestock in Phase 1; introduction of milking cattle and improved breeds in Phase 2 |

8. PROJECT DESCRIPTION

The Angonia region has high potentials for livestock development as stock raising is part of social tradition and well established, land resources and potential feed are abundant, and supplemental feed may be relatively easily obtained, if necessary, from neighboring regions/countries. Prerequisites to livestock development at high rates, as envisioned by the Master Plan, are (1) control of disease and improved veterinary services for cattle, (2) establishment of intensive cattle production with improved breeds, and (3) introduction of semi-intensive raising of small livestock and poultry supported by artificial feed.

This program combines a credit scheme with extension services to support livestock farmers. For cattle raising, livestock farmers' associations will serve as intermediaries for agricultural credit and extension services. Stud bulls are provided by the associations to individual farmers together with extension information and credit, and farmers pay back with calves. The associations undertake grazing land management, slaughtering and marketing on behalf of livestock farmers.

Similar schemes may be applied to swine raising and chicken farms. Swine banking may support farmer groups to produce pigs to be used for both repayment and sales/own consumption. Repaid pigs will be used for sows to be provided to other farmer groups. For chicken farms, incubators will also be provided to farmer groups as well as hens and cocks.

Project No. 2.7

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Farmers' Associations Promotion Program |
| 2. LOCATION | 350 locations throughout the Angonia region |
| 3. IMPLEMENTING AGENCIES | MARD |
| 4. OBJECTIVES | To assist farmers organize farmers associations that would provide technical assistance and function as the channel for procuring farm input and daily commodities as well as marketing farm produce. |
| 5. EXPECTED EFFECTS | Improved farming practice; improved access to farm input and daily commodities; developed markets and increased production; and a higher and more stable farmers' income. |
| 6. PROJECT COSTS | US\$4.8 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 3
(1) 2001: Preparation of pilot project
(2) 2002: Implementation of the pilot project
(3) 2003-2005: Phase I (50 associations)
(4) 2005-2015: Phase II (150 associations)
(5) 2015-2025: Phase III (150 associations) |

8. PROJECT DESCRIPTION

Farmers are highly conscious of the necessity and effectiveness of farmers associations. The term "Association" is used here instead of "Cooperative" in order to avoid farmers responding negatively reflecting upon the past failure in similar attempts. Farmers are ready and willing to make a certain level of contribution to start a farmers association. They need an external assistance to start the program with technical and financial support. Once an association is set up, it will be operated with financial autonomy by member farmers' contribution and repayment. A farmers' association will be equipped with an automobile for transporting farm produce, input and daily commodities as well as for other non-farming purposes. An association will have the retail functions as well.

The project will start with a pilot scheme in 2002. A number of factors will be examined such as an appropriate size of an association, criteria for selecting the location, the actual level of farmer's contribution and participation, an appropriate form of cooperation with other government programs, financial management, etc. All the findings through the pilot scheme will be fed into preparing the Phase I implementation.

Project No. 2.8

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Grain Storage Development |
| 2. LOCATION | Tete city, Ulongue, Furancungo |
| 3. IMPLEMENTING AGENCIES | Agricultural cooperatives and/or grain millers' associations |
| 4. OBJECTIVES | (1) To expand the grain storage capacity in the Angonia region to stabilize grain supply and prices; and
(2) To support the region to become a granary in the central Mozambique. |
| 5. EXPECTED EFFECTS | Stable supply and prices of grains; higher income through value-added supply and processing of grains. |
| 6. PROJECT COSTS | US\$0.6 million |
| 7. IMPLEMENTATION SCHEDULE | Implementing arrangements and construction of the first storage in Phase 1; construction of additional storage in Phase 2 |

8. PROJECT DESCRIPTION

Maize is produced throughout the Angonia region as the most dominant crop. Its production in recent years far exceeds the self-sufficiency level. Maize production may be increased significantly, if the present low input-low yield production is successfully converted to the higher input-higher yield option. Wheat is produced in Tsangano for export to Malawi. It may find a growing domestic market, if the production increases and the physical access to/from production areas is improved. Combining maize and wheat, the Angonia region may become a granary for the entire central Mozambique.

Surplus maize at present is commonly sold to traders from outside, but they do not necessarily have capacity to purchase all the excess. The Institute of Cereals of Mozambique does not have capacity to buy surpluses maize to stabilize the supply and prices. Individual farmers store maize in traditional grain storage, typically made of bamboo, to provide for difficult years.

As the production of maize and wheat expands significantly, grain storage capacity will need to be much increased in the Angonia region. Stable supply and prices of these staple crops to common consumers would be essential for social stability. Also, it is desirable that grain producers benefit from stable prices and processors benefit from a stable supply. Large scale grain storage facilities should be established and owned by either producers' cooperatives or grain millers' associations. Conventional warehouses or grain silos should be established in the production centers of Ulongue and Furancungo, and the marketing center of Tete city.

Project No. 2.9

1. PROJECT TITLE	District Water Supply
2. LOCATION	District capitals of Angonia, Chifunde, Chiuta, Macanga, Moatize and Tsangano.
3. IMPLEMENTING AGENCIES	MPWH, Agua Rural
4. OBJECTIVES	To improve water supply to the six district capitals through rehabilitation of existing systems and expansion of service areas.
5. EXPECTED EFFECTS	At least 50% service coverage of urban and peri-urban population in the short run; further expansion subsequently.
6. PROJECT COSTS	US\$1.8 million
7. IMPLEMENTATION SCHEDULE	Initial implementation in Phase 1; continued implementation thereafter.

8. PROJECT DESCRIPTION

Access to safe drinking water is quite limited, ensured only for 40% of the population in the Angonia region as a whole. In the six districts, the coverage is even lower. Given the limited financial and manpower resources, the service coverage can be increased in a most cost-effective way by improving the water supply systems for the six district capitals. The government target for at least 50% coverage by water supply for urban and peri-urban population should be attained in the nearest future.

Given the existing conditions of the water supply systems for the six district capitals, the following components may be included in the initial implementation for different districts.

Districts	Components
Angonia	<ul style="list-style-type: none">• Installation of a new pump at the source,• Rehabilitation of the existing reserve tank with larger capacity,• Rehabilitation and expansion of existing distribution system,• Construction of additional public fountains,• Installation of meters at house connections, and• Full activation of existing treatment facilities
Chifunde	<ul style="list-style-type: none">• New supply system including:<ul style="list-style-type: none">- borehole with a pump;- reserve tank;- distribution system, and- public fountains.

Chiuta	<ul style="list-style-type: none"> • Rehabilitation of existing system with: <ul style="list-style-type: none"> - replacement of solar panels, and - conversion of existing pump into a diesel driven pump, • Expansion of distribution system with more public fountains, and • Provision of treatment facilities.
Macanga	<ul style="list-style-type: none"> • Integration and rehabilitation of existing system including: <ul style="list-style-type: none"> - rehabilitation/addition of reserve tanks, - rehabilitation/expansion of distribution systems, - provision of additional public fountains, - installation of meters, and - provision of treatment facilities
Moatize	(To be determined)
Tsangano	<ul style="list-style-type: none"> • Rehabilitation of borehole and installation of a new pump, • Expansion of distribution system with additional public fountains, • Installation of meters, and • Provision of treatment facilities.

Exact configurations of the systems and dimension of facilities will be determined through a feasibility study. While the initial construction is undertaken, a master plan may be prepared for further improvement of water supply in the six district capitals, aiming at 100% coverage of urban population within the planning period up to the year 2025.

Project No. 2.10

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Rural Electrification |
| 2. LOCATION | Throughout the Angonia region |
| 3. IMPLEMENTING AGENCIES | Ministry of Mineral Resources and Energy,
EDM. |
| 4. OBJECTIVES | (1) To electrify all the district capitals;
(2) To develop independent supply systems
for remote areas; and
(3) To promote the use of local energy
resources. |
| 5. EXPECTED EFFECTS | At least 50% households coverage by
electrification in rural areas by 2025. |
| 6. PROJECT COSTS | US\$5.6 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 3 |
| 8. PROJECT DESCRIPTION | |

Only 1.7% of the households in Tete province are served with electricity, compared with national average at 4.1%, the third lowest among provinces. In fact, three out of the six districts in the Angonia region are not even served with any electricity. This project will first electrify the remaining three district capitals, rehabilitate one hydro power station, and expand grid supply further into the villages. The priority will be given to set up diesel generators in Furuncungo and Chiuta. In Chifunde, a solar charging center will be established, in the form of rural cooperative. In Ulongue, a 500kW station will be rehabilitated in substitute for, or in addition to, the imported power from Malawi.

Independent systems will be established in steps with either diesel generators for major demand centers away from the grid or small systems based on alternative energies such as mini-hydro, solar and wind to serve rural settlements and activities. Priority should generally follow the settlement hierarchy system from service urban centers, followed by rural service centers, and extension to respective hinterlands.

Project No. 2.11

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Mineral Resources Exploration Program |
| 2. LOCATION | Mt. Chidue, Mt. Muambe, Angonia |
| 3. IMPLEMENTING AGENCIES | Ministry of Mineral Resources and Energy |
| 4. OBJECTIVES | To explore systematically more promising mineral resources, including copper at Mt. Chidue, the Mt. Muambe deposit for fluorite, and rare earth minerals, graphite in Angonia and magnetite/apatite at Mt. Muambe |
| 5. EXPECTED EFFECTS | Diversified raw materials base to support robust industrialization and high growth regional economy. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

In addition to the famous Moatize coal, the Angonia region is endowed with a variety of metallic and non-metallic mineral resources. Most promising metallic materials are iron deposits and copper reserves. More important non-metallic minerals are those that can be processed locally such as graphite, fluorite, apatite, granite and limestone.

Magnetite and ilmenite deposits, both primary and secondary iron titanium deposits, may be explored, while the technology is developed to use this type of iron ore for steel manufacturing. Crystalline limestone of Chidue is the target for further exploration of copper, together with associated tungsten, rare earth minerals and gold mineralization.

The fluorite deposit at Mt. Muambe, with the estimated reserve of 1.4 million tons, is most promising for early development. Also carbonatite may be produced as cement raw materials. The graphite deposit in Angonia should be assessed in detail, while the transportation problem is solved with access roads and the Sena railway. Initial development of limestone should be delineated for local cement manufacturing in line with the Moatize coal development.

Project No. 3.1

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Rural Roads Self-help Improvement Program |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | District administrations supported by ANE Tete |
| 4. OBJECTIVES | To maintain and repair rural roads in the Angonia region by supporting self-help efforts of people in rural areas. |
| 5. EXPECTED EFFECTS | Better access by rural people to social services and markets; cooperative minds of villagers and better communications with neighboring communities. |
| 6. PROJECT COSTS | US\$12.6 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

Present conditions of the classified road system in the Angonia region are generally adequate for existing and near-future traffics. Improvement of non-classified roads would become more important for internal integration of the region as a pre-requisite for the region to pursue outward-oriented development based on the Master Plan strategy.

District administrations are responsible for non-classified roads, but at present they do not have sufficient financial and administrative capacities even for routine maintenance. While resource allocation to district administration is expected to increase in line with the general decentralization policy, increasing private sector participation and community involvement are essential to expand resources and to promote efficient use of limited resources for transport development. Community participation in improving the transport sector is not uncommon in Mozambique, but it should be much expanded with systematic supports.

The program will provide (1) simple machinery and tools for road works, (2) training of community leaders for villagers organizing, and (3) technical guidance for stabilization, gravelling, drainage improvement and repair/maintenance of rural roads. Further improvement of selected rural roads will be subject to the performance of self-help efforts by villagers.

Project No. 3.2

1. PROJECT TITLE	Secondary Roads Improvement
2. LOCATION	Throughout the Angonia region
3. IMPLEMENTING AGENCIES	ANE
4. OBJECTIVES	(1) To rehabilitate sections of secondary roads to make them passable under any conditions in the short term; (2) To improve some secondary roads in steps to ensure access to all the district capitals; and (3) To resolve network deficiencies to establish efficient secondary roads system in the long term.
5. EXPECTED EFFECTS	Access ensured to all the district capitals under any climatic conditions; efficient linkages between district and subdistrict capitals.
6. PROJECT COSTS	US\$14.7 million
7. IMPLEMENTATION SCHEDULE	Urgent rehabilitation in Phase 1 Step-wise improvement in Phase 1 - Phase 2 Resolution of network deficiencies in Phase 3
8. PROJECT DESCRIPTION	

The main road network in the Angonia region consists of the regional artery roads, supplemental artery roads, and secondary roads. These roads together serve all the district capitals, and provide links between district and subdistrict capitals. The project will improve supplemental artery and secondary roads in steps.

In Phase 1, urgent measures should be taken to rehabilitate certain sections of supplemental artery roads to make them passable under all the weather conditions. In particular, the following are covered:

- Rehabilitation of four bridges, and
- Rehabilitation of EN 223 (Mussacama – Calmaue).

The following roads will be improved in steps over Phase 2 - Phase 3:

- EN 222 from Matema to Missaie,
- Access road from ER 464 to Tsangano, and
- Access road from EN 223 to Tsangano.

The following network deficiencies will be resolved in Phase 3:

- Construction and improvement of the road from Kazula to EN 223 (total length 68km), and
- Construction and improvement of the road from Chifunde to EN 222 (total length 62.5km).

Project No. 3.3

1. PROJECT TITLE	International Highways Upgrading
2. LOCATION	Tete city, districts of Moatize, Chiuta and Chifunde
3. IMPLEMENTING AGENCIES	ANE
4. OBJECTIVES	(1) To upgrade the two regional artery roads to international standards; (2) To improve locational conditions of the Tete-Moatize corridor for investments through facilitating trade and distribution; and (3) To improve access to other areas of the Angonia region
5. EXPECTED EFFECTS	Much larger and more efficient flow of commodities through the region and more export processing activities within the region.
6. PROJECT COSTS	US\$24.0 million
7. IMPLEMENTATION SCHEDULE	Phase 1 - Phase 3
8. PROJECT DESCRIPTION	

Both of the regional artery roads constitute important part of international arteries linking neighboring countries and the port of Beira, the outer port of the Angonia region. As the economy develops in the region as well as in neighboring regions and countries, transit traffics will increase rapidly. The Angonia region, particularly the Tete – Moatize corridor, is expected to take advantage of its strategic location on the crossroads of the two arteries to establish more processing, trade and distribution activities. Location of these activities will be facilitated by the project to upgrade these two highways.

The project will be implemented in stages through Phase 2 - Phase 3. Widening of EN103 into a dual carriage way road will be undertaken during Phase 2 between Tete city and Moatize town to support the Tete-Moatize corridor development. Other sections will be upgraded in steps. Upgrading of the highway linking Tete city with Zambia through Changara will be undertaken through Phase 2 - Phase 3.

Project No. 3.4

- 1. PROJECT TITLE** Sena Railway
- 2. LOCATION** Sofala province, Manica province, Moatize, Tete city, Malawi
- 3. IMPLEMENTING AGENCIES** CFM – central or private firm
- 4. OBJECTIVES**
- (1) To provide a driving force for the development of the Zambezi Valley in general and the Angonia region in particular;
 - (2) To facilitate the export of Moatize coal and other local products; and
 - (3) To contribute to the establishment of a multi-modal transport system linked with neighboring countries.
- 5. EXPECTED EFFECTS** Realization of development potentials in the Angonia region at a high level; Tete city and Angonia established as a regional center for international trade and tourism.
- 6. PROJECT COSTS** US\$197.7 million
- 7. IMPLEMENTATION SCHEDULE** F/S and D/D and low cost rehabilitation in Phase 1; further improvement and extension to Blantyre in Phase 2 - Phase 3

8. PROJECT DESCRIPTION

The JICA Study Team reviewed the existing studies related to the Sena Railway Line, including the most recent Sena Line Program (SLP) by GPZ (July 2000), and has examined two scenarios: high level development and low level development of the entire Sena railway including the Moatize line. Forecasted traffic demand under the alternative scenarios is summarized.

Summary of Forecasted Traffic Demand of Sena Railway

Item	(Unit: 1,000 ton/year)	
	Scenario 1 High level development	Scenario 2 Low level development
1. Minerals	6,730	1,020
2. Traffic to/from Malawi	520	520
3. Traffic to/from Tete prov.	79	79
4. Domestic Traffic	681	341
Total Cargo	8,010	1,960

Through the evaluation of the alternative scenarios and field surveys, a stage-wise development of the Sena railway has been planned as follows:

Phase I (2000-2005)

- Confirmation of alignment and right of way,
- Clearing of mines and other obstructions,
- Preparation of a detailed staged restoration plan, and
- Financial arrangement, F/S and D/D of the low cost rehabilitation from Dondo to Vila Nova (335km) as part of the low level development of the main line to Malawi.

Phase II (2006-2015)

- Construction of the Dondo – Vila Nova section,
- Financial arrangement, F/S and D/D of the low cost rehabilitation from Dona Ana to Moatize (254 km),
- Establishment of a high grade link between Moatize and Tete city (2010-),
- Introduction of passenger services (2010-), and
- F/S of a new line from Cambulatsitsi to Blantyre (95 km).

Phase III (2016-2025)

- D/D and construction of the new line to Blantyre, and
- Improvement of the full line.

The potential traffic demand for Sena railway may exceed 2 million ton/year by 2005, which may increase to 8 million ton/year by 2016, once the line is provided. It is a sensible strategy to start the low level development within two to three years rather than waiting for ten years, contemplating the high level development.

Project No. 3.5

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Zambezi River Transport Development |
| 2. LOCATION | Zambezi river |
| 3. IMPLEMENTING AGENCIES | Tete city, private firm |
| 4. OBJECTIVES | (1) To utilize the Zambezi river as inexpensive means to transport local goods; and
(2) To introduce river cruising for tourism. |
| 5. EXPECTED EFFECTS | More diversified transactions of local goods; more diversified attractions for domestic and international tourism; inducement of water-front development. |
| 6. PROJECT COSTS | US\$2.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 2 |
| 8. PROJECT DESCRIPTION | |

At present, the Zambezi river is hardly used even for local transport of goods. Reasons include low level of economic activities and low needs for local transactions, and shallow and unstable flow of the Zambezi water. The river, however, is navigable with a small ship of up to 100 ton with one meter draft. As the economy develops, particularly with more outward-oriented production and services as envisioned by the Master Plan, local and inter-regional transactions will expand rapidly. The river may be used for local transport of some goods and, to a limited extent, inter-regional transactions. Goods to be transported may include logs and lumber, bamboo products, coal briquettes, construction materials, some agricultural products and daily necessities.

A small river port should be provided in Tete city, since it is the center of regional and inter-regional transactions, to facilitate embarking and disembarking of various goods. Shipping services should be provided by private operators to be registered for commercial transactions. Small private ships to transport personal goods may also use the facilities.

In the medium to long term future, river cruising may be introduced to serve domestic and international tourists. Short excursions up and down the magnificent Zambezi river would be an additional attraction for international tourists as well. Port facilities may be upgraded to accommodate pleasure boats, and waterfront development undertaken in the port area as part of amenity creation.

Project No. 3.6

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Bus Services Improvement |
| 2. LOCATION | Throughout the Angonia region |
| 3. IMPLEMENTING AGENCIES | ANE and private firms |
| 4. OBJECTIVES | (1) To improve bus services by encouraging competition among private bus operators; and
(2) To establish a bus terminal in Tete city to facilitate long distance services. |
| 5. EXPECTED EFFECTS | Much expanded bus patronage and more comprehensive coverage of remote areas; much increased exchange of visitors to/from neighboring regions and countries. |
| 6. PROJECT COSTS | US\$2.0 million |
| 7. IMPLEMENTATION SCHEDULE | Continuous improvement of bus services through Phase 1 - Phase 3; establishment of a bus terminal in Phase 2 |

8. PROJECT DESCRIPTION

In Tete province, there are only 10 bus routes, all originating in Tete city. Frequent services are available only between Tete city and Moatize. In Tete province, 60 bus companies are registered with only 88 buses in total. Bus fares are determined proportional to distance. Unit cost in Tete province is Mt 250 per km on tarred roads and Mt 270 per km on non-tarred roads, respectively higher than the national standard of Mt 220 per km due to higher petroleum costs.

The project will provide incentives to private bus operators to encourage competition on new routes and for more frequent services in the forms of tax exemption, concessional loans, and appropriate fare structure. The incentives should apply to bus operators expanding service routes and increasing service frequency. Some incentives should be proportional to the length of service routes so that bus operators would be encouraged to extend their routes to unpopular areas. Concessional loans may be applied to purchase of vehicles.

A bus terminal should be established in Tete city to serve particularly long distance travelers. The terminal includes an international bus passenger terminal, inter-provincial bus terminal, intra-provincial bus terminals, restaurants and related service facilities, and parking area.

Project No. 3.7

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Inland Freight Terminal |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | MPWH and private firm |
| 4. OBJECTIVES | (1) To establish a freight terminal in Tete city to facilitate long haulage freight transport; and
(2) To contribute to the establishment of a multi-modal transport system linked with neighboring countries. |
| 5. EXPECTED EFFECTS | Active international freight operators based in Tete city; much increased trade and export processing activities. |
| 6. PROJECT COSTS | US\$3.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 2 |
| 8. PROJECT DESCRIPTION | |

International freight traffics pass through the Angonia region, as it is located on the crossroad between the two international arteries linking Malawi, Zambia and Zimbabwe. The transit traffic at present accounts for some 60% of the total cargo traffic volume in the region. As the economy develops in the Angonia region and neighboring regions and countries, the region would have to accommodate much larger cargo traffic volume. Moreover, the region should increasingly take advantage of its strategic location to process goods to be imported for export in line with the outward-oriented production strategy of the Master Plan. Also more goods should be produced for export based on indigenous resources as well.

The project will establish a freight terminal in Tete city to facilitate long haulage freight transport. The terminal initially includes international and domestic freight terminals, restaurants and related services facilities, and parking area. Subsequently, container yards with handling facilities would also be provided to establish an inland container depot or dry port. This would serve as important terminal facilities in the multi-modal transportation system where changes between different transport modes would take place efficiently.

Project No. 3.8

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | New Zambezi River Bridge |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | ANE and/or the private sector |
| 4. OBJECTIVES | (1) To meet future traffic demand on the international artery across the river;
(2) To establish a symbol of regional and national integration in the new era; and
(3) To contribute to the high image of the Angonia region in general and Tete city in particular. |
| 5. EXPECTED EFFECTS | Angonia region and Tete city known for high grade infrastructure and as a center of international trade. |
| 6. PROJECT COSTS | US\$24.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 2 - Phase 3 |
| 8. PROJECT DESCRIPTION | |

The existing Zambezi river bridge, constructed some 65 years ago, cannot hold much increased traffic expected on the international artery linking Malawi, Zambia, Zimbabwe and the port of Beira. A new bridge will be required during Phase 3, if not earlier. Considering the long lead time for project preparation and construction, a feasibility study may start in early part of Phase 2.

The existing bridge represents state-of-art technology at the time of its construction, and the new one should not be a cheap substitute. The new bridge should be an embodiment of international cooperation among all the riparian countries that should be promoted through the coming decade. It should be designed and constructed by mustering technological and financial capacities of the riparian countries as a peaceful symbol of cooperation, supported by international aid society.

Project No. 3.9

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Tete International Airport Upgrading |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | Department of Civil Aviation, private firm |
| 4. OBJECTIVES | (1) To upgrade facilities and services of the Tete airport; and
(2) To establish a local air services network linked with neighboring countries. |
| 5. EXPECTED EFFECTS | Rapid increase in passengers and cargoes handled at the airport; enhanced image of Tete city as the regional gateway. |
| 6. PROJECT COSTS | US\$20.0 million |
| 7. IMPLEMENTATION SCHEDULE | Upgrading of facilities and privatization of airport operation in Phase 1; establishment of the local air services network in Phase 2 - Phase 3 |

8. PROJECT DESCRIPTION

Existing airport facilities of the Tete airport are generally tolerable to handle air passengers and cargoes at present and in the near future. To attract more foreign investments to the Angonia region, however, their facilities and services need to be upgraded over the medium to long term.

In Phase 1, passenger terminal facilities should be improved and cargo terminal facilities newly constructed. In parallel with these, a study may be undertaken to improve the airport operation, especially in view of establishing a local air services network linked with neighboring countries. New institutional arrangements and service facilities would be required for such an expanded operation, including immigration, customs and quarantine. Airport operation should be privatized within Phase 2 to upgrade services.

Project No. 3.10

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Rural Telecommunications |
| 2. LOCATION | District capitals |
| 3. IMPLEMENTING AGENCIES | TDM |
| 4. OBJECTIVES | (1) To establish telephone links to all the district capitals; and
(2) To provide basic telephone services to most of larger settlements. |
| 5. EXPECTED EFFECTS | Easier exchange of information on economic opportunities, community activities, social services, etc.; more developed sense of regional integration. |
| 6. PROJECT COSTS | US\$12.4 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 3 |

8. PROJECT DESCRIPTION

The population in the Study Area is sparse and generally scattered in dispersed settlements, largely deprived of any means of communications even with neighboring towns. To overcome constraints of the enclave communities, the Master Plan proposes the outward-oriented production and services even in rural areas. A pre-requisite is to improve communications between settlements.

Under this project, all the district centers and major towns will be connected by VHF/UHF through repeaters. If possible, cable lines will be provided to connect towns closer to Tete city. Ulongue will be served by VSAT.

In the subsequent stage, all the district capitals will be connected by fiber optic lines after Tete city is connected to Beira.

Project No. 3.11

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Border Facilities Improvement |
| 2. LOCATION | Zobue, Calomue, Biri-biri, Cuchamano,
Cassativa, Misasale |
| 3. IMPLEMENTING AGENCIES | Immigration and Customs, district
administrations |
| 4. OBJECTIVES | (1) To improve immigration and customs
facilities at border points; and
(2) To improve market facilities for border
trade. |
| 5. EXPECTED EFFECTS | More smooth and lively cross-border
activities; formalized and thus more reliable
border trade and increased income for local
administrations. |
| 6. PROJECT COSTS | US\$2.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

Cross-border transportation of goods and people will become increasingly a norm in and around the Angonia region. As the international traffic increases many folds in the coming decade, immigration and customs clearance will become a serious constraint to smooth flow of traffic. The project will provide improved facilities for immigration and customs. Some existing facilities may be rehabilitated initially, but new immigration and customs facilities will be constructed in Phase 2 at all the border points together with related service facilities.

At present, border trade is dominantly undertaken as informal activities. An exception is a municipal market in Zobue, where some 110 stalls are established. Each small trader installs a stall of its own and pay a fixed price per day for sales activities, while security and cleaning are ensured by the local administration. This market should be upgraded, and similar facilities installed in other border areas. This will formalize the border trade and increase income for local administrations. At the same time, better security and sanitation will benefit traders.

Project No. 4.1

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | GPZ Strengthening Program |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCY | GPZ |
| 4. OBJECTIVES | (1) To strengthen GPZ functions for planning and coordination in general, and coordination between the public sector and the private sector for industrial development in particular; and
(2) To expand GPZ capacities for the fields to establish GPZ ownership for the Zambezi Valley development. |
| 5. EXPECTED EFFECTS | Effective implementation of various programs; GPZ as a fully autonomous entity with well established ownership. |
| 6. PROJECT COSTS | US\$1.6 million |
| 7. IMPLEMENTATION SCHEDULE | Start in Phase 1 |
| 8. PROJECT DESCRIPTION | |

GPZ should strengthen its planning and coordinating functions for effective implementation of various programs. It should strengthen, in particular, the coordinating capacity between the public and the private sector. GPZ should expand expertise capacities for certain fields where GPZ ownership should be established. The following refer specifically to GPZ roles in industrial development.

The GPZ function should be enhanced to support the private sector in consideration of the roles of the public sector and the private sector. It is necessary to strengthen the functions listed below to implement development programs.

Function 1: Promotion of industrial reform

- (i) Provision of policy framework,
- (ii) Introduction of advanced technology for diversity in the industrial structure,
- (iii) Improvement of industrial foundation,
- (iv) Investment promotion, and
- (v) Reinforcement of industrial linkages.

Function 2: Support for enterprise reform

- (i) Improvement of corporate management,
- (ii) Re-vitalization of medium scale enterprises, and
- (iii) Provision of market information and technical information.

Project No. 4.2

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Local Planning and Management Capacity Enhancement |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | GPZ, Tete city and other local administrations |
| 4. OBJECTIVES | To enhance the local planning and management capacity to support the accelerated urbanization within the context of the Angonia regional development. |
| 5. EXPECTED EFFECTS | More orderly urbanization and spatial development of the Angonia region. |
| 6. PROJECT COSTS | US\$1.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

The Master Plan strategy for the Angonia regional development supports accelerated urbanization in general and particularly in Tete city and its vicinities. A strong urban core will be created in the Tete-Moatize area, under which a hierarchical structure of urban centers should be established in steps with functional division among urban centers at different tiers. To promote the urbanization in line with the Master Plan strategy, local planning and management capacity needs to be much enhanced.

As the first step to enhance the local planning and management capacity, the project is to prepare urban development plans for major urban centers in the Angonia region within the framework of the Angonia region development. The project will provide consultancy services to prepare these plans in cooperation with GPZ and respective local administrations. For the Tete-Moatize core urban area, a detailed urban development plan should be prepared during Phase 1 as part of Project No. 1.1.

Staff capacity of GPZ for local planning and management may be expanded to provide technical supports to other local administrations. Consultancy will cover also a review of legal and administrative framework for preparation and implementation of local and urban development plans in Mozambique, and recommendations for legal changes and administrative arrangements. The project may continue subject to the approval of the recommendations by the Government.

Project No. 4.3

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Zambezi River Basin Database Development |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | GPZ |
| 4. OBJECTIVES | (1) To establish a comprehensive database for the Zambezi river basin covering both natural and socio-economic data; and
(2) To contribute to the promotion of multi-national cooperation on the entire Zambezi river basin. |
| 5. EXPECTED EFFECTS | Tete city as an information center for Zambezi river basin development; enhanced status of Mozambique in multi-national cooperation on the basin. |
| 6. PROJECT COSTS | US\$4.0 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

Cooperation in the development and management of water resources the Zambezi river basin has been on agenda in recent years. Early efforts are represented by the Zambezi River System Action Plan (ZACPLAN) adopted by the then SADCC in 1987. The plan consists of 19 projects (ZACPRCS) with the following overall objectives:

- (1) to create an inventory of projects, evaluate environmental impact of major projects, and initiate a basin-wide information exchange,
- (2) to develop regional and national legislation necessary for the management of the basin,
- (3) to develop a basin-wide unified monitoring system related to water quality and quantity, and
- (4) to develop an integrated water resources management plan for the basin.

More recently, the Zambezi program has been dealt with by the SADC Environment and Land Management Sector (ELMS). Member states of SADC signed the Protocol on Shared Watercourse Systems at the 1995 Summit in South Africa. The Protocol dictates the establishment of river basin management institutions for shared watercourse systems in the SADC region. For the Zambezi river basin, the Zambezi River Commission (ZAMCOM) is planned to be established with eight riparian states.

While Lesotho takes the initiative generally with the newly formed SADC Water Sector Coordination Unit, Mozambique can and should contribute significantly to coordinated

development and management of the Zambezi river basin. Mozambique is a downstream riparian, having a stretch of 831km or 30% of the total length of the Zambezi river and 223,000km² or 17% of the entire river basin. Moreover, Mozambique has a vast amount of data on various natural resources of her territory of the basin collected since the colonial times.

A most meaningful way for Mozambique to take the initiative in coordinated development and management of the Zambezi river basin is to establish a database for water and other resources in the basin as the first step. Archives of data from the colonial times are still possession of the GPZ. A database should be developed compiling and encoding the archives by using modern technologies, focusing on the Mozambique part of the basin. Free access should be allowed to the database not only by other riparian states but from all over the world. Resources and technology contributions are expected also from the international society to upgrade and strengthen the database.

Such a database with open access will be instrumental in promoting multi-national cooperation on the entire Zambezi river basin, and serve also as a model for other international river basins as well. GPZ should take the initiative in making access to an international aid organization for the initial implementation of an information center with software and hardware facilities and technical cooperation.

Project No. 4.4

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Corporate Management Modernization |
| 2. LOCATION | Tete city, Angonia, Moatize |
| 3. IMPLEMENTING AGENCIES | Public vocational schools |
| 4. OBJECTIVES | To modernize corporate management of existing enterprises to enhance the private sector and increase competitiveness of enterprises. |
| 5. EXPECTED EFFECTS | Viable enterprises conforming to the market economy |
| 6. PROJECT COSTS | US\$0.5 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

Since the vitalization of the private sector is indispensable, training programs are provided to modernize management styles of small and medium scale enterprises existing in the Angonia region. The programs include basic and applied theories for the production technology (off-the-job training) and physical training (on-the-job training). There are three programs to be launched:

- Corporate management training program,
- Sales promotion training program, and
- Traveling enterprise diagnosis program.

Project No. 4.5

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Tete Provincial Hospital Upgrading |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | Ministry of Health |
| 4. OBJECTIVES | (1) To improve health services of the Tete provincial hospital through upgrading medical equipment; and
(2) To establish a provincial center for AIDS related activities. |
| 5. EXPECTED EFFECTS | Improved medical services with sophisticated equipments; both treatment and research activities for HIV/AIDS strengthened. |
| 6. PROJECT COSTS | US\$3.1 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

The Tete provincial hospital is a top referral hospital with 350 beds to serve the whole provincial population. Although the hospital seems well managed, lack of basic equipments and old buildings without air-conditioning is a constraint for providing better health services. Since DANIDA, implementing a comprehensive health program in Tete province, focused its support to rural hospitals in Angonia and Mutarara, the provincial hospital has been left poorly equipped for a long time.

The number of AIDS patients including opportunistic infection with TB (tuberculosis) is increasing in the hospital because prevalence rate of HIV is higher in Tete than in other provinces. However, there is neither isolation ward nor special treatment for them. Due to lack of adequate laboratory machines and training, accurate diagnosis of HIV infection cannot be made. The proposed HIV/AIDS care center is expected to carry out home based care and research activities as well.

Project No. 4.6

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Health Referral System Establishment |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | Ministry of Health, Directorate of Provincial Health |
| 4. OBJECTIVES | (1) To establish referral system between hospitals and health centers/posts for effective health care coverage with limited resources; and
(2) To introduce telecommunication systems to improve the operation of the referral system. |
| 5. EXPECTED EFFECTS | (1) access to health services will be improved,
(2) efficient health services will be provided with better telecommunication systems |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

The number of health facilities is quite limited in the Study Area. There are only two hospitals in Tete city and Angonia District, 23 health centers and 26 health posts. The situation is much worse in six other districts than in Tete city, especially in Chifunde, Chiuta and Tsangano, with only one health center and no medical doctor. In these areas, the average distance to the closest medical facilities is over 35km, and more than 70% of the population does not have access to any health services.

At present, patients are referred directly from each health center/post or come to Tete provincial hospital by themselves because there is no health referral system, which consists of different tiers such as primary, secondary and tertiary care. Establishment of referral system is essential to ensure access to health services for the whole population in the region, especially for provinces such as Tete, which have very limited resources. Telecommunication system will facilitate implementation of this system more effectively.

Project No. 4.7

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Health Awareness Enhancement Program |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | Ministry of Health, Directorate of Provincial Health |
| 4. OBJECTIVES | (1) To enhance awareness for hygiene and sanitation to prevent minor illness among local people through information and education campaigns; and
(2) To promote self-help among local people so that they can solve health-related problems by themselves. |
| 5. EXPECTED EFFECTS | (1) decrease in prevalence of poverty-related diseases, (2) reduced infant mortality and maternal mortality. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

Poverty-related diseases associated with poor hygiene and nutrition, limited water supply and low educational and economic level are prevalent in the Study Area. Such diseases as malnutrition and diarrhea, two top causes of childhood death as well as major causes of adult death, could be easily prevented by increasing health awareness. Adequate knowledge of hygiene and sanitation, such as boiling water before drinking and washing hands after going to toilet, could decrease occurrences of these diseases. Changing diet and eating habits is also important.

These health awareness programs are especially effective for women because they are responsible for sanitation, nutrition and childcare for households. Health promotion should be carried out through community participation so that the local people can treat minor illnesses by themselves without going to health facilities.

Project No. 4.8

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Distance Education Program |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | MINED |
| 4. OBJECTIVES | (1) To attain complete service coverage for primary education; and
(2) To improve the quality of education at all levels by establishing an open education system linked to qualified individuals and institutes outside. |
| 5. EXPECTED EFFECTS | Qualified individuals to support the regional development; Angonia region as a regional education center. |
| 6. PROJECT COSTS | US\$3.0 million |
| 7. IMPLEMENTATION SCHEDULE | Complete coverage for primary education in Phase 1; extension to other levels in steps during Phase 2 - Phase 3 |

8. PROJECT DESCRIPTION

Though primary education has been declared compulsory in Mozambique, serious shortages of adequate education facilities and personnel and other socio-economic constraints prevent a considerable portion of school-age children to receive primary education. In Tete province, even the gross enrollment rate were 67.1% for EP1 schools and 15.9% for EP2 schools in 1998, respectively lower than the national averages. Girl's enrollment rates are particularly low in the Country and in Tete province.

Despite the massive restoration effects after the civil war, many primary schools in the Angonia region still lack basic facilities. As of 1996, 19 out of 89 EP1 schools in the Angonia district had no desks and the other two schools had no toilets, and two of the four schools in Chifunde district had no desks and the other two had neither desks nor toilets. Shortages of teachers and their poor deployment in districts also pose serious constraints.

Given the present school facilities and personnel as well as financial constraints, a better initial strategy to improve primary education is to further improve the existing schools with associated facilities rather than establishing more schools. To expand coverage of primary education with the existing schools, distance education and other innovative approach need to be introduced. Initially, boarding facilities, moving classes and home schooling with distribution of teaching materials may be introduced. As telecommunications facilities are improved in the region, distance education by radio and TV broadcast may be introduced.

Distance education would be extended in steps to other levels and also to adult education. It should be complemented by intensive courses with transport and boarding services to ensure sufficient qualifications for all the students at each level and in each field. For some specialized fields, the distance education system in the region would become a subsystem of an open education system linked to qualified individuals and institutes outside the region.

Project No. 4.9

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Primary Schools Improvement |
| 2. LOCATION | Region-wide |
| 3. IMPLEMENTING AGENCIES | MINED and local communities |
| 4. OBJECTIVES | (1) To improve existing primary school facilities in short to medium term; and
(2) To expand capacities of primary education in steps in medium to long term. |
| 5. EXPECTED EFFECTS | Expanded human resources base to pursue broad-based socio-economic development. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Improvement of existing facilities in Phase 1; expansion in Phase 2 - Phase 3 |

8. PROJECT DESCRIPTION

Levels of education services and attainment are very low in the Angonia region. In Tete province, 84% of the people over the age of 15 have never completed any level of formal education. Improvement of primary education is both the immediate need and the most tedious yet effective way to attain the Angonia regional development in the region.

Despite the restoration efforts after the civil war, shortages of school buildings, classrooms and other facilities are still acute, and shortage of teachers, especially qualified teachers, are more serious in the Angonia region. Moreover, the deployment of teachers in dominant rural areas is constrained by poor rural infrastructure. Given these situations, a sensible approach in the short run is to improve existing primary schools with associated facilities such as adequate classrooms, toilets, and school furniture and supplies. Such improvements should be in line with the improvement of rural infrastructure in selected rural service centers to facilitate the deployment of teachers.

Impact of primary education with limited resources in the public sector would require broad-based participation of local communities. Parents may be mobilized to teach certain subjects for their children at school, such as practical techniques and traditional wisdom. Children, in turn, may serve as change agents for new ideas and methods for their parents. Local communities should be mobilized for construction of primary school facilities by combining labor and some construction materials. Provision of appropriate number of teachers should be guaranteed upon the completion of facilities in return for community contribution.

Project No. 4.10

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Watershed Management Program |
| 2. LOCATION | Upper and middle catchment areas of the three tributaries |
| 3. IMPLEMENTING AGENCIES | Local administrations and communities under the guidance of MICOA |
| 4. OBJECTIVES | (1) To restore and enhance the environmental capacity of tributary basins; and
(2) To establish community-based management organizations for watershed management and sustainable use of water and related land resources |
| 5. EXPECTED EFFECTS | Sound watershed to support various socio-economic activities; established ownership of water and land resources by local communities. |
| 6. PROJECT COSTS | US\$1.5 million |
| 7. IMPLEMENTATION SCHEDULE | Implementation for model watersheds in Phase 1; expansion through Phase 2 - Phase 3 |
| 8. PROJECT DESCRIPTION | |

Slash and burn practice is widespread in the Angonia region, clearly beyond the need for shifting cultivation. Other reasons for the practice include hunting, land ownership claims, and socio-cultural reasons. Also upper catchment areas of main tributaries have been degraded by deforestation. Watershed management is essential to restore and maintain production and water retention capacities of the entire river basins.

The program should establish a principle that indigenous resources, represented by water and land resources, should be substantially owned and managed by local people and communities. This principle involves two theorems. First, local people should voluntarily promote sustainable use of indigenous resources, refraining from unnecessary slash and burn and undertaking most productive use of the resources. Second, local communities should benefit from any use of indigenous resources by outside interests. These would be satisfied by involving local communities in the management organization and by introducing some incentives for local communities to benefit from the use and management of the resources. The program will support local communities for watershed management through the following:

- (1) support establishing management organizations involving all the stakeholders;

- (2) environmental education and awareness campaign to promote sustainable resource use, discouraging unnecessary slash and burn;
- (3) provision of seedlings for tree planting together with technical extension, and
- (4) seed fund to establish livelihood projects based on sustainable use of water and land resources with technical and financial consultancy.

Project No. 4.11

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Environmental Inventory |
| 2. LOCATION | Region-wide with focus on Chiuta and Chifunde |
| 3. IMPLEMENTING AGENCIES | MARD, MICOA, Tete province, GPZ |
| 4. OBJECTIVES | (1) To conduct an environmental inventory to create a database on social and natural resources; and
(2) To prepare comprehensive data on bio-diversity to justify the establishment of a wildlife reserve. |
| 5. EXPECTED EFFECTS | Environmental database as reference for monitoring and evaluation; designation of the wildlife reserve. |
| 6. PROJECT COSTS | US\$2.5 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

Flora and fauna in the Angonia region are rich but threatened by deforestation, slash and burn, and illegal hunting. To protect them from further degradation, a wildlife reserve has been proposed in Chiuta and Chifunde areas. To justify the establishment of the reserve, a comprehensive survey should be conducted to establish a database.

The Angonia region is expected to undergo significant changes as the regional development program is implemented. To avoid adverse effects on the environment due to development activities, such changes should be monitored and corrective measures taken in advance as necessary. A database needs to be established as a reference for monitoring and evaluation, covering both natural and socio-economic conditions.

The project will conduct an environmental inventory and establish a database on social and natural resources. GPZ may take the initiative in addressing to related government agencies and the Tete provincial government, and work as a coordinator in the implementation. External assistance should be sought for technical guidance and provision of equipment necessary for the inventory.

Project No. 4.12

- | | |
|-----------------------------------|--|
| 1. PROJECT TITLE | Urban Environment Improvement Program |
| 2. LOCATION | Tete city, Moatize and Ulongue |
| 3. IMPLEMENTING AGENCIES | MICOA, MPWH, Tete provincial government, Municipal governments of Tete and Moatize, GPZ (coordination) |
| 4. OBJECTIVES | (1) To realize clean and sanitary environment through proper management of solid wastes and wastewater; and
(2) To create urban amenity for local residents and visitors. |
| 5. EXPECTED EFFECTS | Pleasant urban environment enjoyed by local people and attractive to visitors. |
| 6. PROJECT COSTS | US\$25 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 - Phase 2 |
| 8. PROJECT DESCRIPTION | |

While the Angonia region is predominantly rural, some urban environmental problems have started to appear especially in Tete city, including water quality of rivers and groundwater, solid waste disposal, industrial pollution, and urban roads and traffic. As the urbanization accelerates in the forthcoming decades as envisioned by the Master Plan, urban environment may degrade rapidly without counter-measures.

The Angonia region has some attractive landscapes and cultures, which may be combined with the Zambezi river and other attractions for promoting tourism. Urban infrastructure and facilities need to be much improved to accommodate increasing number of visitors as well as urban residents.

The program is to improve the urban environment of Tete city, Moatize town and Ulongue, where the future urbanization is expected to concentrate. It consists of projects to improve urban infrastructure such as drainage, wastewater treatments, solid waste disposal, and other measures to introduce new urban facilities. Urban roads, water supply, power supply, and telecommunications will be undertaken by other projects. Other measures for Tete city include waterfront development on the Zambezi river, city beautification with tree planting, restoration of urban parks and community facilities, and urban renewal with relocation of polluting industries. For these measures, the city plan should be updated first as part of the project. The improvement of urban infrastructure will be undertaken in steps with priority to solid waste disposal and wastewater treatment for Tete city.

Project No. 4.13

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Renewable Energy Center |
| 2. LOCATION | Tete city |
| 3. IMPLEMENTING AGENCIES | GPZ and Ministry of Mineral Resources and Energy |
| 4. OBJECTIVES | (1) To establish an information center with a database on renewable energy resources and uses; and
(2) To provide technical assistance to people in rural areas for renewable energy application |
| 5. EXPECTED EFFECTS | Wider use of renewable energy resources of various types; better protection of environment due to reduced use of firewood and charcoal; promotion of energy saving cooking stoves |
| 6. PROJECT COSTS | US\$2.5 million |
| 7. IMPLEMENTATION SCHEDULE | Phase 2 - Phase 3 |
| 8. PROJECT DESCRIPTION | |

The population in the Study Area is sparse and tends to be dispersed over a wide area in small settlements making it difficult for rural electrification with grid-provided electricity to cover the entire area. One way to solve this problem is to utilize local resources.

Under this project, a renewable energy center will be established in Tete city. The center will serve as a database for the region. It will also provide technical assistance to farmers who are willing to use solar, small hydro, and bio-mass/gas energy. The center will launch some pilot projects in remote rural areas, starting with a solar energy charge center in Chifunde.

Charcoal and firewood are used for cooking at most households, including those in Tete city. No stoves but bricks and rocks are usually used so more energy is wasted. One way to approach this problem is to promote energy saving stoves, especially in rural areas. The center will provide mobile extension services throughout the region, demonstrating energy saving cooking stoves and selling them at a subsidized price.

Project No. S.1

- | | |
|-----------------------------------|---|
| 1. PROJECT TITLE | Enhancement of Extension Services |
| 2. LOCATION | All the six districts and Tete city |
| 3. IMPLEMENTING AGENCIES | Agriculture Department of the Tete Provincial Government, MARD, NGOs |
| 4. OBJECTIVES | (1) To enhance roles and capacities of rural extension services; and
(2) To encourage positive perception and behaviors for changing human environment. |
| 5. EXPECTED EFFECTS | More positive attitude for changes among farmers; greater awareness and acceptance to the contents delivered by the extension services; increase in productivity. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTATION SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

This program will provide the following.

(1) Training of trainers to rural extension workers

Provision of trainer-training to rural extension workers will contribute directly to improving the quality of services. Principles of adult education are applied for trainees to develop appropriate curricula and teaching materials. The training emphasizes hands-on, rather than theoretical, approach, the latter of which conventional trainers in Mozambique commonly practice. Professional trainers should be employed to provide training specifically designed for a limited number of Mozambican head trainers. Such training should focus on knowledge, skill and also attitude.

(2) Increased funding for extension services

In order to build a strong foundation to develop rural communities, a lot more funding to support extension services is needed. This increased financial support is to help cover salaries, per-diems, and office expenses for supplies. More motor vehicles will be provided to extension workers to cover vast areas more effectively and in a timely manner.

(3) Organization-wide strategic planning of extension services

There is a great need to redefine the roles of extension workers in order to strengthen their sense of responsibility. Participatory analysis of extension work and of organizational structure should be undertaken. Extension services should be reorganized if necessary. Special attention should be paid to recruitment and empowerment of female rural extension workers to strategize women's training in various subjects.

Project No. S.2

- | | |
|---------------------------------|---|
| 1. PROJECT TITLE | Community Mobilization |
| 2. LOCATION | All the six districts and Tete city |
| 3. IMPLEMENTING AGENCIES | Agriculture Department of the Tete Provincial Government, MARD, NGOs |
| 4. OBJECTIVES | To utilize and revitalize existing social organizations in communities to serve effectively their respective membership population. |
| 5. EXPECTED EFFECTS | Improved delivery of various social services; greater awareness and acceptance to the contents delivered by the extension services. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTING SCHEDULE | Phase 1 |
| 8. PROJECT DESCRIPTION | |

The existing social organizations within communities should be reutilized and empowered. There are a few community-based governing entities in rural communities. Examples include traditional tribal structures headed by chiefs. Many communities have Women's Committees, Water Committees, and Justice Committees. These organizations are vehicles of decision-making and self-governance.

There are three distinct activities in this program.

(a) Community mobilization activities

Annual gatherings, such as a village fair, agricultural festival, or dance and music fair may be organized and promoted. Through these events, rural communities reaffirm their culture and traditional values and strengthen the unity of their communities.

(b) Regular town hall meeting

Important issues among the community should be discussed in an open forum. Meetings should be regularly scheduled. The town-hall-meeting style will increase transparency of the process. It encourages wider participation, particularly of female members, in the communities' decision-making process.

(c) Leadership training

To support various activities of the communities listed above, leadership training organized by rural extension services is provided for the leaders of social organizations, including female leaders. Special attention will be paid to women because their greater involvement as leaders in empowering their communities is particularly expected in the Angonia region.

Project No. S.3

- | | |
|---------------------------------|--|
| 1. PROJECT TITLE | Adult Education on Land Ownership and Sustainable Agriculture |
| 2. LOCATION | Dala, Mbinhe, Namadende, Aphande, Makonje |
| 3. IMPLEMENTING AGENCIES | Department of Agriculture of Tete Provincial Government, and Tete Provincial Directorate of Education |
| 4. OBJECTIVES | To acquire knowledge, skill and attitude on environmentally sustainable agricultural practices. |
| 5. EXPECTED EFFECTS | Reduction of slash and burn through awareness building; improved soil and increased productivities in the agricultural sector; increased food security and nutrition levels of households. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTING SCHEDULE | 2002 - 2010 |

8. PROJECT DESCRIPTION

This program consists of the following components.

(1) Training of trainers to extension workers

Agricultural extension plays significant roles in implementing this program. Extension workers are trained to be capable trainers to deliver subject matters to community members. The training is designed for hands-on yet experiential. Principles of adult education are utilized for trainees to develop appropriate curricula and teaching materials.

(2) Training by extension workers to community members

Examples of training provided by extension workers include: (a) sustainable use of land; (b) basic soil management practice; (c) land laws and conflict resolution; (d) selection of suitable crops; (e) nutrition education linked to selection of crops; (f) land conservation and 'slash and burn' practice; and (g) afforestation and reforestation.

(3) Region-wide radio campaign to promote sustainable agriculture

By utilizing radio broadcasting system, tree planning and anti-'slash and burn' campaign is implemented regularly during the campaign. (The radio station in Tete has own studio to produce its own program.) During the program implementation, tree planting is promoted in schools throughout the region so that children learn importance of trees and soil conservation from early age. Children will serve also as change agents for their families.

Project No. S.4

- | | |
|---------------------------------|---|
| 1. PROJECT TITLE | Small Animal Husbandry Program |
| 2. LOCATION | Chimwala, Mkanta, Nsadzo, Chipiri,
Namadende, Ntowe and Banga |
| 3. IMPLEMENTING AGENCIES | Agriculture Department of the Tete Provincial
Government, MARD, NGOs |
| 4. OBJECTIVES | To increase income from sale of small
animals in the local market. |
| 5. EXPECTED EFFECTS | Diversified sources of income not only by
farm products but also meats, eggs etc.;
improved diet in family from increased
consumption of meats and eggs through home
consumption; strengthening self-governance
of local communities through formation of
community-based farmers' association. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTING SCHEDULE | 2002 to 2005 for Phase I; 2005 and onward
for Phase II |

8. PROJECT DESCRIPTION

This program consists of two separate phases: Phase I (2002-2005) for promotion of indigenous and local breeds, and Phase II (2005 - onward) for promotion of hybrid breeds.

Phase I (2002-2005)

The strategy of the initial phase of the program is to promote small animal husbandry using indigenous and local breeds. The Agriculture Department of Tete provides breeds and chicks to groups established in communities in the Angonia region. The rural extension mobilizes communities to establish groups consisting of five to ten households. The government provides a soft loan to the farmers' groups to purchase new breeds or chicks. Alternatively, these groups can be vehicles of the peer-to-peer lending schematic (Project S.7 Small-scale Business Program). Using a fund raised within a peer group, or a money loaned from the government under this program, the members of the group collectively raise these animals. When the animals are matured, some are sold in the market for income purpose and some directly to the local community members. The proceeds are used for repayment of the fund.

Services provided by the rural extension include such technical assistance as (1) basics of animal husbandry, (2) prevention of common diseases and damages by other animals, and (3) basic management skills such as book keeping and leadership training for farmers'

groups.

Phase II (2005 and onward)

The second phase is introduction of hybrid farm animals to increase productivity and marketability. Based on the record of the program, only the groups repaying successfully from the sales of indigenous small animals in the previous phase are eligible to receive the support from the government. Hybrid breeds are introduced in this phase. Hybrid animals require more input than indigenous breeds. Using the same program schematics, the Agriculture Department of Tete province provides chicks and breeds of hybrid animals on a loan basis. The groups raise more funds to loan the members to buy feed, chemicals and other necessities and repay the loan from the proceed of the sales.

When it is implemented, the following services are required in addition to the supports listed in the phase one: (1) extended line of credit for farmers sufficient to cover feed and its storage facilities; and (2) all kind of veterinary services including provision of medicines. Currently, only Macanga, Tete and Angonia have veterinary services available. Extending veterinary services to other districts is a prerequisite of this phase of the program.

Project No. S.5

- | | |
|---------------------------------|--|
| 1. PROJECT TITLE | Horticulture/Tree Planting Program |
| 2. LOCATION | Chimwala |
| 3. IMPLEMENTING AGENCIES | Department of Agriculture, and Department of Education, the Tete Provincial Government. |
| 4. OBJECTIVES | To promote a variety of fruit bearing trees and vegetables specifically to women in rural communities. |
| 5. EXPECTED EFFECTS | Raised awareness for conserving soil and environment through planting fruit bearing trees and growing vegetable; improved nutrition and food security; possible increased dispensable income for women by selling surplus fruits and vegetables in the market. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTING SCHEDULE | 2002 - 2010 |
| 8. PROJECT DESCRIPTION | |

The program is targeted specifically for women in rural communities. Assumptions are that (1) women spend more time in their homes and more likely take care of fruit trees and vegetables planted close to their home; (2) women use the fruits and vegetables for their home consumption; (3) women use the money earned from selling their surplus produce to buy foods, cloth and other services for their children.

It is recommended to mobilize (and revitalize) already existing women's groups in communities in order to allow women to use land and tools traditionally controlled by heads of households (men). Leadership training should be provided as necessary. Provision of all the services (materials and training) listed bellow should be through the women's organization to empower the organizations and to ensure the success of the program.

The government provides gardening tools (e.g., shovels, plows, watering cans and other small tools), seeds, seedlings, and chemicals. Rural extension workers (preferably experienced women) train female leaders of communities in such subjects as preparation of soil, making composts, making nursery, collecting seeds, making pickles and other preserves, and basic nutrition and health education.

Project No. S.6

- | | |
|---------------------------------|--|
| 1. PROJECT TITLE | Community Skills Center |
| 2. LOCATION | Chipiri, Lumadzi, Ntowe |
| 3. IMPLEMENTING AGENCIES | Department of Agriculture and Department of Commerce of Tete Provincial Government |
| 4. OBJECTIVES | To acquire knowledge and skills on community skills such as carpentry, masonry and furniture making, etc. |
| 5. EXPECTED EFFECTS | Increased job opportunities outside of the community in low season; diversified income sources; support for small business development in communities. |
| 6. PROJECT COSTS | |
| 7. IMPLEMENTING SCHEDULE | 2002 - 2010 |
| 8. PROJECT DESCRIPTION | |

A Community Skills Center provides farmers with training in basic community skills such as masonry, carpentry and furniture making, etc. Such skills will help farmers seek wider employment opportunities during the dry season when activities in their farmland are minimal. They are able to work outside the community using the skills and knowledge acquired.

The training is provided by artisans and technicians available in nearby communities. The rural extension workers provide basic training to trainers to effectively teach and evaluate their skills and knowledge.