Document of
The World Bank

Report No: 39806-MZ

GEF PROJECT DOCUMENT

ON A

PROPOSED GRANT FROM THE
GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US$6.2 MILLION

TO THE

REPUBLIC OF MOZAMBIQUE

FOR A

MARKET LED SMALLHOLDER DEVELOPMENT IN THE ZAMBEZI VALLEY PROJECT

May 30, 2007

Environment, Rural and Social Development Unit, AFTS1
Country Department 2, Mozambique
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 2007)

Currency Unit	=	Meticais
26.45	=	US$1
US$1.52	=	SDR1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
BDS	Business Development Services
CAEIF	Community Agricultural and Environmental Investment Fund
CAS	Country Assistance Strategy
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organization
CDD	Community Demand Driven
CFAA	Country Financial Accountability Assessment
CLUSA	Cooperative League of the USA
DA	District Administrator
DANIDA	Danish International Development Agency
DBS	Direct Budget Support
DDA	District Agricultural Directorate
DF	District Facilitator
DPFP	Decentralized Planning and Finance Project
DNA	Department of Water Affairs
DNPDR	National Directorate for the Promotion of Rural Development
DTT	District Technical Team
ERR	Economic Rate of Return
ESMF	Environmental and Social Management Framework
FMA	Field Management Advisor
FMR	Financial Monitoring Report
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographical Information System
GOM	Government of Mozambique
GPZ	Zambezi Valley Development Authority
GTZ	German Foundation for Technical Cooperation
IC	Individual Consultants
ICB	International Competitive Bidding
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IGF	Inspectorate General of Finance
IPCC	Intergovernmental Panel on Climate Change
LCS	Least-Cost Selection
LIG	Local Investment Grant
M&E	Monitoring and Evaluation

MICOA	Ministry for the Coordination of Environmental Affairs
MINAG	Ministry of Agriculture
MPD	Ministry of Planning and Development
MPWH	Ministry of Public Works and Housing
NAP	Nation Action Program
NAPA	National Adaptation Plan of Action
NBSAP	National Biodiversity Strategy and Action Plan
NCB	National Competitive Bidding
NEPAD	New Partnership for African Development
NEMP	National Environmental Management Program
NGO	Non-Government Organization
OP	Operational Policy
PAMA	Agricultural Markets Support Project
PARPA	Action Plan for the Reduction of Absolute Poverty
PEFA	Public Expenditure and Financial Accountability
PIU	Project Implementation Unit
PFM	Public Financial Management
PPC	Provincial Project Coordinator
PWH	Ministry of Public Works and Housing
PRSP	Poverty Reduction Strategy Paper
QCBS	Quality and Cost Based Selection
RPF	Resettlement Policy Framework
SBD	Standard Bidding Document
SIDA	Swedish International Development Cooperation Agency
SLG	Savings and Loans Group
SLM	Sustainable Land Management
SPA	Strategic Priority of Adaptation
SSS	Single Source Selection
SWAP	Sector Wide Approach
UMC	Community Management Unit within the National Directorate of Forest & Wildlife
UNAC	National Union of Farmers Association
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention on Climate and Desertification
VSL	Village Savings and Loans
WVI	World Vision International

Vice President:	Obiageli K. Ezekwesili
Country Director:	Michael Baxter
Sector Manager:	Frank K. F. Byamugisha
Task Team Leader:	Eduardo Luis Leao De Sousa

MOZAMBIQUE
Market led Smallholder Development in the Zambezi Valley

CONTENTS

Page

MOZAMBIQUE

MARKET-LED SMALLHOLDER DEVELOPMENT IN THE ZAMBEZI VALLEY

GEF PROJECT DOCUMENT

Date: May 30, 2007 Country Director: Michael Baxter Sector Manager/Director: Frank Byamugisha/ Michel Wormser Project ID: P093165 Lending Instrument: Specific Investment Loan	Team Leader: Eduardo Luis Leao de Sousa Sectors: General agriculture, fishing and forestry sector (20%); Animal production (20%); Irrigation and drainage (20%); Crops (20%); Agricultural extension and research (20%) Themes: Rural markets (P); Rural non-farm income generation (S); Rural services and infrastructure (S); Other rural development (S) Environmental screening category: Partial Assessment

Global Supplemental ID: P098040 Lending Instrument: Specific Investment Loan Focal Area: L-Land degradation Supplement Fully Blended?: No	Team Leader: Eduardo Luis Leao De Sousa Sectors: General agriculture, fishing and forestry sector (100%) Themes: Land administration and management (P); Environmental policies and institutions (S)

Project Financing Data

[ ] Loan [] Credit [x] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Total GEF financing (US$m.): 6.20
Proposed terms: Grant

Financing Plan (US$m)

Source	Local	Foreign	Total
Beneficiary/Government	1.20	0.00	1.20
International Development Association *	14.21	5.79	20.00
Global Environment Facility	4.20	2.00	6.20
Total:	19.61	7.79	27.40

Borrower:
Republic of Mozambique

Responsible Agency:
National Directorate for the Promotion of Rural Development
Ministry of Planning and Development
Bairroda Maxaquene
"C" Rua 3253, No. 134
P.O Box 4518, Maputo, Mozambique
Tel: 258 21 414434 Fax: 258 21 419824 Email: dndr1@tvcabo.co.mz

* Credit approved by the Board of Directors on June 20, 2006

Estimated IDA disbursements (Bank FY/US$m)									
FY	07	08	09	10	11	12	13		
Annual	2.97	3.32	3.47	3.92	3.39	2.13	0.8		
Cumulative	2.97	6.29	9.76	13.68	17.07	19.20	20.0		

GEF Estimated disbursements (Bank FY/US$m)									
FY	08	09	10	11	12	13	14		
Annual	0.54	1.03	1.16	1.21	0.92	0.42	0.22		
Cumulative	0.54	1.57	2.73	3.94	4.86	5.28	6.20		

Project implementation period: Start September 30, 2007 End: March 31, 2013
Expected effectiveness date: September 15, 2007
Expected closing date: September 30, 2013

Does the Project depart from the CAS in content or other significant respects? ***Ref. PAD A.3***	[ ]Yes [X] No
Does the Project require any exceptions from Bank policies? ***Ref. PAD D.7***	[ ]Yes [X] No
Have these been approved by Bank management?	[ ]Yes [ ] No
Is approval for any policy exception sought from the Board?	[ ]Yes [ ] No
Does the Project include any critical risks rated "substantial" or "high"? ***Ref. PAD C.5***	[X]Yes [ ] No
Does the Project meet the Regional criteria for readiness for implementation? ***Ref. PAD D.7***	[X]Yes [ ] No

Project development objective ***Ref. PAD B.2, Technical Annex 3***

The development objective of the Project is to increase the income of smallholder farmers in selected districts of the Zambezi Valley region of central Mozambique. Increased incomes will be achieved not only by direct support to smallholder groups and other supply chain participants, but also through the strengthening of local level capacity to undertake and manage service delivery within the context of the Government of Mozambique's decentralization policy.

Global Environment objective ***Ref. PAD B.2, Technical Annex 3***

The Global Environment Objective is to limit land degradation, provide predictive capacity for assessing vulnerabilities to climate change, and to improve the ecosystem's resilience towards climate change in the Central Zambezi Valley.

Project description *[one-sentence summary of each component] Ref.* ***PAD B.3.a, Technical Annex 4 (More GEF specific?)***

The Project will achieve its objective of increasing the incomes of smallholder farmers within the Project area through three technical components, with a fourth component dedicated to management, coordination and monitoring. The three technical components comprise:

- The promotion and support of groups formed by small producers and other supply chain participants in such areas as marketing, savings and credit, and agribusiness development, as well as the strengthening of district level institutions which support them
- The provision of support for broad-based market-led sustainable agricultural and natural resource development, including not only direct outreach to groups and agribusiness participants in production, marketing and other supply chain elements, but also encompassing applied research, demonstrations, training and the expansion of local extension capacity

- A demand-driven Community Agricultural and Environmental Investment Fund which will provide resources for agriculturally related infrastructure, small scale investment and improved natural resource management.

Which safeguard policies are triggered, if any? ***Ref. PAD D.6, Technical Annex 10***

Environmental issues outlined in Section D5 indicate this is an EA Category "B" Project. Actual Project investments will be demand-driven and will only be determined during implementation. Thus, an Environmental and Social Management Framework (ESMF) has been prepared to address the substantive requirements of OP4.01 and OP4.09, the latter primarily for livestock hygiene facilities and weed control around Project-funded facilities. Procedures and measures to avoid or minimize adverse environmental effects from Project investments, including changes to agricultural practices, have been included in the ESMF. The ESMF contains a screening procedure for determining if a resettlement plan is required for any particular investment according to the Resettlement Policy Framework has been prepared according to the requirements of OP4.12.

Component 3 (Community Agricultural and Environmental Investment Fund) will make small scale investments, including water and land-based investments, including in agribusiness. These investments may require either involuntary land acquisition, or displacement of people, or both, so OP4.12 on Involuntary Resettlement is triggered. A Resettlement Policy Framework (RPF) has been prepared as a mitigation instrument since the sites and nature of investment sub-Projects will only be determined during Project implementation.

OP7.50 (Projects on International waterways) is triggered as there may be water withdrawals for small irrigation Projects implemented in the Zambezi basin, including the Shire River – a major tributary of the Zambezi. Sources of water will include: (a) shallow groundwater from alluvial aquifers; (b) small tributary streams which rise entirely in the territory of Mozambique; (c) small tributary streams which rise in neighboring Malawi; and (d) direct extraction from the Zambezi and the Shire. Notification has been sent by the Government of Mozambique to all riparians under OP7.50. GOM has a well-established and capable International Waters Division in the Department of Water Affairs (DNA) that has undertaken the notification process.

Significant, non-standard conditions, **if any**, for: ***Ref. PAD C.7***

Credit effectiveness
The Recipient has:
(a) Adjusted the financial management and accounting systems, including a Chart of Accounts, to be able to identify project activities, and disbursement categories under the GEF grant.
Covenants applicable to Project implementation
a) (i) ensure that the Project is implemented in accordance with the recommendations of the ESMF; and (ii) carry out a screening procedure to determine if a resettlement plan is required under any sub-Project under Component 3 of the Project; and
(b) ensure the recruitment of two agricultural extension staff per administrative post, in the First Phase Project Districts, by January 31, 2007(already complied with) and in the second Phase Project districts by January 31, 2008.
(c) Withdrawal Condition for Component 3: (i) Recipient shall have ensured that the following staff have been recruited in any province or district and are in place: one accountant per Province; one accountant and one procurement officer per District; and one regional procurement specialist; and (ii) to any Project Beneficiary until the related Project Beneficiary shall have concluded an Agreement.

STRATEGIC CONTEXT AND RATIONALE

1. Country and sector issues

Mozambique has witnessed rapid growth since achieving peace in 1992. The economy grew by 8% annually between 1994 and 2004, albeit from a very low base and the national poverty headcount index fell from 69% in 1996 to 54% in 2002. The conditions for growth were created by the economic reforms initiated by the Government, as well as the Government's success in maintaining national peace and stability. Growth in the agricultural sector has been an important contributor to overall economic growth and has been the key factor in reducing rural and national poverty. Agricultural growth has mainly been driven by the post-conflict re-settlement of refugees in the rural areas, and the resulting expansion in labor and land. This expansion caused the sector to grow by an average 6.8% per year from 1992 to 1997, an average 4.6% between 1997 and 2003, 9% in 2004, 7% in 2005 and 10.4% in 2006.

Agriculture in Mozambique is almost entirely dominated by smallholders. Smallholders comprise 99% of all rural households and provide 95% of agricultural GDP. Most of the smallholders are subsistence farmers with an average of 1.4 ha of cultivated land per household. Their traditional low input, traditional farming practices result in generally low yields relative neighbouring countries with similar agro-ecological potential. Smallholders, in particular in the Zambezi Valley, are also highly vulnerable to extreme climatic conditions which alternate between frequent droughts and floods. Land degradation, the unsustainable exploitation of natural resources, and changing climatic patterns are likely to only aggravate such problems in the future.

An IISD/UNEP study[†] indicates that returning migrants and increasing climate variability are additional challenges to people's livelihood and to sustaining ecosystem services in Mozambique with significant negative impacts for Tete and Sofala provinces. Extensive agriculture by returning migrants is resulting in increased deforestation, the loss of biodiversity, and a rapid decline in soil fertility of cleared areas, which leads to further deforestation. The loss of native forests reduces community access to both timber and non-timber forest products and associated ecosystem services, which in turn increases the vulnerability of both existing and new settlements to droughts and floods.

Even though the overall macro-economic and policy environment is considered to be relatively conducive to agricultural and smallholder growth, current growth patterns driven by land and labor expansion are unlikely to be sustained, unless a number of critical and inter-related constraints are addressed. These constraints include the weak organizational capacity of farmers, the weak institutional support to smallholders, the lack of access to credit, poor rural infrastructure resulting in inefficient input-output markets, inadequate access to knowledge on improved land management and improved farming systems. These factors result in low local capacity to adapt to both short term climate variability and medium to long term climate change.

The Government of Mozambique (GOM) is determined to promote continued economic growth and poverty reduction. Absolute poverty reduction is the main priority for all Government action, as reflected in its Five-Year Program 2005-2009 and in its Poverty Reduction Strategy (PARPA-I, followed by PARPA-II. Agriculture and rural development, as well as improvements in natural resources management, are considered key in achieving economic growth and poverty reduction.

[†] UNDP and IISD, Connecting Poverty and Ecosystems Services, 2005.

At the same time, GOM is pursuing an ambitious decentralization program, which aims at making the district the development pole, from where all development action should be initiated.

GOM acknowledges that further smallholder growth and poverty reduction will depend on gains in agricultural productivity, and so it pursues a two-pronged strategy of (i) building producers' capacity to increase their productivity, and (ii) transforming the role of public institution into facilitators and providers of essential growth-facilitating services. Critical elements of GOM's strategy are the stimulation of market mechanisms, the promotion of the creation of financial institutions for the rural areas, the improvement of rural and agricultural infrastructure, the stimulation of agri-business development, and the improvement of the performance of extension, research and market information services. All of these actions should support smallholders in their gradual transformation into more intensive, productive and commercially oriented farming.

The type of approach GOM intends to take in the implementation of its agricultural strategy will be (i) driven by the needs and demands of farmers, which comprise the whole spectrum of production, marketing, finance and rural infrastructure, (ii) focused on direct impact at the district level, and (iii) open to collaborative arrangements with non-state actors, such as farmers associations, NGOs and private sector actors, including through mechanisms such as outsourcing of services.

The long-term sustainable use of natural resources, and, more specifically, land, forests, wildlife and water is a key ingredient of the Government's strategies. In the Poverty Reduction Strategy, the GOM has committed itself to promote and enforce the sustainable use of natural resources for the benefit of the country as a whole, and to encourage the cultivation of renewable resources. The National Action Plan for drought and desertification (NAP), prepared by the GOM in the context of the United Nation Convention on Drought and Desertification (UNCCD) – establishes the strategic measures for drought mitigation. Finally, the Central Government has in place a strategy for disaster preparedness in the major flood plains, in which early warning systems of floods and seasonal migration between the floodplain and the uplands are the proposed strategies for the affected communities.

2. Rationale for Bank involvement and GEF eligibility

As discussed in the IDA PAD, the overall rational is that a) the Project supports environmentally sustainable agricultural intensification among smallholder farmers (which is key for continued economic growth of Mozambique), b) is consistent with GOM's sector strategy, c) by increasing the incomes of smallholder farmers, the Project is critical for poverty reduction in Mozambique, d) the Bank's global experience in community-driven and market-led approaches allows it to assist GOM in its efforts to change its approach in agricultural development, e) the proposed Project will, in many ways, address aspects that are not likely to be resolved by other actors in the short to medium term and f) the project will be able to benefit from complementarity from other World Bank-financed operations.

Besides the national economic and social benefits of increased agricultural growth, the blending of the Project with a **Global Environment Facility (GEF)** grant will significantly harness the potential synergies between national goals and global benefits such as reduced deforestation and the resultant decreased loss of above- and belowground biodiversity, and reduced greenhouse gas emissions while maintaining the functional integrity of both upland forest and lowland riparian ecosystems. For example, the current use of extensive farming methods is leading to increased deforestation, land degradation, and further clearing of native woodlands as farmers abandon degraded land. The loss of ecosystem services (local hydrology, habitats for native biodiversity)

from deforestation and land degradation is resulting in increased vulnerability of local communities to droughts, floods and unstable markets. Priority areas for improving land management for global environmental benefits include forest margins, gallery forests, and riparian zones, which are not only important for native biodiversity but also help to stabilize hydrological flows and thus reduce the possibility of degradation of existing agricultural lands. These areas are not normally a priority for national development programs so incremental OP 15 funding will ensure the synergy between the local benefits of improved management and the global benefits (reduced loss of high biodiversity habitats, improved protection and conservation of forest buffer zones and terrestrial-aquatic boundaries. In addition to the activities proposed under the GEF OP 15 (Sustainable Land Management), specific incremental funding is being sought under the GEF's Special Priority of Adaptation (SPA). This additional funding would help strengthen Mozambique's capacity to assess and integrate climate change risk into sustainable land management planning via the testing and calibration of dynamic vegetation, soil, hydrology models for improved predictive capacity of local climate change impact scenarios and assessment of priority mitigation interventions to reduce the negative impacts of extreme events on local populations and ecosystems.

GEF eligibility flows from Mozambique's signing and ratification of the key global treaties on the environment[‡]: The Project would directly contribute to the implementation of the UNCCD NAP and to some of its main operational strategies, including community mobilization, training and knowledge sharing, sustainable forest exploitation, sustainable soil management, improved water use and management, improved land rights for local communities and institutional capacity building, and would serve to report on progress made in the implementation of the Action Plan. It would also address priorities under the National Biodiversity Strategy and Action Plan (NBSAP), and respond to the recommendations of the Initial National Communication under UNFCCC. Synergies among conventions will be sought, and adaptation to climate change will offer a unique concrete opportunity to test these linkages at the operational level, filling the gap between the regimes created by the Conventions and the reality on-the-ground.

3. Higher level objectives to which the Project contributes

The overall Project's support to smallholder development will directly contribute to GOM's objective for the agricultural sector, and also contribute to the central objective of Mozambique's Poverty Reduction Strategy. Furthermore, this Project would primarily support the Bank's CAS for Mozambique first and to a lesser degree also its second pillar, discussed in detail in the PAD for the IDA credit, which was approved on June 20, 2006.

The Project is consistent with GEF Operational Policy 15 (OP15) concerning mitigation and prevention of land degradation. The Project follows OP 15 Strategic Priorities 1 (Targeted Capacity Building) by enhancing the enabling environment and capacity of local stakeholders to support sustainable land and natural resource management practices that yield not only local benefits but are also synergistic with global environmental benefits (enhance conservation and use of native biodiversity, reduced deforestation and carbon emissions). The Project also addresses Strategic Priority 2 (Implementation of Innovative and Indigenous SLM Practices) by first documenting local and traditional best practice NRM approaches and then facilitating demand driven research and adaptation of innovative and indigenous SLM practices through on-the-ground investments mainly under Components 2 and 3. Examples of best bet practices

‡ United Nations Convention to Combat Desertification (UNCCD, 1997), the Convention on Biological Diversity (CBD, 1995), the United Nations Framework Convention on Climate Change (UNFCCC, 1995), and the Stockholm Convention on Persistent Organic Pollutants (2005).

include agroforestry systems with native species, sustainable forest and woodland extractive practices such as the elimination of fire in honey collection and reduced collection of wild medicinal plants coupled with increased cultivation of these species in agroforestry systems. Annex 9 has a more detailed description of the anticipated GEF and incremental costs associated with achieving these benefits.

The Market-Led Smallholders project will complement other activities of the Bank and partners (e.g., UNDP, FAO and UNEP) under the multi-agency GEF-co-financed Strategic Investment Program (SIP) for sustainable land management in Sub-Sarahan Africa. The linkage of the project with activities supported through the TerrAfrica platform at national and regional levels is expected to leverage additional advocacy and foster knowledge exchange in several ways.

The published Intergovernmental Panel on Climate Change (IPCC) scenarios for climate change impacts for southern Africa suggest that Mozambique is highly likely to suffer an increase in the frequency and severity of extreme events (droughts and floods). Mozambique has developed a DRAFT National Adaptation Program of Action (NAPA) – (see Annex 4 Attachment 2). While the draft NAPA[§] focuses on 4 major programs for short to medium term priorities, this Project includes a specific component on the GEF's Strategic Priority of Adaptation (SPA) to both support Mozambique's proposed NAPA and to contribute to the long-term national institutional capacity to:

(a) Identify, characterize and quantify basin/catchments scale hydrology and land cover and land use changes as a baseline for watershed level work in the project catchments.
(b) Create and sustain a national capacity to model the interactive impacts of climate change and land cover land use change and to assess the priority adaptation responses in the project districts.
(c) Contribute to strengthening of a national data base of land cover and land use change dynamics, hydrology, and climate information to support the collaborative activities of national agencies (e.g. National Meteorological Agency, CENACARTA, National Directorate of Water, ARA Zambezi, GPZ) and policy makers.

B. PROJECT DESCRIPTION

1. Lending instrument

The proposed Project would consist of a US$6.2 million GEF grant, supplementing the already effective IDA credit of US$20 million equivalent.

2. Project development objective and key indicators

The overall development objective of the Project is to increase the incomes of smallholder farmers in selected districts of the Zambezi Valley region of central Mozambique. The Global Environment Objectives are to limit land degradation and to improve the ecosystem's resilience towards increasing climate variability and eventual climate change. The Global Environment Objectives are linked to the creation of local environment benefits indicated under Section A.

Key outcome indicators reflecting achievement of the overall Project development objective will be: the creation of social, physical and investment capital as well as associated market and

[§] Based on communication with Eduardo Baixo, MICOA

support systems, which will facilitate an increase in average incomes of farmer groups. Increased incomes would arise from improved yields and reduced losses, increased labor productivity; the diversification of farming systems and improved market linkages, while the achievement of the global environment objective will be measured by: i) an increase of at least 20,000 ha under improved SLM or natural resource management practices in Project area by Project end; ii) a measurable increase in biodiversity or carbon sequestration in targeted Project sites vs. control sites through one or more of the following: (a) reappearance of native species, (b) increased above-ground carbon stocks, (c) reduced soil erosion, (d) reduced incidences of wild fires; iii) at least 3 predictive and basin specific hydrology-land cover-climate change scenarios for land use-land cover change impacts on hydrology under changing rainfall and evapotranspiration regimes; and (iv) increased use of drought-tolerant crops, fodder species and varieties, crop rotations to increase soil organic matter, reduce weeds, and conserve soil moisture by local land users. Progress in achieving environmental targets will be measured by remote sensing and field surveys in Project and control areas. An initial baseline beneficiary survey of approximately 1,000 households, which will include control areas, has been completed in February 2007 .A second impact evaluation survey will be carried out prior to the mid-term review and a final impact survey prior to the completion of the Project. Similarly, remote sensing with appropriate ground truth surveys and a GIS system will be used to establish the baselines for the national agricultural and natural resource and the global environment indicators and outcomes. The Project will maintain both internal and external monitoring systems and conduct mid term and end of the Project evaluations.

3. Project components

The overall Project will be implemented over a seven year period in two phases across five districts within the Zambezi Valley region of Central Mozambique, with GEF activities running parallel to the IDA part over six years. The Project will start operations in the two adjacent districts; Mutarara, Tete Province and Morrumbala, Zambezia Province. Further three districts are proposed for inclusion during the second year of implementation. Preliminary selection of the remaining three districts has identified Mopeia in Zambezia province and Maringue and Chemba in Sofala Province, although these could be modified during the initial stage of implementation. The selection of districts- five over three provinces and under two phases are based on the following; (i) GOM selected the districts in the Project area and suggested working over two phases; (ii) working across provincial boundaries provides a wider variety of socio-economic and natural resource contexts in which to assess the Project approach; (iii) Project activities will be able to benefit from complementarity and potential synergies with other programs, already operating in the selected districts.

Project preparation funds obtained via a GEF PDF-B grant were used to develop quantitative baselines for natural resource endowments (e.g. Land cover e.g. forest, grasslands, crop, bare soil, riparian areas; land cover change dynamics, areas prone to flooding, roads and other infrastructure, settlements). These activities were completed in September 2006.

The Project will be integrated and support Government's decentralization policies and initiatives, thus being district focused. It will achieve its objective of increasing the incomes of smallholder farmers within the Project area through three technical components, with a fourth component dedicated to management, coordination and monitoring (detailed Project description is provided in Annex 4). The three technical components are:

Component 1: Community Group Organization and Local Institutional Strengthening (Total: US$8.6 million; IDA: US$7.6 million; GEF: US$0.9 million; Government: US$0.1

million) comprising: (a) community based organization capacity development; (b) rural financial services, and; (c) district capacity development. Expenditures under this component include consultancy services, training, goods and equipment and a modest amount of civil works.

Activities under this component will lay the basic foundation for the sustainability of Project intervention. The primary objective is to empower and build the social capital of farmer groups, women's groups and other supply chain participants in areas such as marketing, agribusiness development, and district agricultural staff. The empowerment of groups will ensure that district planning process has the participation of key stake holders in the rural community. The vision for the farmer and savings and loans groups is that from small groups of 15-25 individuals, they will grow into apex organizations of community based organizations such as rural producer organizations and village savings groups.

Other inputs will also include training and support services to providers, district level government agencies and financial institutions. The key output will be functioning smallholder farmer groups and Savings and Loans Grants (SLGs) which are able to define their own needs and priorities and participate effectively in district planning process and capacity among local institutions to support such groups.

GEF OP 15 funds will be used to (i) complete the quantitative baseline data set being compiled with PDF-B resources. Some data and maps already exist at various agencies in Mozambique but access to the data is very poor and it is difficult to judge the adequacy and quality of these data layers for the proposed activities; (ii) establish the baselines for aboveground biodiversity using a tested rapid appraisal tool (Plant Functional Attributes), (iii) document and geo-reference indigenous NRM and native biodiversity knowledge, (iv) quantify land cover change dynamics in attempt to identify deforestation and land degradation frontiers and (v) training of local government staff and smallholders community leaders. A participatory approach that involves community members in the baseline surveys will be used to identify the improved crop, soil and water management "best bet" interventions and to facilitate their contribution to local land use planning and future uptake of Project findings

Component 2: Agricultural Production and Marketing Development (Total: US$6.4 million; IDA: US$3.9 million; GEF: US$2.5 million) comprising: (i) agribusiness and market development; (ii) strengthening of extension services; (iii) applied research, training and demonstrations; and (iv) improved agricultural and agroforestry systems. Expenditures under this component include limited civil works, equipment, consultancy services and incremental operating costs.

This component provides technical support and pays for operating costs of activities to promote market driven, broad-based sustainable agricultural development. Through a strengthened extension service, technical assistance would be provided to stakeholders involved in production, marketing and processing of agricultural products. Contracted studies, applied research, specialized training and awareness campaigns would be undertaken in such areas as market opportunities identification and development, crop diversification, sustainable land and water management, market information etc.

The bulk of GEF OP 15 incremental funding will be used to provide technical support to facilitate the adoption of improved management of land and water resources through the adaptation of available "best bet" agroforestry, soil conservation and alternate energy sources and to ensure the priority linkages with global environmental benefits (carbon sequestration, above and below ground native biodiversity conservation). The baseline information from the PDF-B report and

the additional information from Component 1 activities will be used to identify and target priority locations for improved cropping and natural resource management interventions. Special attention will be given to improving and diversifying cropping systems by coupling indigenous knowledge, species, and varieties with current natural resource management. Communities currently practice a range of extractive activities (collection of firewood, honey, and medicinal plants, charcoal burning) in existing forests, which often involve the use of fire and the occurrence of unintended forest fires. The proposed forest management activities will target the development and implementation (see component 3 below) of more sustainable extraction practices and alternative cultivation/production practices for the currently extracted forest products. Agricultural intensification practices that facilitate nutrient cycling (e.g. the use of legume cover and intercrops, small amounts of fertilizer with cash crops), reduced weeds and pests (e.g. via crop rotations), and the use of high value-low volume crops to avoid nutrient exports will be promoted to provide alternatives to the current practice of slash and burn agriculture.

Under the proposed SPA component, the main goal is to strengthen the country's emerging NAPA priority activities (see Annex 4 – Attachment 2), which are targeting the development of early warning systems for climate variability and climate change. The proposed SPA activities will strengthen the capacity of national partners to (i) identify the vulnerability of specific sectors (agriculture, forestry, fisheries, water supply and quality) to drought/flood prediction, erosion/landslide hot spots, infrastructure, re-forestation schemes by region, and (ii) to evaluate the tradeoffs among sectors as a basis for future policy interventions and financial investments.

The specific activities include the calibration and testing of basin and catchment level land cover dynamics-hydrology models (VIC, DHSVM) with participation (observation/measurements) by local communities and stakeholder agencies (National Meteorological Agency, National Directorate for Water, Ministry for Coordination of Environmental Actions (MICOA), National Institute for Disaster Management (INGC). Both VIC and DHVSM handle dynamic land use-land cover changes and have already been tested at basin to field scales in other regions (e.g. the Amazon and Mekong basins). In addition, a suite of crop models will be evaluated for use in the study of impacts of climate variability and climate change on local crop productivity. The models will be used to simulate the impact of improved crop rotations as a mitigation strategy to changing rainfall (see Annex 4 – Part 2 for details of the proposed activities and models).

The key inputs under this component will be education campaigns for rural stakeholders, demonstrations, farmer training, and applied research on marketing, active participation of private sector in agribusiness, and agroforestry techniques and natural resources management aspects. The key output will be groups actively engaged in the validation and adoption of improved technologies and entering into close links with other non-agricultural supply chain participants.

Component 3: Community Agricultural and Environmental Investment Fund (Total: US$8.7 million; IDA: US$5.9 million; GEF: US$1.9 million; Beneficiaries: US$0.9 million) comprising the following windows: (a) agriculturally related infrastructure; (b) small-scale agricultural investment; and (c) sustainable land management. Expenditures under this component include civil works, consultancy services, equipment, and materials for infrastructure, agriculture and agribusiness investments.

The Fund will operate under a demand driven approach linked with the participatory district planning process and would provide resources, including consultant's services, necessary to help finance identified investment priorities in agriculturally related infrastructure, small scale investment and improved land management. There are no formal financial institutions operating

in the Project area, and only a few informal financial intermediaries, creating high demand for additional financial resources to be obtained.

GEF OP 15 investments will target improved natural resources management that result in verifiable global environmental benefits. These grants will be based on community demands guided by priority criteria to ensure global environmental benefits. Examples of "best bet" practices that are not only attractive to communities but also fulfill priority global benefit criteria include (i) in-situ conservation in biodiverse home gardens of important native fruit, medicinal, forage plant species identified by local communities, (ii) protection and/or restoration of degraded community managed areas such wetlands, and riparian and buffer zones and use rights for extractive products, (iii) improved, fireless honey collection methods to reduce wildfires from traditional honey collection practices, and (iv) conservation of habitats identified as important sources of medicinal plants.

Component 4: Project Management, Coordination and Monitoring and Evaluation (Total: US$3.1 million; IDA: US$2.0 million; GEF: US$0.9 million; Government: US$0.2 million). Expenditures include consultancy and training, goods and equipment as well as operating costs.

This component will include technical supervision and coordination, work plan and financial reporting functions at district, provincial and national levels. The component will be congruent with the government's decentralization initiatives and will utilize existing public sector arrangements as far as possible. Additionally, the existing inter-ministerial national and provincial steering committees and district consultative councils established under GOM's Decentralization Law will be utilized for the Project. In addition, two key technical staff will be recruited; a District Facilitator for each district and a Field Management Advisor (see Annex 6) who will work across all five districts. Funds will be provided for intensive monitoring of the Project (see Section C2).

The remote sensing quantitative baselines developed via the GEF PDF-B grant will serve as objective reference points to evaluate progress over the life of the Project and beyond. The SPA modeling component will provide an interactive predictive and analytical framework to assess current and emerging resource management issues during and beyond the lifetime of the Project. GEF funds will be used to recruit a Senior Environmental Specialist (ES) who will be based in the project area together with the Field Management Adviser and District Technical Facilitators (DTFs) with whom he will interact closely. GEF funds will also be used to equip the project and government technical specialists who will work across all five districts with vehicles, motor cycles, GPS units etc. including the cost associated with operating them.

Additionally, this component will provide resources necessary to (i) design and implement a Remote Sensing and Geographical Information System (GIS) Database to monitor local and environmental indicators, (ii) design and implement a community-based monitoring system linked to the GIS database and (iii) design and implement a communication strategies.

4. Lessons learned and reflected in Project design

Key lessons applied in Project design include:

Determinants of Rural Poverty in Mozambique*:* Analysis of the determinants of rural poverty in Mozambique (undertaken in the context of the World Bank's *Agricultural Development Strategy – Promoting Smallholder Agricultural Growth*) suggests that agricultural growth, and in

particular smallholder growth, is the main determinant of poverty reduction in Mozambique. This has been taken into account in Project design by making smallholder producers and their supply chains the principal targeted beneficiaries of the Project. Roads and transportation for agricultural products are also among the most important factors determining a rural household's poverty level. For example, access to transportation for agricultural production increases rural consumption by 30%. In addition, extension, the increased access to and use of appropriate fertilizers, and non-farm employment opportunities strongly improve rural livelihoods.

Alignment with Government structures and systems: Recent Experience with the Bank-supported DPFP and in the IFAD-support Agricultural Markets Support Project (PAMA) has shown that relying on government structures and systems might add additional challenges to the efficiency of Project implementation. A lesson learnt is that strong collaboration with and support and advice to government staff at both provincial and district level is critical for successful Project implementation. The Project has incorporated these lessons in its design (see also section C on implementation arrangements).

Capacity Building and Technical Assistance to Beneficiaries: Based on other donor operations in Mozambique (including PAMA, DANIDA's Agricultural Sector Program, and African Development Bank (ADB)-supported small-scale irrigation Project,) point to the need for extensive capacity-building and technical assistance to beneficiaries. Even in those interventions that were intended to be more or less market-led, such as the Private Sector Development component of DANIDA's Program (operative in Tete and Manica province), considerable and pro-active Project support to beneficiaries in the identification, formulation and supervision of sub-Projects was required to get activities off the ground The proposed Project therefore has a strong emphasis on capacity-building and technical assistance.

Group Promotion and Mobilization: Experience of organizations active in Mozambique such as CARE, UNAC, World Vision International (WVI) and CLUSA points to the need for farmers groups and/or associations to deliver clear economic benefits to their members. Group formation that is not demand-driven or not linked to demand-led technical assistance in production, marketing, or finance-related activities is therefore likely to lead to demoralization and un-sustainability. The proposed Project intends to build on these lessons by building in strong links between the groups formed (under component 1) and the services and investment support provided under component 2 and 3.

Cost-sharing of investment by smallholders: Experience from WVI and GTZ indicates that smallholders are both willing and able to contribute a significant proportion of the cost required for small productive investments (e.g. small-scale irrigation) and to re-pay the financed portion of the investment, so as to permit other group members to make similar proposals.

Importance of tangible benefits in SLM/CBNRM Projects: Matakala and Mushove (2001) and UMC (2006) indicate that in CBNRM and SLM Projects in Mozambique communities will become more involved if they perceive the Project as providing them with tangible benefits; Projects which generate only intangible benefits such as soil and water conservation tend to draw less interest amongst communities. The Project's blended design (addressing poverty and global environment issues in an integrated manner) and focus on increasing smallholders' income respond to this lesson. Awareness and education campaigns will convey the Project's approach to Project beneficiaries.

People/land management focus: Lessons from the GEF Land Degradation Linkage Study (2001)[**] indicate that (i) Projects with a people/land management focus tend to address land degradation issues more directly. The Project employs a demand-driven approach, including in the land use planning process under component 1; and (ii) the most effective linkage Projects appear to be those where land degradation is built in as an initial component of the problem and the solution. The smallholders Project's objective under the GEF increment is focused on reducing land degradation through SLM, land use planning and related activities.

5. Alternatives considered and reasons for rejection

Implementing agency: There were two main reasons for selecting the National Directorate for Promotion of Rural Development (DNPDR) of the Ministry of Planning and Development (MPD) as an alternative to the Ministry of Agriculture (MINAG). These are: (i) the Project emphasis on group promotion and mobilization, and (ii) the strong links with the district-level decentralization administration.

Need for investment in infrastructure: Given the current relatively low absorptive capacity of districts in the Project area, and the need to avoid unnecessary duplication with DPFP Project, which already finances rural roads, one alternative was to eliminate investment in infrastructure from the Project. The reason for rejecting this alternative was that the community planning process supported by DPFP currently does not specifically address agricultural issues, and lacks the mechanisms to ensure the identification and mainstreaming of the agricultural infrastructural needs of smallholders into the local planning process. The amount of funding available through the DPFP is also very limited, amounting to an average of only US$302,000 per district over the four and a half year implementation period and is not expected to satisfy the demand. for infrastructure. Nevertheless, Project resources would only be used for infrastructure where demand was in excess of DPFP's capacity to respond.

Use of a Project Credit Mechanism: As the Project area currently lacks the presence of formal credit institutions, one alternative for facilitating the flow of investment funds was through a line of credit under the Project. This alternative was eventually rejected, as establishing a credit mechanism or institution purely on the basis of time-bound Credit funds would not be a sustainable solution and there was adequate liquidity in the banking system. A community-based fund is proposed for producer groups, with attention to developing improved access to rural financial services to provide longer term sustainability. Savings and loan groups supported by the Project will not receive funds, as global experience has shown that the performance of savings-based groups often deteriorates when external funds are provided.

Inclusion of adaptation activities: There was some concern to including climate change adaptation activities as they may be construed as contributing to the complexity of Project implementation. However, it was recognized, though, that the impacts of climatic events such as droughts and floods are crosscutting and diverse, with severe consequences for agriculture and natural vegetation besides the indirect effects on health and economy. Any changes in land use and agricultural practices should, therefore, take into account climate trends in order to reduce the vulnerability towards increased weather variability. While the effect of climate change in other

[**] The study aims to identify the results and initial impact of the land degradation component of those linkage Projects which link biodiversity, international waters and climate change with land degradation. Lessons learned from this review lead to a set of recommendations on how land degradation issues should be addressed in subsequent GEF activities.

countries in the region is still uncertain, a number of regional climate models predict that the intensity and frequency of both droughts and floods (from cyclonic events) in Mozambique in general and the central Zambezi Valley in particular will increase in the medium to long term.

C. IMPLEMENTATION

1. Institutional and implementation arrangements

Overall responsibility for implementation will rest with the National Directorate for the Promotion of Rural Development (DNPDR) of the Ministry of Planning and Development (MPD). DNPDR has been responsible for leading and preparing the Project on behalf of the Government of Mozambique. The DNPDR was selected because agriculture, environmental aspects, group mobilization and decentralization issues are all central to Project implementation. Additionally, MPD has the responsibility for integrated socio-economic development. In addition, the Project has been designed to support the decentralization strategy of the GOM, which is implemented through the MPD, under the Provisions of the Decentralization Law established in 2003 (details in Annex 1).

District: The focus of all activities will be at the district. To coordinate the activities at the district, two District Facilitators (DF) have been recruited respectively for the two First Phase districts and three more will be recruited for the Second Phase districts. The DF will collaborate closely with district government and with the District Administrator. The DF would play a catalytic role in ensuring technical departments work for the needs of smallholders and provided technical assistance when required. This includes development of annual Project work plans, budgets and reports. The DF will be supported by government recruited accounting and procurement officers to supplement existing local capacity. The operation of the Community Agricultural and Environmental Investment Fund (CAEIF) will be largely a district responsibility, and would be integrated into the decentralization process, including the district consultative councils, to the extent it relates to the provision of public goods.

Provincial: At the Province, coordination is required for the services provided by public and private sector that are not present in districts. In addition, banking facilities are not available in the district. A key implementation role based in one of the provincial capitals will be that of the Field Management Advisor (FMA), supported by an associated pool of short and medium term specialist consultants. The FMA will be supervised by the National Director of DNPDR, and work in close collaboration with the representatives department of DNPDR in the Provinces and District Facilitators. The FMA will have the responsibility for ensuring implementation quality and coordination between districts and provinces. Together with the consultant specialists, he/she will provide training, methodological support, reference materials and guidance to government staff as well as for contracted service providers.

The Provincial Representative of DNPDR would act as Provincial Project Coordinator and would supervise the work of the District Facilitators in coordination with the District Administrators. The DNPDR provincial team will be responsible for incorporating provincial level activities into aggregated district plans, reports and budgets and overseeing the timely flow of funds from national to provincial level.

National: Given the central role of the district in Project implementation, tasks and roles at the national level will be largely contract supervision and oversight. At the national level an existing

Inter-Ministerial Steering Committee,[††] will be expanded to include representatives of other relevant ministries. The key role of the steering committee is to ensure that overall strategic direction of the Project is appropriate, as well as to approve Project work plans and budgets. The National Director of DNPDR is for the coordination of Project activities and will act as Secretary to the steering committee on matters related to the Project. To assist him in preparing the necessary progress, financial and procurement reports three full time staff will be provided, namely a senior Financial Management Specialist and Procurement specialist (consultants for up to 2 years) supported by a accountant, and procurement officer The latter staff will be provided by the Government.

Implementation Status: The IDA credit became effective on December 28, 2006. The following is a list of administrative and project thematic steps that have been taken so far: a) central and district level recruitments which were mandatory prior to effectiveness (District Facilitators, Field Management Adviser, Procurement Specialist, Financial Management Specialist, local procurement and accounting officers), b) opening of two Designated Accounts, c) establishment of DNPDR as an SISTAFE operating unit (including provision of training and equipment), d) preparation and endorsement by the Ministry of Finance of the revised work plan and cash flow for FY 2007, e) materialization of the first advance from CUT (Treasury Single Account) in early May 2007, f) establishment of the project TA in their respective districts which are already involved in the preparation of the respective plans for 2008, g) finalization of the bidding documents for contracting the CBO service provider, and h) discussion of the project in two sessions of the Central Level Supervision Committee that encompasses all ministries relevant to the project range of activities. The official launch is now scheduled to take place on June 28, 2007.

As planned, the project is being managed from within DNPDR, which has used the first five months to understand the project in practical terms and to get ready to respond to the project implementation requirements. Although project implementation has been facing some delays (some due to reasons beyond DNPDR), they have been dealing reasonably well with the difficulties arising from complexity and novelty issues stemming from the implementation of the project. Thus, the overall project implementation was rated *Moderately* Satisfactory in the last ISR.

2. Monitoring and evaluation of outcomes/results

Given the strong complementarities between the GEF and IDA-funded activities, monitoring and evaluation is being discussed only at the aggregate level (without distinction of source of funds).

Overall Project monitoring will occur at three levels. **Internal monitoring** will form part of Project implementation activities – primarily management information system. At the district, this will be the responsibility of the District Facilitator, who will ensure the collection and reporting of data on inputs and outputs. Data will derive from quarterly expenditure and work data supplied by district Project participants - public, private and non governmental - as well as from CAEIF (Community Agricultural and Environmental Investment Fund) disbursement records and verification visits to funded sub-Projects. The work of the DF will be supported on a Project-wide

[††] The Inter-Ministerial Steering Committee currently includes senior officials from MPD, Finance, Agriculture, Public Works and Housing and State Administration.

basis by the Field Management Advisor (FMA) who will monitor technical performance indicators and completion of activities and outcomes against work plans, particularly for service providers.

Process monitoring will be undertaken by an independent contractor reporting directly to the Inter-Ministerial Steering Committee. Their work will include not only reviewing and analyzing the internal monitoring data generated within the Project, but also assessing the implementation process itself and the manner in which the overall Project objectives are being met. In this context, the Project's success in both the sustainable mobilization of a traditionally marginalized population and the creation of an enhanced district level capacity to support such groups must be a central component. In addition, the external monitoring system should attempt to assess the extent to which sub-Projects put forward by participating groups, and eventually funded, actually reflect their priorities.

In order to generate and utilize this data, the external process monitoring will be expected to maintain a database containing annual sample surveys covering the activities, income levels and perceptions of beneficiary groups and control populations. In this work they will draw heavily on the baseline study was completed in February 2007 and a second major survey to be conducted prior to the mid-term evaluation.

Impact Evaluation will be carried out by an independent institution for both the IDA and GEF portions combined. There will be two surveys – one at mid term and at the end of Project. These will be based on the baseline survey completed in February 2007 and are fully budgeted.

Remote Sensing (RS) and Geographic Information System (GIS) will be used by the Project for capturing baseline and diagnostic information on natural resource endowments, villages and communities, and infrastructure and establishing baselines for Project indicators by time of Project effectiveness. RS and GIS information will also be utilized, to monitor and evaluate the changes resulting from Project interventions. Finally, information collected will feed into the land use planning process as a decision making tool.

Partnerships with national institutes, such as CENACARTA and the National Meteorology Institute, will provide the Project with information on agriculture yield forecast, land cover maps, forest cover monitoring and evaluation, annual forest and woodland burning and agriculture frontier expansion, mapping of soils and hydrology of an area and providing an indication of areas that are vulnerable to droughts and flooding that need to be avoided or rehabilitated. Participation by faculty and graduate students from *Eduardo Mondlane* University will be obtained for documenting indigenous natural resource knowledge and for adapting indigenous knowledge with current research in demonstration and on-farm trials.

Monitoring and Evaluation will also be enhanced at the local level - the Project will support community-based M&E as a tool for building the capacity of associations to implement their plans and monitor their impact. M&E will build on accepted traditional methods of surveillance which exist at the community level, and involve associations in surveillance activities and reporting of abuses of natural resources (such as illegal hunting and logging and uncontrolled wild and anthropogenic fires) to the proper local authorities. Ecological monitoring would initially be carried out by extension agents with the view of transferring such responsibilities to associations as their capacities are developed.

Regarding areas of sustainable land management (SLM), the Project will seek coordination and complementarities with work of TerrAfrica and the SIP/SLM on M&E, which will result in

greater utilization of SLM M&E components of the Project and SLM M&E portfolio of activities by various partners.

3. Sustainability and replicability

The sustainability of the Project rests upon several key factors, which were discussed in the project document for the IDA portion in detail. To summarize, they included: (i) the Project design places major emphasis on institutional and process strengthening, (ii) the Project design responds fully to the current and expanding decentralization policies of GOM, and (iii) the Project design does not include a Project implementation unit, relying instead on existing government structures for management of the Project, including flow of funds.

Specifically in the case of GEF funds, they will be used to ensure that increasing productivity of land resources results in objectively verifiable local ecosystem services AND global environmental benefits. This will, in turn, provide a long terms basis for vulnerability reduction among the poor and strengthen their ability to focus beyond immediate subsistence needs. It would, furthermore, preserve the natural potential of land and protect the integrity of the ecosystem. The geo-referenced, Project area natural resource baselines and community-based land use planning will be assembled in standardized and accessible databases located at multiple stakeholder agencies so that they serve all future development programs. Project staff, community leaders and members, students from the local university that will participate in baseline surveys and model calibration will contribute to enhanced local capacity to continue to apply and refine Project methods and extend results and lessons learned to other areas. Change detection analysis will allow the quantification of Project impacts *vis a vis* rates of deforestation and incidences of burning.

Furthermore, the sustainability of Project support to the adoption of new technologies and investments will be greatly increased by expanded, Project facilitated access of smallholders and agribusiness participants to rural financial services. Given the limited GOM capacity to provide public funds for such activities, the presence of a private sector finance capacity is seen as critical for investment and innovation beyond the implementation period.

The combined potential for replication of the Project is considered to be high. Due to the innovative approach in which smallholder development is closely linked to current decentralization policies and the integration of management within existing structures, the Project encompasses only a small number of districts. Successful implementation, both in terms of poverty reduction outcomes as well as the mainstreaming of smallholder support processes, would provide a strong argument for replication of the Project into other districts within the Zambezi Valley region and, eventually, nationally. A replication strategy and action plan will be prepared before end of Project. The plan would identify the main lessons learned from the first years of implementation, assess the progress of the national decentralization process and capacity of additional districts to carry out Project activities, as well as resources (outside National allocation to districts) required to carry out these activities and potential sources.

4. Critical risks and possible controversial aspects

As in the case of all innovative Project designs, a number of significant risks are present. These risks are discussed in more detail in the relevant working papers and are summarized below:

RISKS	RISK MITIGATION MEASURES	RISK RATING WITH

		MITIGATION
To Project development objective		
1. Reversal or weakening of GOM decentralization policies reduces capacity of districts to implement and sustain Project activities	Support to decentralization by Project using existing mechanisms established by Law and empowering communities to participate actively in district planning process.	M
2. Institutional capacity at all levels of GOM and among service providers insufficient to adequately manage tasks	Substantial investment of Project resources in institutional strengthening and staff training	S
3. Inability to identify and contract suitable service providers and technical advisors to provide high quality support	Promote partnership between larger, more experienced organizations and local institutions in bidding on contracts	M
4. Severe drought or flooding in the Project area prevents gains in output and income	Links to National Institute for Disaster Management capacity of early monitoring systems in the region and identify "high risk" zones and introduce adaptation measures	S
5. Inadequate collaboration and coordination between different Project stakeholders	Provision of two key Project positions; District Facilitator and Field Management Advisor	N
6. Weak provincial MICOA institutions and non-existent institutions at district level	Recruiting through the project of Senior Environmental Specialist and two medium level CBNRM Animators	S
To component results		
1. As funds are routed through the Treasury timely availability of funds to districts and communities may be a constraint.	Reporting structures in place with strengthened capacity of financial management staff at national, provincial and district levels. Government commitment to ensure resources provided on a timely basis to the districts and communities.	M
2. HIV/AIDs impacting adversely on agriculture head of households and on extension staff.	Awareness campaigns, distribution of condoms and links with on-going programs. Use of traditional medicines for treatment (e.g. African potato).	S
3. Poor response to group promotion efforts, limiting participation by smallholders	Allocation of significant resources to this activity and use of service provider with appropriate experience.	M
4. Inability to achieve sustainable increase in rural financial service access	Contract specialized financial system service provider and promote linkages to formal financial sector.	M
5. Elite capture of groups and thus majority of Project benefits	Focus on full community participation in creation of groups and transparency in group activities.	M

6. District extension service too weak to effectively support groups and entrepreneurs	Provision of resources to DDA for expansion of both subject matter specialists and field staff. Strengthening of DDA.	N
7. Inability to establish improved a agribusiness and market linkages	Strong focus on market development for beneficiary groups and local entrepreneurs.	N
8. District staff unable to ensure effective and timely response to sub-Project proposals	Creation of new district posts, use of simplified procurement procedures, training of staff and contracting of support agents.	M
9. Lack of local capacity to procure goods for small scale sub-Projects, resulting in lengthy delays in implementation of sub-Projects	Support to local traders in responding to requests for supply of goods.	N
10. Lack of group and small entrepreneur interest in making investments under the Fund	Awareness and promotion campaign among participating groups	N
11. Poor financial reporting delays funds transfers to provinces and districts	Strengthening of financial management capacity and introduction of transparent systems at all levels	S
Overall risk rating		**S**

The overall 'substantial' risk rating arises not because of individual risk ratings in the high or substantial category, but due to the number of risks faced by the Project in different areas. Considerable effort has been made to keep the Project structure as simple and flexible as possible, but the inclusion of districts (in response to strong government wishes) in three different provinces increases management complexity.

5. Loan/credit conditions and covenants

Additional conditions of Effectiveness
n/a

Special Covenants:

(a) ensure that the Project is implemented in accordance with the recommendations of the ESMF; and (ii) carry out a screening procedure to determine if a resettlement plan is required under any sub-Project under Component 3 of the Project;

(b) ensure the recruitment of two agricultural extension staff per administrative post, in the Second Phase districts by January 31, 2008; and

(c) Withdrawal Condition for Component 3: (i) Recipient shall have ensured that the following staff have been recruited in any province or district and are in place: one accountant per Province; one accountant and one procurement officer per District; and one supervisory procurement officer; and (ii) Project Beneficiary shall have concluded a MoU referred to in paragraph 6 of Section I of this Schedule.

D. APPRAISAL SUMMARY

1. Economic and financial analyses

Financial Analysis. Project financial and economic performances were estimated taking into account all Project costs (both IDA and GEF) except costs with long-term benefits which are difficult to evaluate at this stage. Such costs correspond to the following activities: (i) district capacity building; (ii) Project management, coordination, monitoring & evaluation and (iii) 60% of component 3: Community agricultural and environmental investment fund (this, to take into account investments in rural road rehabilitation and environmental public goods). The Project financial rate of return is estimated at 13% and financial net present value at US$0.5 million. However, this is probably an underestimate as the analysis is based on several conservative assumptions and does not take into account benefits generated within the value chain (increased farm-gate prices, increased income of traders and agribusinesses, etc.).

Economic Analysis. The Project economic rate of return is estimated at 15% and net present value US$1.6 million taking into account the proportion of Project costs justified in the financial analysis. If all Project costs were to be included in the economic analysis, the economic rate of return would still be of 8%.

Sensitivity Analysis. A sensitivity analysis was conducted using switching values. The Project is not particularly sensitive to small increases in costs or decreases in benefits (by 10%). The Project is relatively more sensitive to declines in benefits than increases in costs. A 30% increase in costs would yield an ERR of 10%, while a 30% reduction in benefits would cause to drop the ERR to 8%. The ERR is not very sensitive to delays in Project investments such as large investments of public good nature, e.g. feeder roads rehabilitation. A two year delay in accrual of Project benefits would yield an ERR of 10%.

Fiscal Impact. The GOM's budget is not expected to sustain investment made by the beneficiaries. A large part of the Project costs would be within sub-Projects implemented and co-financed by private beneficiaries. The main budget impacts are related to the maintenance of rehabilitated feeder and district roads after the Project completion, which would cost about US$175,300 per year, and the continuation of the extension services, which would cost approximately US$100,000 per year.

2. Technical

Local circumstances and smallholder needs as well as international best practice and lessons learned have been incorporated in the technical design of the Project. A number of such best practices and lessons learned are:

Linking community investment funds with the provision of production and market-related advice: International practice as well as experiences in Mozambique (e.g. by DANIDA in Tete and Manica) have shown that in relatively under-developed business environments like the proposed Project area, with little or no presence of formal Business Development Services (BDS) providers, providing finance through community investment funds will have to be accompanied by pro-active provision of assistance in production and/or marketing issues. Without such assistance, the fund will run the risk of being either under-utilized (thereby failing to reach its objective of injecting the much needed financial resources into the region), or being "misused"

for purposes that do are not viable or sustainable from a business point of view. The Project has incorporated this lesson in the design by building in strong links between the groups formed under Component 1, the assistance provided under Component 2, and the CAEIF funds of Component 3.

Working with groups to overcome production- and marketing-related constraints: While donors often consider working through groups necessary if only for efficiency reasons, there is also a certain degree of consensus that groups can be effective and indeed sustainable in carrying out production- and marketing-related activities, as long the group serves a clear and tangible economic purpose for each of its individual members. Groups should be based on a clear demand and only engage in such demand-driven activities that cannot be carried out by its members individually. Without these conditions, groups are unlikely to be sustainable, as both international and Mozambican experiences have shown. These lessons learned have been incorporated in the proposed Project approach and the abidance by these lessons will be monitored during Project implementation, particularly with respect to the interventions under Component 1.

Value Chain approach: There is now a strong international consensus on the need to take into account all actors and activities along the value chain, when designing and implementing smallholder or business development interventions. These lessons have also been learned in the Mozambican context and are now being applied in related Projects such as EMPRENDA or PAMA. They have been incorporated into the Project design, in particular in the interventions proposed under Component 2.

Rural finance through Village Savings and Loans (VSL) groups: International experience shows that in environments such as the proposed Project area, where no commercial banks or micro-finance institutions are currently operating, the creation of Village Savings and Loans (VSL) groups is an effective way to provide basic financial services to people living in remote rural communities. It may be possible to federate such groups to enable linkage to the formal financial institution that the Project expects to attract to the area. Economies of scale exist on the following three levels: (i) the accumulation of capital, that cannot be achieved by individual members alone, (ii) the specialized technical assistance needed for the group, which would be too costly to provide on an individual basis, and (iii) the attractiveness of groups (compared to individuals), in terms of lower transaction costs for commercial banks or formal micro-credit institutions.

3. Fiduciary

The Project will be implemented at three levels; national, provincial, and district (see Annex 6). At the national level, implementation tasks will largely be concerned with financial management and central oversight of the whole Project (i.e. both IDA and GEF-financed activities). The Project has also been designed to closely complement the activities of the ongoing World Bank-financed Decentralized Planning and Finance Project (DPFP), which is also being implemented through the MPD.

Funds will flow from the GEF grant to a Designated Accounts in the Ministry of Finance to finance activities under relevant components, and to a Designated Account at DNPDR to finance foreign expenditures. Activities to be financed using Project funds will be indicated in the annual plans drawn up in accordance with existing financial and accounting regulations. The consolidated work plans will be submitted to the Ministry of Finance for approval. Based on these approved work plans, the MOF will advance to the Government Treasury Account, from the Special Accounts, an amount equal to the forecasted local currency expenditures for a three month period. All other funds advanced by GEF to the Designated Account A will remain in the

MOF Designated Account. Once the work plans (and other relevant documentation e.g. accountability for grants previously disbursed) are reviewed and approved by the DNPDR, a request will be sent to the Treasury Department for funds to be released. The Treasury Department will then arrange a transfer of funds on the Treasury in favor of the DNPDR at the center, or to the relevant Provincial Treasury Account. Each provincial DPPF will then request for a transfer to Project bank accounts for activities at the province and district respectively.

The provinces and districts will receive an initial advance after meeting the disbursement conditions, and subsequent replenishments upon presentation of adequate documentation of expenditures incurred. Due to the decentralized nature of fund flows, an adequate financial management system is required to ensure the reports on expenditures to be incurred at provincial and district levels are prepared and submitted to the DNPDR in timely manner. A specific training will be provided to the accountants of the two First Phase districts. Until a reliable FM system is in place, funding of district level activities will be done through specific expenditure advances closely controlled by DNPDR

Payments in foreign currency will be made by DNPDR using the USD funds in the Designated Account B to be opened and maintained by them. Activities at the community, district and provincial level to be financed using foreign currency will be included in the annual plans referred to above, and submitted to the DNPDR for consolidation. The option of disbursing the funds through direct payments from the GEF grant will only be made for expenditures above the threshold specified in the Disbursement Letter. Withdrawal applications for such payments will be accompanied by relevant supporting documents such as copies of the contract, contractors' invoices and appropriate certifications.

The financial transactions relating to this operation would be recorded and monitored using a separate management and accounting system. Actions outlined in the Financial Management Action Plan in Annex 7 will be undertaken by the Project to further strengthen the financial management system.

4. Social

In the districts along Zambezi Valley poverty is insidious, commercial networks are almost non-existent, agriculture is primarily rain-fed and smallholder production mostly used for subsistence. The districts targeted by this Project are all economically isolated with almost no formal commercial or financial services. Significant portions of most of the resident population's recent history have involved living elsewhere either as refugees or as internally displaced communities. Tendencies of social fragmentation, mistrust and isolation of individuals or small groups are in constant tension with development dynamics requiring inclusion, collaboration, cohesion, sharing and mutual benefit. Although some traditional mutual assistance practices persist, and more recent group activities have been promoted by various non-government organizations in this area, longer term impacts are not evident, and it still remains a significant challenge to establish longer term stable group organizations with individual and common benefits. Rural women and young people are still very much marginalized from the public sphere in these areas. With the high HIV/AIDS prevalence in this region, their full integration into development activities is essential.

The Project is explicitly a demand responsive initiative. The key areas to be closely monitored include: (a) Community attitudes at the end of support period, (b) There is also a risk that the Project will not be able to adequately stimulate the emergence of entrepreneurs. (c) People benefiting most from the Project may be the more influential and better motivated male members of farmer and other self-help groups if careful facilitation does not promote full group

participation in decision-making processes. (d) Illiterate and poor smallholders living in remoter areas may not be able to take advantage of the processes involved in obtaining access to Project benefits, unless specific mechanisms are used to ensure the Project is as inclusive as possible.

Using the demand responsive approach clear consistent communication about opportunities and eligibility to participate in the Project will be promoted so that messages do not contradict or undermine those of other Projects in the same area. Communities that are confused take longer to react, trust levels drop and time to redress the situation is required. Adequate preparation to launch this approach is essential. Presently communities are mostly reactive and unaware of their civil rights. It will take some time to establish group confidence to take up their responsibilities. The approach to legalizing farmers groups and securing their use rights to basic assets such as land is one way to improve group performance. It is possible that during the six years of implementation many of the groups will not be legalized as procedures are very slow and complex[‡‡]. This may limit the impact of their acquisition of social and economic capital during the Project period.

The main social benefits of the Project are likely to be added knowledge, skills and experience of smallholders, including women and youth, that strengthen the organizational cohesion, leadership and member motivation of their groups and associations. Their increased institutional and leverage capacity is expected to assist them to manage and control their access to rural finance, agribusiness services and government managed resources, significantly improving their development opportunities. These and the potential negative impacts discussed above will be monitored through community level participatory review mechanisms that promote the critical review of key indicators and progress of the groups involved in the Project. Indicators will also be quantitatively measured in pre-mid-term and pre-Project completion household surveys.

Potential involuntary displacements of people, or land acquisitions, as a result of Project investments will be handled through a Resettlement Policy Framework (RPF).

5. Environment

Potential environmental concerns resulting from Project activities are those associated with (i) rehabilitation and maintenance of roads, (ii) irrigation systems, (iii) agricultural development and commercialization which would lead to increased production volumes both through extensive and intensive farming practices and (iv) increased value added processing and marketing capacity of agribusinesses involved in the commodity supply chains. Anticipated sub-Projects would include, for example, investments in: farm power, farm equipment and implements, small tributary reservoirs and irrigation schemes and facilities, integrated pest management, post-harvest and handling equipment and means, technology and marketing at agro-enterprise level; and handling, transportation, storage and processing assets improvements. The Project would not finance any major infrastructure, and sub-Projects are unlikely to involve the acquisition of land.

The road rehabilitation and maintenance works are expected to have minor, manageable negative environmental impact since the works will follow the existing alignments. Small-scale agriculture and commercial farming projects may involve strengthening existing practices, introducing new and perhaps exotic crops, or crop diversification or intensification with new farming systems. They may also assist people move from shifting to settled agriculture, from subsistence to cash cropping, and/or from labor-intensive to mechanized farming. The Project would not directly

[‡‡] The Mozambican government is presently adapting the Law on Associations (Law nº 8/91) to make the legalization process for agricultural associations more simple.

finance purchases of fertilizer and chemicals. Agro-businesses and farmers are able, or course, to purchase them from input suppliers. Measures to avoid or minimize adverse environmental effects from Project investments, including changes to agricultural practices, is included in the Environmental and Social Management Framework (ESMF).

6. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[]
Natural Habitats (OP/BP 4.04)	[]	[X]
Pest Management (OP 4.09)	[X]	[]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[]	[X]
Involuntary Resettlement (OP/BP 4.12)	[X]	[]
Indigenous Peoples (OP/BP 4.10)	[]	[X]
Forests (OP/BP 4.36)	[]	[X]
Safety of Dams (OP/BP 4.37)	[]	[X]
Projects in Disputed Areas (OP/BP 7.60)*	[]	[X]
Projects on International Waterways (OP/BP 7.50)	[X]	[]

This is an EA Category "B" Project. Actual Project investments will be demand-driven and will only be determined during implementation. Thus, an Environmental and Social Management Framework (ESMF) has been prepared to address the substantive requirements of OP4.01 and OP4.09, the latter primarily for livestock hygiene facilities and weed control around Project-funded facilities. The ESMF also contains a screening procedure for determining if a resettlement plan is required for any particular investment according to the Resettlement Policy Framework (RPF) that has been prepared according to the requirements of OP4.12. Both the ESMF and RPF have been disclosed in the Project districts and provinces, and sent to the Bank's Info Shop.

OP7.5 (Projects on International Waterways) is triggered as there may be water withdrawals for small irrigation Projects implemented in the Zambezi River basin, including the Shire River – a major tributary of the Zambezi River. The Republic of Mozambique has sent notifications to all riparians providing May 15, 2006 as deadline to provide approval/no-objection.

7. Policy exceptions and readiness

There are no policy exceptions under the Project.

The Bank has appraised the draft Operational Manual, procurement plan the financial management system and the staffing plan. The ESMF and the RPF have been disclosed. The disbursement schedule reflects the need for significant capacity building in the initial years of the Project, and has been adjusted to take into account the delay in availability of GEF funds.

* *By supporting the Project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*

Annex 1: Country and Sector or Program Background

1. Country Issues

Mozambique has witnessed impressive growth since the 1992 peace agreement that officially ended the sixteen-year civil war which had left the country with the lowest GDP per capita in the world. On average, the economy grew by 8% annually between 1994 and 2004. Peace and democracy, post-war resettlement in the rural areas, the achievement of macro-economic stability, and the transformation of a centrally-planned state-owned economy into a market-oriented one, have all contributed to this growth.

Economic growth has been accompanied by rapid poverty reduction: between 1996 and 2002, the national poverty index fell from 70% to 54%. Despite this progress, Mozambique remains one of the world's poorest countries and out of its estimated population of 18.3 million, almost 10 million are still poor. The majority of the poor (and of the population at large) live in the rural areas and are working in agriculture. Isolation caused by a lack of basic infrastructure (including roads and markets), a lack of institutional support and low agricultural productivity characterize the poor in Mozambique and are important obstacles in their attempts to escape poverty. Until recently, HIV/AIDS infection rates were relatively low compared to neighboring countries, but they are now rising rapidly – the latest estimates put the national average infection rate at 16.2% - and are expected to significantly affect economic growth and poverty reduction in the coming years.

The Zambezi Valley forms part of Mozambique's Central Region, one of the hardest hit areas during the civil war. Most infrastructure in the region was heavily damaged or destroyed and many communities were effectively abandoned during the conflict. Some areas, notably those close to reconstructed primary and secondary roads and with higher precipitation levels, have grown relatively rapidly over the last decade. Others, however, have lagged behind, hindered by poor market linkages, limited access to new technologies, lack of investment capital and variable rainfall. With a prevalence of 20.4%, HIV/AIDS has so far affected Mozambique's Central Region also much more than the rest of the country.

2. Agriculture, Rural Development and Environmental Issues

Mozambique has significant agricultural potential, with an estimated 36 million hectares of arable land, of which only 10% is presently in productive use. The wide diversity of soil types and the diverse climatic conditions in the country are suitable for a large variety of crops. Even though the share of agricultural in its national GDP is gradually decreasing (from 34% in 1996 to 21% in 2003), Mozambique is still a predominantly agricultural society. Some 80% of the economically active population is currently employed in the agriculture, forestry, or fishing sector.

A quarter of the Mozambican population lives in the Zambezi Valley, which has particularly good potential for agriculture. With 5.5 million hectares of arable land, the Zambezi Valley accounts for 15% of Mozambique's total arable area. Maize, cassava, and sweet potatoes are the most important food crops, followed by beans, sorghum, millet and rice. Cotton, groundnuts, tobacco and cashew are important cash crops, with sesame and paprika gaining in importance in recent years.

Agriculture in Mozambique is almost entirely dominated by smallholders. Taken as a whole, smallholder agricultural producers comprise 99% of all rural households and provide 95% of

agricultural GDP. Average cultivated area per agricultural household is only 1.4 hectares. Smallholder farmers often have multiple small plots, practice intercropping, use little or no inputs and achieve only low productivity. Most are subsistence farmers and completely dependent on rain fed production. In 2003, for instance, 83% of maize, 78% of rice, 95% of sorghum, 98% of millets, 74% of groundnuts and 75% of beans produced in the country was retained for home consumption.

From the early 1990s onwards, the Government of Mozambique (GOM) embarked on a liberalization process, replacing state intervention in the agricultural sector (in the form of state companies, marketing boards, pan-territorial and guarantee prices, food security reserves, and numerous subsidies) with more market-oriented policies. Today, GOM has no control over prices at agricultural input or output markets, with the exception of cotton prices. Agricultural inputs such as fertilizer and agrochemicals are exempt from trade tariffs.

As war refugees returned to their lands to resume agricultural activities after the end of the civil war in 1992, and rural infrastructure began to be rehabilitated, Mozambique's agricultural sector grew at an average annual rate of 6.8% from 1992 to 1997. It continued to grow at a somewhat lower average rate of 4.6% between 1997 and 2003. Main contributors to this growth were maize, sugar and tobacco. However, as agricultural growth has been driven primarily by labor and land expansion, without technological improvements or productivity gains, current growth is not expected to continue for much longer. In fact, after the post-conflict "bounce-back", growth is now starting to plateau. Growth poor land management practices have put increased pressure on the ecosystem, resulting in land degradation, deforestation and loss of biodiversity. These, in turn, have increased people's vulnerability to climatic variability and have adversely affected their well being.

Productivity levels of smallholders in Mozambique indicate vast scope for improvement, with current levels much below their estimated potential. Compared to neighboring countries with similar agro-climatic conditions, per hectare maize yields are extremely low at 0.9 ton/ha. Potential productivity gains are however held back by a number of inter-related constraints, which, if not addressed, will hamper further smallholder growth and poverty reduction. The most critical of these constraints are:

- *Weak organizational capacity of farmers:* The degree and capacity of organization among farmers in Mozambique is weak. Only about 5% of rural households currently belong to a farmers' association. The Zambezi Valley is no exception to this: the armed conflict broke down many of the social structures in the communities and social capital was significantly reduced. Farmer groups have been established in the region by organizations such as World Vision International (WVI) and the Zambezi Valley Development Authority (GPZ), but many of these groups will need substantive additional support to ensure long-term sustainability. Recently, positive results have also been achieved by the Dunavant Cotton Company, which has organized farmers into a hierarchical system of some 700 groups for input delivery, production advice and harvest collection.

- *Weak institutional support to smallholder farmers:* Most of the Government's current limited technical support capacity for the agricultural sector is concentrated at the provincial level, far from most farmers. Decentralization of funds and responsibilities within the Ministry of Agriculture (MINAG) under the agricultural sector-wide programme ProAgri has largely involved devolving responsibilities from national to provincial levels, with only limited increases in district authority or capacity. Government services are often top-down and technocratic, and occur in isolation from other rural development stakeholders, including

smallholder farmers and the emerging private sector. The outreach capacity of extension services is also extremely limited: There are on average 1.3 extension workers per 10,000 rural inhabitants in the country, and only 13% of rural households have effective access to extension. District Directorates of Agriculture (DDAs) also lack the capacity of to facilitate participatory planning and coordination with farmers, civil society and the private sector.

- *Lack of access to rural credit*: The lack of rural finance in Mozambique is pervasive even by African standards. With the privatization of the banking industry, commercial banks have virtually disappeared from the rural areas and currently operate almost exclusively from the larger urban centers, with most of their activities concentrated around Maputo. High transaction costs, poor incomes and low saving rates have made the rural areas generally unattractive for commercial bank operations. Public and donor sector initiatives to stimulate rural finance have so far had only a marginal impact and the success of micro-finance institutions has been limited mostly to urban areas. There are however some emerging success stories of NGO-promoted community-based savings and credit arrangement in the country.

- *Use of ineffective farming methods resulting in land degradation and low productivity:* Input markets are liberalized and the Government stresses the role of the private sector in input supply. In practice, however, smallholders use few inputs due to limited access and largely subsistence production patterns: only about 4% of rural households currently use fertilizers, and 5% uses pesticides, most of them cash crop growers. Animal traction is used by 10%, and about 82% of rural farm households report seed supply as their main problem. The lack of input traders and extension agents, and the lack of access to credit are all important barriers to an increased use of productivity-enhancing inputs by smallholders. In addition, farmers carry out extensive land management and forest extraction practices, which often involve the use of fire and inadvertent large scale burning of native woodlands, resulting in deforestation, land erosion and desertification. Such environmental degradation and the accompanying loss of ecosystem services will negatively impact both pristine ecosystems and agro-ecosystems in the future.

- *Low level of rural infrastructure (including roads and irrigation) development:* Despite recent investment, the density of the road network is still the lowest in southern Africa. 57% of the classified road network is now in good or fair condition, but the emphasis has been on classified roads. Rural access roads are still underdeveloped and require enormous investments; most are in poor condition and many are impassable, especially during the rainy season. This severely affects farmers' access to markets. Irrigation infrastructure is extremely limited, which, given Mozambique's highly variable climatic conditions, significantly increases the vulnerability of farmers. Government statistics reveal that the total irrigation-equipped land amounts to 118,000 ha, of which only 40,000 ha is presently utilised. This is around 1% of the total irrigable land, estimated at 3.3 million hectares. 60% of the country's irrigable land lies in the Zambezi Valley. Apart from small-scale NGO led interventions, such as the promotion of treadle pumps in Sofala and Zambezia, initiatives to promote irrigation have so far had limited success. A lack of infrastructure for storage, or processing further limits opportunities for value addition and causes high post-harvest losses.

- *High vulnerability to climate variability and climate change:* Mozambique, and in particular the Zambezi valley, is highly vulnerable to changing climatic patterns, including extreme climatic events such as drought and floods which are exacerbated by the pressure on

ecosystem services. Periodically, severe droughts and floods cause crop failures[§§], and regional climate models predict that the intensity and frequency of droughts will increase as global temperatures rise.

3. The Poverty Reduction Strategy

The reduction of absolute poverty has become the main priority in all Government action. Poverty reduction played a central role in the latest presidential and parliamentary elections. It also serves as a rallying point for government, civil society and donors at the annual "Poverty Observatories", established by the Government as a multi-stakeholder forum to monitor progress of the PRS. Poverty reduction is also the unifying common denominator among Government and the international donors in Mozambique. The latter have joined forces to support the Government's poverty reduction efforts through Sector-Wide Approaches (SWAPs) or Direct Budget Support (DBS) in the role of "Programme Aid Partners".

Poverty Reduction and the promotion of sustainable and broad-based growth are also the main objectives of the Government's latest Five-Year Programme 2005-2009, which was adopted by Parliament in April 2005. In its Five-Year Programme, GOM commits itself to action in the three main areas of governance, human capital and economic development. Across all fields of action, priority will be given to rural areas, where most of the poor live.

At the same time, the Government has stressed it will make the district the principal development pole for combating poverty. The current decentralization of planning and finance functions, with its emphasis on participatory district-level planning, is key in this. The ultimate goal of the decentralization agenda is to close the gap between Government, its institutions and its citizens, to focus Government programmes on the needs of its citizens, and to increase Government's accountability. Recently approved laws, such as the Local Institutions Law (LOLE, 2003) and Regulations of 2005, and the law on the Government Financial Administrative System, have made district consultative councils mandatory and have institutionalized an annual allocation of $300,000 to district budgets as of 2006. Such policy changes are all indicative of GOM's commitment to decentralization (see Attachment 1).

Mozambique's first PRSP, known as its *Programa Acelerada da Redução da Pobreza Absoluta 2001-2005 (PARPA I),* had as its specific objective the reduction of absolute poverty levels from 70% in 1997 to less than 60% by 2005 and less than 50% by 2010. Already in 2002, absolute poverty had been reduced to 54%. GOM is determined to continue this trend and has , in the end of 2006, been approved and adopted its second PRSP *(PARPA-II, 2006-2010* . As in PARPA-I, economic development, human development and governance will continue to be the three main pillars of GOM's poverty reduction strategy.

4. Government Support to Agriculture and Rural Development

Both in its Five-Year Programme and in its Poverty Reduction Strategy, GOM strongly emphasizes the critical role that agriculture, rural development, and basic infrastructure play in the country's economic development. Agriculture is explicitly recognized as the main driver of poverty reduction and economic growth in Mozambique. GOM also acknowledges that future agricultural growth will to a large extent depend on productivity gains. The two main objectives of GOM for the agricultural sector are therefore (i) to build the capacity of producers to increase

[§§] Maize yield fell on average by 40 percent to 85 percent in the Zambezi valley during the drought years 1982/1983, 1986/1987, and 1991/1992.

their productivity and (ii) to transform the role of public institutions to act as both facilitators and providers of essential services that will ensure growth of the sector and contribute to poverty reduction.

To achieve these objectives, the government plans to actively stimulate the market mechanism, promote the creation of financial institutions for the rural areas, improve the rural road network and agricultural infrastructure, stimulate the development of agri-business, and improve the performance of the extension, research and market information services for the family sector. In recent policy documents, GOM places increasing emphasis on grass root development at district level, and on the gradual transformation of smallholders into commercial farmers by the promotion of better linkages between the family sector and the commercial agriculture sector.

PROAGRI is MINAG's sector-wide program for the agricultural sector, operational since 1999 and supported by the donor community, including the World Bank, through a SWAP. In its first phase (1999-2004), PROAGRI attained important achievements in institutional reform at central level and decentralization to districts and provinces. PROAGRI-II began in 2006 and it recognizes the importance of horizontal integration across sectors and thus the importance of marketing, finance and rural roads for agriculture growth. It also intends to promote the role of non-state actors, such as farmers associations, NGOs and the private sector. As for extension services, MINAG advocates a combination of an expansion of qualified government staff, and a move towards a more pluralistic extension system, in which some services will be provided by NGOs and private sector actors, through outsourcing mechanisms.

5. Government Strategy toward Land Degradation, Exploitation of Natural Resources and Changing Climatic Patterns

Since the end of the war a number of legal and institutional tools have been developed to ensure that economic activities are carried out in compliance with acceptable principles and standards of social and environment impacts. The most important acts and laws in respect to environmental management are the Water Law (1991), Land Law (1997), Environment Law (1997), Forestry and Wildlife Law (1999), Mining Law (2002) and the Law on Calamities Management (2003). These laws put in place instruments that allow communities to benefit from natural resources and be protected from natural disasters, and that restrain excessive exploitation of natural resources.

The long-term sustainable use of natural resources, and, more specifically, land, forests, wildlife and water is a principle that runs through many of the Government's strategies. In the Poverty Reduction Strategy, the GOM has committed itself to promote and enforce the sustainable use of natural resources for the benefit of the country as a whole, to prevent its irreversible exploitation, and to encourage the cultivation of renewable resources. GOM acknowledges the strong relationship between poverty and the environment, and aims to ensure that all stakeholders in the development process play their role in the preservation of the environment.

Three national reports on the implementation of the United Nations Convention to Combat Desertification (UNCCD) have been submitted to the Convention in 1999, 2002 and 2004. Implementation of the UNCCD National Action Program (NAP) has started and specific activities have been conducted in the areas of biodiversity conservation, land degradation, water management and disasters management. Other programs that address land degradation, drought and desertification are the National Environmental Management Program (NEMP), ProAgri, the Water Resources Management Strategy and NEPAD's (New Partnership for African Development) Comprehensive Africa Agriculture Development Program. The Government of Mozambique completed its National Biodiversity Strategy and Action Plan (NBSAP) in 2005

with the main priorities of (i) identification and monitoring of biodiversity components, and (ii) establishment and implementation of strategies for sustainable use and management of biological resources.

The Land Law, and the Forestry and Wildlife Law and its Regulation define local communities as the development focus. Benefits from natural resource use must return to local communities. While the legal framework has thus been set, little has happened in the field to ensure the sharing of benefits with local communities. Local communities usually lack the necessary organization structure, the basic knowledge and the necessary leverage to voice their views and demand such benefits. Government and NGOs have promoted the establishment of local natural resources committees at community level, including in districts of the Project area, but little benefit exists as yet and more work is still required.

Mozambique's Initial National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) is still in draft form and the National Adaptation Plan of Action (NAPA) is not yet complete. The draft Initial National Communication identifies an urgent need to consider sustainable land management and more specifically changes in agricultural management practices such as changes in crop types, season and location of farming or new technologies[***]. In the forestry sector proposed measures are to prevent further forest destruction, to reassess and adjust the use of fuels and construction materials, and to engage in reforestation with reconsideration of the species used. The Communication also envisions significant development of small dams and an integrated water management plan to make more effective use of irrigation. MINAG has put forward strategies for adaptation to climate change and the draft PRSP II recognizes that natural disasters resulting from climatic change can aggravate the situation of absolute poverty. The government's strategy for the reduction of the impact of disasters requires that the country is equipped with the means for prevention through early warning systems and appropriate response mechanisms. Other actions are related to the need to strengthen institutional, regional and international coordination, as well as to intensify training and civic education activities on matters concerned with climate change.

The participation in international efforts and the establishment of policies and national programs show clearly the country's commitment to inherently address environmental issues within their policies and programs. Lack of funding for implementation is the main constraint, and many good policies remain currently still on paper.

[***] In the Initial National Communications to the UNFCCC six vulnerable sectors are identified: agriculture, water resources, coastal resource, grass land, forest, meteorology/hydrology, and adaptation measures are proposed for each. These include: (1) adjust land management practices, such as changes in crop types, season and location of farming, development of intensified and mechanized farming; (2) promote drought tolerant crop varieties and livestock in drought vulnerable areas; (3) alternate grazing systems; (4) change stocking rates; and (5) change the timing of the grazing period.

Annex 1 - Attachment 1: Status of Decentralization in Mozambique

This attachment briefly describes the current status of decentralization in Mozambique, including the legal and policy framework, empowerment and accountability aspects and the planning and budgeting process.

1. Legal and Policy Framework

Government policy and objectives: The Government of Mozambique's Action Plan for the Reduction of Absolute Poverty (PARPA) highlights decentralization as a key element of its poverty alleviation strategy. The Government has introduced new legislation as part of its efforts to reform the system of local administration including: (i) Decree 15/2000, which recognizes community authorities as interlocutors between rural communities and the district administration; and (ii) the Law of Local State Organs[†††] (LOLE), which gives additional discretion and flexibility to the provincial and district authorities.

Structure of the State administration: In Mozambique there is a two-track system of decentralization: (i) deconcentration of competencies and powers of the Central Government to the provinces and districts, and (ii) devolution of responsibilities and resources to autonomous municipalities. The state administration consists of four levels below the central state: provinces (10 + the capital), districts (128), administrative posts (343), and localities (1,048).

Districts: A district is a local organ of the central Government charged of realizing the government program, the social and economic plan and the government budget in the respective district with powers to decide, execute and control the planned activities. It consists of the District Administrator (DA), the district permanent secretary, and directors of sectoral district services. A typical district has three administrative posts, nine localities and about 110,000 inhabitants. The annual district revenue is typically about US$25,000, of which over 70% is from Central Government allocations, while up to 70% is taken up by salaries and allowances.

Municipalities: On the basis of a new statute passed in 1997 (Law 2/1997), municipalities - with democratically elected assemblies and presidents of municipal councils - were established in 33 cities and small towns after the first municipal elections were held in 1998. While the law provides for the creation of elected assemblies and presidents also in villages, the process has not been extended to that level. However, as part of the decentralization process, elections will be held in latter half of 2007 to establish Provincial Assemblies. .

Delineation of roles and responsibilities: For the provinces and districts, responsibilities are delegated through vertical sectoral hierarchies to the directorates at the provincial and district levels. The extent of delegation varies across sectors. District services for agriculture (SDA) are responsible for local service delivery in the areas of agriculture, livestock, forestry and wildlife, extension and fisheries. They are also responsible for collecting statistical information, distributing government provided inputs, performing regulatory duties and other administrative functions.

2. Empowerment and Accountability

[†††] Lei dos Órgãos Locais do Estado (LOLE)

Political structures: Provincial Governors and District Administrators (DA) are representatives of the Central Government and accountable to the President. There is only formal upward accountability from the District Administrations to the Provincial Governments, who are in turn accountable upwards to the Central Government. There is no provision in the existing legislation for any form of local assembly at the district or provincial level. Law 2/1997 establishes municipalities as territorial units, with their own representative body (Municipal Assembly) and executive organ (the Municipal Council).

Participation and consultation mechanisms: National guidelines for District Development Plans (adopted in 2003) reinforce the role of the districts as units for planning and budgeting. The guidelines allow for the creation of local consultative councils to act as an interface between the civil society and the district authorities in the planning process. In addition to councils, the new statutes recognize local fora, community committees and community development funds. The District Administrator is responsible for establishing local consultative councils at district and lower levels in his/her area of authority. The councils must include representatives of community authorities (traditional chiefs and/or secretaries) and economic, social and cultural interest groups selected by lower level councils and/or fora. At least 30% of the members must be women. The councils are relatively large, varying from 30-50 members at district level to 10-20 members at locality level, and they are expected to address practically all aspects of rural development, social services and civic education.

3. Planning and Budgeting

Assignment of investment and recurrent expenditures: The Central Government assigns approximately a third of the state budget to the provinces, which is earmarked to specific bodies or functions. The lion's share of the budget at the provincial and district levels comes from sector allocations for delegated responsibilities. The provincial share of the national budget is split into priority and non-priority sectors. The priority sectors' budgets (investment and recurrent) are determined by the Line Ministries, with some input from the provinces during the planning stage. The non-priority sector investment budget is formulated by the provincial government, while the recurrent budget is largely a function of staffing decisions at central level. The residual between the provincial investment budget ceiling and sectoral ceilings for priority sectors becomes the allocation to the non-priority sectors.

Planning and budgeting: Three levels are distinguished:

- At the national level, there are several medium to long term planning instruments. The Plano Economico e Social (PES) and Orçamento do Estado‡‡‡ (OE) are produced on an annual basis. Line Ministries have parallel annual planning and budget management processes;
- The provincial governments prepare their own annual plans (provincial PES) which they submit to the Ministry of Planning and Development;
- Districts prepare five year District Development Plans (PDDs) that are used as a tool for negotiating with higher levels of government and donors. Communities participate in the formulation of these plans through consultative councils (CC). The role of the councils is to transmit to local state organs the demands of local communities, and to collaborate with district authorities in disseminating information to communities. Councils are expected to participate in the preparation of relevant development plans and budgets and comment on the proposals, and to approve the work-plan and implementation report of the organ responsible for administration of district level development (Decree no. 11/2005). Under the Law of Local State Organs, the

‡‡‡ National State Budget

districts will become a budget unit for the first time and will receive transfers directly from the state budget. As part of the planning process of the 2007 budget, the Central Government has earmarked the equivalent of US$300,000 per district.

Local transition to decentralized planning: the organs responsible for administration of district level development are mandatory (Decree 11/2005). While their status is consultative (i.e. they are essentially organs of administrative deconcentration) they can become important actors in a process of genuine decentralization. This will, however, require a strengthening of their capacity, and a greater autonomy, including the status of autonomous budget centers under the state system. The consultative councils (CCs) have potentially an important role in the process of transition from previous centralized vertical/sectoral approach to a decentralized and participatory horizontal/area-based mode of planning.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

Program/Project	Sector Issues Addressed	Impl. Status	Performance Ratings	
World Bank (co) financed			**IP**	**DO**
ProAgri-I (Agricultural Sector Public Expenditure Program)	Agriculture, Institutional Strengthening (MINAG)	Completed	S	S
Decentralized Planning and Finance Project (DPFP)	Sub-national government administration, Central government administration, Micro and SME finance, Roads and highways	Active	MS	MS
Roads and Bridges Management and Maintenance Project	Rural Infrastructure	Proposed	-	-
Beira Railway Project	Rural Infrastructure	Active	S	S
Transfrontier Conservation Areas and Sustainable Tourism Development Project (IDA/GEF)	General agriculture, fishing and forestry; general industry, Environment, Biodiversity	Active	S	-
Coastal and Marine Biodiversity Management Project (IDA/GEF)	Environment, Biodiversity	Active	MS	MS
Energy Reform and Access Project (IDA/GEF)	Power; Renewable energy, Climate Change	Active	MS	MS
Second National Water Development Project	Water Supply & Sanitation Adjustment	Active	S	S
Communication Sector Reform	Telecommunications & Informatics	Active	S	S
TerrAfrica Strategic Investment Program (IDA/GEF)	Sustainable Land Management	Proposed	-	-
Other			**Donor(s)**	
ProAgri-II (Agricultural Sector Expenditure Program)	Institutional Strengthening (MINAG) Natural Resources Management, Agricultural Productivity	Active	MULTI	
Small-scale Irrigation Project (Maputo, Sofala, Zambezia)	Rural Infrastructure (Irrigation)	Active	AfDB	
Financial Sector Technical Assistance Project (FSTAP)	Rural Finance	Active	AfDB, IDA/DfID/ SIDA, GTZ/ KfW	
Agricultural Sector Programme Support (ASPS) II – Private Sector Development (Tete, Manica, Cabo Delgado)/Rural Roads (Manica, Tete)	Farmers' Associations, Agri-Business Development, Rural Finance, Rural Infrastructure (Roads)	Active	DANIDA	
Sustainable Credit for Growth of Micro-Entrepreneurs (Manica, Sofala, Zambezia) (CARE)	Rural Finance	Active	DfID	
Support to Rural Development in Zambezia Province (Zambezia)	Decentralization/Local Institutional Strengthening, Natural Resources Management, Agricultural Productivity, Rural Enterprise Development	Proposed to start by April 2006	Finland	
PRODEL (Inhambane, Manica, Sofala)	Decentralization/Local Institutional Strengthening/Participatory Planning, Agricultural Production/Marketing, Rural Infrastructure (Irrigation)	Active	GTZ	
Rural Finance Support Programme	Rural Finance	Active	IFAD/AfDB	
Agricultural Services Programme	Institutional Strengthening, Extension	Proposed to	IFAD	

(ASP)		start by July 2006	
Family Livestock Development Programme (FLSDP)	Extension, Livestock Development	Completed	IFAD
Agricultural Markets Support Programme (PAMA) (Cabo Delgado, Niassa, Maputo)	Agricultural Marketing, Rural Infrastructure (Roads), Farmers Associations	Active	IFAD
Decentralized District Planning and Financing Project (DPFP) (UNDP/UNCDF, Nampula, Cabo Delgado)	Decentralization, Local Institutional Strengthening	Active	Norway, Netherlands, Switzerland, Ireland, World Bank
Clearing House Mechanism Enabling Activity	Biodiversity	CEO approved	UNEP
Enabling Mozambique to Prepared its First National Communication in Response to its Commitments to UNFCCC	Climate change	CEO approved	UNDP
National Adaptation Programme of Action (NAPA)	Climate change	CEO approved	UNDP
National Capacity Self-Assessment (NCSA)	Multi-focal	CEO approved	UNEP
Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs): National Implementation Plan for Mozambique	POPs	CEO approved	UNEP
National Biodiversity Strategy and Action Plan and First National Report to the CBD	Biodiversity	CEO approved	UNEP
Regional: Sustainable Land Use Planning for Integrated Land and Water Management for Disaster Preparedness and Vulnerability Reduction in the Lower Limpopo Basin (MSP)	Land degradation	CEO approved	UNEP
Regional: Coping with Drought and Climate	Climate change	Proposed	UNDP
Regional: Southern Africa Biodiversity Support Programme	Biodiversity	CEO endorsed	UNDP
OVATA (World Vision, Zambezia)	Agricultural Productivity, Farmers' Associations, Rural Infrastructure (Roads)	Active	USAID
EMPRENDA Alliance Project (CLUSA, TechnoServe, ACDI/VOCA)	Farmers' Associations, Agricultural Marketing	Active	USAID
TerrAfrica Strategic Investment Program	Sustainable Land Management	Proposed	TerrAfrica partners (e.g., UNDP, FAO, AfDB, UNEP and IFAD)/GEF

The World Bank provides support to four central provinces as part of the GOM's national **Decentralized Planning and Finance Program** (DPFP). The Program's components are: 1) Participatory District Planning, which aims to develop a district-level participatory planning

system based on civil society consultation and participation; 2) Local Investment Grants (LIG), which provides financing for small rural infrastructure included in annual plans; 3) Capacity Building, designed to strengthen the training system to increase the capacity of local administration officials to undertake key local government functions more effectively; 4) Policy Reform, designed to provide technical assistance to the GOM to improve decision-making; and 5) Project Coordination, which finances a PMU in the Ministry of Finance. The smallholders' Project, which will operate within the DPFP targeted area, has been designed to closely complement the activities of the DPFP. While the DPFP has a strong emphasis on capacity building and participatory planning at the district level, the smallholders' Project will specifically address agricultural and other land uses issues in district planning. The synergies that could be attained from collaboration between the two Projects could result in valuable experience that could help GOM in its efforts to move to a more multi-sectoral- and district-based approach to agriculture and rural development. The Project will also be coordinated by the committees established under the decentralization law.

The second phase of the **Agriculture Public Sector Programme, ProAgri II,** provides budget support to the Ministry of Agriculture to enhance its extension coverage. The Project is implemented in close collaboration with District and Provincial Directorate of Agriculture staff, and, thus, success of the Project will, to a large degree, depend on ProAgri-II's planned expansion of the public extension network at the district level. The Project will also complement ProAgri-II by mobilizing demand from the community-level for agricultural services and providing for additional extension resources.

The goal of the seven-year IFAD-initiated **Agricultural Markets Support Project (PAMA)** is to increase the participation of smallholder producers in the market economy on more favorable terms, with a view to increasing agricultural income and improving food security at both the national and local levels. At the local level, the objectives are to: 1) respond to specific constraints faced by targeted smallholder producers in accessing markets; and 2) identify opportunities available to alleviate them. The focus on development of linkages between smallholder producers and markets is common to both PAMA and the smallholder Project, although the Projects operate in different areas. As PAMA has been operating in the past 4 years, some lessons learned from its experience as well as Terms of Reference for service providers will be used and addressed by the smallholder Project, especially under component 1 and 2.

The Project is also expected to benefit from complementarity with the World Bank-financed infrastructure Projects, the second **Roads and Bridges Management and Maintenance Project**, which will finance the Caia Bridge over the Zambezi River, as well as the **Beira Railway Project**. The latter includes the rehabilitation, maintenance and operation of the Sena rail line which passes through the provinces of Sofala and Tete and has a significant potential for economic influence over the Zambezia province. Once rehabilitated, the Sena Line would become again the main transport system for the central region in Mozambique. Both Projects would have a significant impact on improving the accessibility of this area, and would, thus, contribute to improved conditions for success of the proposed Project (e.g. through improved conditions for export of agricultural produce). The smallholder Project would need to lobby for the prioritization of the works on the Sena Line (currently schedules in 2010) in order to draw on the full benefits of its operation.

The USAID funded **OVATA Program** has four main objectives: 1) increase food security through agricultural production and marketing by means of developing marketing groups; 2) improve access to markets and improve infrastructure; 3) increase utilization of production

through an integrated nutrition program; and 4) decrease the negative impact of HIV/AIDS on food security through an extensive awareness campaign. This Project will provide lessons learned to the smallholder Project with regards to development of market groups and improved access to markets under components 1 and 2.

The **Empowering Private Enterprise in the Development of Agriculture in Mozambique's Beira and Nacala Corridors (EMPRENDA) Project**, launched in February 2005, aims to increase per capita rural family income and promote productive asset accumulation in the Project area. EMPRENDA's focus is to create and strengthen sustainable, competitive rural enterprises and farmer associations operating in the three value chains: high value horticulture, confectionary nuts, and field crops/animal feeds. EMPRENDA is working to strengthen management and planning skills within farmer associations, to unite these associations at the zonal and regional level to form stronger businesses and to link these enterprises to other actors in the rural economy. Some discussion took place with the EMPRENDA Project during the smallholder Project's preparation phase where it was suggested to expand the focus of EMPRENDA to the 5 districts in order to provide support for the input supply activities under component 2.

As indicated in Annex 1, the Project would directly contribute to the implementation of the UNCCD NAP and to some of its main operational strategies, including community mobilization, training and knowledge sharing, sustainable forest, soil and water use management, improved land rights and institutional capacity building, and would serve to report on progress made in the implementation of the Action Plan; the Project would also address priorities under the National Biodiversity Strategy and Action Plan (NBSAP), and respond to the recommendations of the Initial National Communication under UNFCCC as will be articulated in the forthcoming National Adaptation Programme of Action (NAPA) being prepared with assistance from UNDP. The objectives of the DRAFT NAPA are to: (a) Strengthen the country's (climate) early warning system for extreme events; (b) Strengthen the capacity of small holder farmers to manage the adverse effects of climate change; (c) Promote the use of renewable energy for water pumping and lighting in rural and periurban areas; (d) Promote reforestation; (e) Promote measures to collect and conserve rainwater; (f) Promote action to stop and prevent soil erosion; and (g) Promote the integration of climate change issues in the planning context of decentralized institutions and programs.

The Mozambique draft NAPA has proposed 4 major program activities to meet the above objectives in the short to medium term. These include: (1) Improved collection of meteorological data and generation of weather forecasts (including extreme events) and communication of information to stakeholders especially in vulnerable areas, (2) Improved capacity of farmers and livestock herders to collect and store water for enhanced mitigation of drought effects, (3) Mapping of land cover dynamics and erosion vulnerability in coastal regions, and (4) Improved characterization and use of hydrological resources for irrigation, water storage, and sustainable use of river margins.

Project activities linked to the testing, calibration, and operationalizing the predictive landscape dynamics/water resource model will directly support the NAPA priority aimed at developing "early warning" systems for climate change impacts and allow the incorporation and synthesis of multi-sector, diverse environmental information into a decision analysis and support framework. The Project activities in the Zambezi valley are synergistic with the UNDP regional **Coping with Drought and Climate Project** (under preparation, estimated effectiveness – early 2007), which is supporting Mozambique's efforts to develop and pilot a range of coping mechanisms for reducing the vulnerability of farmers and pastoralists to future climate shocks in the Limpopo basin. The Project is piloting coping strategies, improving early warning systems, implementing

DPM policies, and will replicate and disseminate successful approaches of adaptation while focusing on the delivery of global environmental benefits in the focal area of land degradation. The Project will build on Mozambique's V&A assessment and preliminary results from the National Adaptation Programmes of Action once completed. The proposed WB Zambezi smallholders Project will be nicely placed to test the Limpopo "best bets" coping strategies and contribute novel strategies emerging from the Zambezi basin. In addition, the Zambezi valley Project has a unique but highly complementary aspect to UNDP's Limpopo Project because it will be able to proactively model the impacts of human-induced flooding due to discharges from the Cahorra Bassa dam.

The World Bank/GEF funded **Transfrontier Conservation Areas and Sustainable Tourism Development Project (TFCA)** is designed to increase environmentally sustainable tourism investment and development and local participation and incomes from tourism in the five TFCAs. The Project has two main components: 1) Integrated Development Planning (IDP), in which permanent participation structures will be established in Vilanculos and Matutuíne districts using the DPFP model, tourism will be integrated into district planning, and mechanism to involve the private sector would be set up; and 2) Tourism Component, designed to develop a tourism "master plan" from which concessions will be defined. The Project's participatory approaches will be assessed for relevance by the smallholder Project and adapted as needed.

The World Bank/GEF funded **Coastal and Marine Biodiversity Management Project** is designed to pilot an integrated approach to sustainable development in Mocimboa da Praia and Palma in Cabo Delgado, and Nacala-Porto and Mossuril, in the province of Nampula. The Project involves macro zoning at the district level with some participation of communities when deciding where new conservation areas should be established, and in defining what types of micro Projects could support natural resource management. The Project has been extended for a further two years. Both the coastal, transfrontier and smallholders Projects provide an opportunity for joint promotion of awareness to issues of global importance related to sustainable natural resource management amongst government offices at national, province and district levels and amongst communities themselves.

The World Bank/GEF **Energy Reform and Access Project** is an eight-year, two-phase program with the objective of increasing access to modern energy in peri-urban and rural areas. It comprises: (i) reforms necessary for improved performance of the energy sector (in particular electricity) and accelerated access to electricity, in rural and peri-urban communities; and (ii) investments in electricity supply infrastructure, including renewables and the setting up of an optic network across the country. It is estimated about 40,000 new connections will be made in the first phase of the program with the provinces of Zambezia, Tete and Sofala amongst those which will benefit from this component. Additionally, once available in the five targeted districts, communities will have access to IT centers which they can use for communication e.g. on market situation and upcoming climatic events.

The UNDP regional **Coping with Drought and Climate Project** (under preparation, estimated effectiveness – early 2007) seeks to support Mozambique, Ethiopia, Kenya and Zimbabwe in their efforts to develop and pilot a range of coping mechanisms for reducing the vulnerability of farmers and pastoralists to future climate shocks. The Project will focus on addressing the impacts of climate change on land degradation and food security, specifically aiming at: piloting coping strategies, improving early warning systems, implementing DPM policies, and will envisage replicating and disseminating successful approaches of adaptation while focusing on the delivery of global environmental benefits in the focal area of land degradation. The Project will build on Mozambique's V&A assessment and preliminary results from the National Adaptation

Programmes of Action once completed. As the smallholders' Project will focus on similar approaches under its adaptation activities, the two Projects can learn from each other's experience in country and throughout the sub-region.

Communication Sector Reform Project: A $14.9 million Project that seeks to improve access to and quality of communications services by increasing competition and private sector participation in telecommunications, postal services, and air and transport services. Greater competition has resulted in substantially increased access to telecom services, reduced domestic and international prices, and overall improvements in the quality of service. As a result of these reforms, teledensity reached 5.5 percent in mid-2005, driven largely by an expansion in the mobile market. The development impact of this increased teledensity is likely to be significant as it helps reduce the cost of doing business, and improves access to markets and services, including in rural areas. The Bank plans to provide support through a new analytical activity on rural telecoms funded under the Africa Action Plan, undertaken in collaboration with the proposed Regional Communications Infrastructure Program and a WBI-supported regional connectivity study for academic institutions.

The Strategic Investment Program (SIP) is a multi-agency investment program co-financed by GEF for sustainable land management (SLM) in Sub-Saharan African countries and led by the World Bank. It has been supported by the TerrAfrica platform and will benefit from it during implementation. The GOM has acknowledged the importance of adopting a programmatic approach to SLM. GEF-SIP financing will be used strategically to support the development of a programmatic framework to promote SLM including the establishment of a multi-stakeholder partnership for SLM, in line with the TerrAfrica principles and approach. It will also be used to remove policy, capacity and other systemic barriers to SLM adoption and to pilot innovation at field level. Development partners investing in SLM and related fields will be coordinated to align these investments to the platform. The Bank will connect this Project with other TerrAfrica partners' efforts to move toward a more programmatic approach to SLM in Mozambique, in particular with UNDP.

Annex 3: Results Framework and Monitoring

Results Framework

Project Goal/Project Development Objective (PDO)	Project Outcome *(Process)* Indicators	Use of Project Outcome Information
Project Goal Accelerate poverty reduction within the Central Region of Mozambique	- Change in average poverty levels in Project zone compared with non-Project areas	- Assess effectiveness of overall Project strategy
Global Environment Objective: Limit land degradation and improve ecosystem's resilience towards climate change in the Central Zambezi Valley.	- Increase in area under improved SLM or natural resource management practices in Project area by at least 20,000 ha by Project end - Measurable increase (or reduced losses) in biodiversity or sequestered carbon in targeted Project sites vs. control sites through one or more of the following: reappearance of native species, increased carbon stocks, reduced soil erosion, reduced incidences of wild fires - At least 3 predictive and basin specific hydrology-land cover-climate change scenarios for land use-land cover change impacts on hydrology under changing rainfall and evapotranspiration regimes - Increased use by local land users of drought-tolerant crops, fodder species and varieties, crop rotations to increase soil organic matter, reduce weeds, and conserve soil moisture	- Y 5-6: Assess whether areas which underwent the most significant change are those that comprise the largest proportion of communities practicing SLM (see component 2) and disseminate results
Project Development Objective Increase the income of smallholder farmers in selected districts through broad-based and sustainable agricultural growth	- 30% average increase in agricultural income - including self-consumption - of participating smallholder households (i.e. an estimated 20,000 HH) compared with non participating HH, by the end of the Project	- Y 3&5/6: monitor income levels of participating households - Mid-term review, determine if modifications to strategy required - Discuss mainstreaming of Project approach into national strategies - Y. 5&6: Assess linkage between change in vegetative cover and biodiversity reappearance and change in average income and disseminate results
Intermediate Outcomes (one per component)	**Intermediate Outcome Indicators for Each Component**	**Use of Intermediate Outcome Monitoring**
Component One: Community Group Organization and Local Institutional Strengthening	**Component One**: - Number of CBO engaging in Project supported organizational development activities - Cumulative number of groups active in at least	**Component One**: - Y. 2 and 3: to assess the relevance of the Project strategy and service providers efficiency

	one sub-Project supported by the CAEIF	
Intermediate Outcome 1: Smallholders organized in production and marketing groups have access to technical and financial resources that contribute to their sustainable economic development	- Proportion of groups that: • have adopted operational accounting systems; • have all their members aware of the account balance; • use internal M&E through critical reviews that result in better servicing their members. - Proportion of groups that demonstrate increased knowledge about relevant HIV/AIDS and gender issues - Proportion of women group members in decision making positions; proportion of the groups supported that are youth groups - Number of members of savings and credit groups; Amount and number of loans issued by Project supported savings and credit groups and MFIs	- Y. 2 to 6: To assess group organization, sustainability, trust and the impact of capacity development - Y. 2 to 6: To verify the mitigation of potentially negative effects of increasing mobility and wealth on HIV/AIDS incidence - Y.2 to 6: To verify that the Project has a positive effect on gender and age equity - Y. 2 to 4: to assess service provider efficiency. Y. 3: To assess the relevance of the Project strategy. Y. 5&6: To evaluate the Project impact on local investment capacities
Intermediate Outcome 2: District LUPs are formally integrated into districts plans and are in use as basis for development.	- Number of land use plans prepared with clear responsibilities defined, endorsed by the local authorities[§§§], taken into account in the district plan and implemented	- Y. 2 to 3: Assess demand for land use planning & commitment of local authorities. Y. 3: Assess relevance of the Project strategy.[****] Y. 5: Assess Project impact
Component Two: Agricultural Development Facilitation Intermediate Outcome 1: Participating smallholders experience increased and more sustainable agricultural productivity and have greater access to input and output markets.	**Component Two:** - Proportion of participating smallholders reporting improved access to inputs[††††], and improved market knowledge - Percentage of farmers with a secured market through contractual arrangements with agribusinesses or traders - % of increases gained on average by participating households (compared with non participating HH): • % increase in yields of key crops; • % increase in sales; • % increase return on family labor; - % decrease in crop losses.	**Component Two:** - Y. 3 to 5: Assess implementation progress; Determine factors affecting take up of technologies for Project farmers
Intermediate Outcome 2: Increased use of indigenous	- Proportion of participating households adopting improved agricultural and forestry technologies promoted.	- Y. 3 & 5/6: Assess relevance and success of techniques introduced and

[§§§] Including the traditional local leaders.

[****] If at least 2 LUPs are not approved by year 3, it could indicate that the process has failed to achieve consensus and ownership by key stakeholders. This could necessitate a revision in the Project strategy and/or an adjustment/repetition of capacity building and awareness raising efforts in the relevant districts.

[††††] Seed, fertilizer, agricultural chemicals & spare parts.

and innovative SLM strategies and techniques; of adaptation measures integrated into SLM techniques; and of energy efficient technologies by SH in the target 5 districts Intermediate Outcome 3: basin and catchment level land cover dynamics-hydrology models (VIC, DHSVM) calibrated and tested with participation observation/ measurements) by local communities and stakeholder agencies	- Proportion of participating SH adopting energy efficient technologies - Proportion of participating SH adopting SLM techniques as an adaptation activities - Above land use plans integrate the predictive climate change impact scenarios from the dynamic landscape level modeling identified in the global environmental objective above	methodologies used; adjust methods accordingly
Component Three: Community Investment Fund Communities, groups and small entrepreneurs have access to resources needed to improve the effectiveness and benefits and environmental sustainability of their activities	**Component Three:** - Methodologies for proposal identification, preparation, evaluation and implementation support fully defined and incorporated in appropriate training and reference materials; appropriate trainings completed - Proportion of sub-Project requests prepared within 6 months of submission; proposals evaluated within one month of submission - Proportion of each window disbursed	**Component Three:** - Y. 1 & 2: Assess adequateness of Project approaches to initiating CIF processes - Y. 2 to 3: Assess the appropriateness of proposal formulation and evaluation procedures - Y. 2 to 4: Assess level of demand by window; Y. 3: Review CAEIF allocation by window
	- Proportion of approved sub-Projects completed as scheduled with appropriate participant input (by window) - % of financed sub-Projects properly maintained 1& 2 years after completion - % of sub-Projects showing positive financial results and assessed socially & environmentally sustainable (by type of activity) - % of NRM sub-Projects showing environmental benefits[‡‡‡‡] compared to baseline	- Y. 2 to 6: Assess implementation and contribution capacities - Y. 3 to 6: Assess the relevance and impact of the major type of small scale activities financed under CAEIF and feed information on success stories into the education and awareness programs with the aim to replicate. - Y. 5 & 6 Assess Project impact[§§§§]

[‡‡‡‡] Which can potentially include increase in biomass production (t/ha/year), reduction in burnt surface, water availability, etc.

[§§§§] For those Projects which prove to generate environmental benefits, sustainability of benefits will be assessed and technical guidance will be provided accordingly.

Component Four: **Project Management Coordination, and Monitoring & Evaluation** Effective oversight, monitoring of Project activities, policy guidance and lessons learned	**Component Four:** - Establishment, membership and frequency of meeting of multi-sector Project and provincial Steering Committees - Timeliness and adequacy of annual work plans and reports (including M&E reports, expenditure and accounting reports) - Timeliness of budget preparation at district and provincial level, and inclusion of budgets into annual government budget - Time required to release funds for approved budgets at provincial and district levels - Time required for recruitment, training and entry into operation of key Project personnel[*****] and major service providers (including M&E) - Availability of a replication strategy and action plan before end of Project	**Component Four:** - Determine effectiveness of multi-sector steering committee mechanism - Determine adequacy of training programme - Adequacy of external monitoring - Determine effectiveness of funds flow mechanism being utilized - Identify main lessons learned from the first years of implementation, assess progress of the national decentralization process and capacity of additional districts to carry out Project activities, identify resources (outside National allocation to districts) required to carry out these activities and potential sources

[*****] Project Coordinator, District Project Facilitators, Technical Assistance Group staff, finance/procurement officers…

Results Monitoring Arrangements

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5 - YR6**	**Frequency and Reports***	**Data Collection Instruments**	**Responsibility for Data Collection**
GEO Outcome Indicator - Increase in area under improved SLM or natural resource management practices in Project area by at least 20,000 ha by Project end	Baseline	-	-	8,000 ha	-	20,000 ha	Mid term review (MTR); Project Completion Report (PCR)	(Remote sensing LANDSAT, IKONOS/SPOT) and geo-referenced field surveys.	Contracted external evaluators
- Measurable increase in biodiversity or carbon sequestration in targeted Project sites vs. control sites through one or more of the following: reappearance of native species, increased carbon stocks, reduced soil erosion, reduced incidences of wild fires.	Baseline	-	-	10%	-	25%	Mid term review (MTR); Project Completion Report (PCR)	Spatial information	Contracted external evaluators
- Predictive and basin specific scenarios for landuse-land cover change impacts on hydrology (flooding, drought) under changing rainfall and evapotranspiration regimes. -increased use by local land users of drought-tolerant crop and fodder species and varieties and alternative crop rotations suggested by EPIC model scenarios	Baseline	-	-	2	-	5	MTR; PCR	Spatial information	Contracted external evaluators
PDO Outcome indicators - 30% average increase in agricultural income of participating smallholder households (compared with non-participating HH)		-	-	15%	-	30%	MTR; PCR	District statistics; TIA; Specific surveys	Contracted external evaluators

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5 - YR6**	**Frequency and Reports***	**Data Collection Instruments**	**Responsibility for Data Collection**
Intermediate Outcome Indicators									
Component 1: - Number of CBOs engaging in Project supported organizational development activities;	-	60	150	380	540	660	Quarterly & Annually – Progress reports	Group promotion service providers (GPSP) reports;	GPSP
- Cumulative number of groups active in at least one small-scale invest. supported by the CAEIF;	0	0	100	300	500	600	Quarterly & Annually	District evaluation committee report	District Project facilitator
- Proportion of groups that : * have adopted operational accounting systems	-	0	50%	50%	60%	60%	Annually - GPSP annual reports; MTR&PCR	Participatory meetings; focus groups; group records	GPSP; External evaluators
* have all their mb aware of the account balance		0	60%	60%	70%	80%			
* use internal M&E through critical reviews that result in better servicing their members		0	30%	35%	50%	75%			
- % of groups that demonstrate increased knowledge / relevant HIV/AIDS and gender issues	PRA	0	20%	30%	60%	80%	Annually - GPSP reports	Focus group discussions	GPSP
- % of women group members in decision making positions	PRA & baseline					35%	Annually - GPSP reports	Group records	GPSP; External evaluators
- Number and proportion of the groups supported that are youth groups (including local university graduate students trained in rapid survey and monitoring techniques)	Baseline	0	5%	10%	15%	130 (20%)			
- Number of mb of savings and credit groups	0	0	500	2,000	8,000	12,000	Quarterly - Rural finance SP reports; MTR&PCR	Saving & credit groups account records; MTR&PCR	Rural finance SP; External evaluators
- Amount and number of loans provided through Project supported institutions									
- Number of land use plans prepared with clear responsibilities defined, endorsed by the local authorities, taken into account in the district plan and implemented	TBD (0?) Target to be set on the basis of the baseline		0	2	4	5	Annually - Districts annual plans	Districts annual plans	District technical planning team; Ext. evaluators

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5 - YR6**	**Frequency and Reports***	**Data Collection Instruments**	**Responsibility for Data Collection**
Component Two: - % of participating HH reporting improved access to inputs and market information	TIA & baseline	0%	10%	25%	40%	50%	Annually - GPSP reports; survey & evaluation rep.	Participatory reviews; household (HH) surveys	GPSP; external evaluators
- % of farmers with a secured market / contractual arrangements with agribusinesses or traders	Baseline	-		20%		30%			
- Participating households gain:							Mid term review & Project completion reports	Household surveys	Contracted external evaluators
- Increase in yields of key crops (%)	TIA & baseline		-	25%	-	50%			
- Increase in sales (%)			-	25%	-	50%			
- Return on family labor	Baseline		-	15%	-	30%			
- Decrease in losses	Baseline		-	7%	-	10%			
- % of participating SH adopting improved agricultural, agroforestry and/or forest product extraction technologies promoted (for each technology)	Baseline	-	-	10%	-	50%			
- Proportion of participating SH adopting energy efficient technologies	Baseline	-	-	10%	-	30%			
- Proportion of participating SH adopting SLM techniques as an adaptation strategy	Baseline	-	-	10%	-	50%			
Component 3: - Methodologies for proposal identification, preparation, evaluation and implementation support fully defined and incorporated in appropriate training and reference materials; corresponding trainings completed	-	Activity comp-leted					Once - On-call technical experts reports	Annual Project report	Technical coordinator
- % of sub-Project prepared within 6 months of receiving the request	0	0	80%	80%	80%	80%	Six-monthly - District evaluation com. rep.; M&E reports	District proposal evaluations; District request register	District facilitators; M&E contractor
- % of proposals evaluated within one month of submission	0	0	90%	90%	90%	90%			

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5 - YR6**	**Frequency and Reports***	**Data Collection Instruments**	**Responsibility for Data Collection**
- Proportion of each CAEIF window disbursed	-	0%	25%	50%	80%	100%	Quarterly - Financial reports	Financial reports	Financial managers
- Proportion of sub-Projects completed as scheduled with anticipated beneficiary input (by window)	-	-	60%	60%	70%	70%	Quarterly. DPOPH invest. completion certification ; supervision rep.; financial reports	Contracted supervision - DPOPH quality review; GPSP rep; M&E reports	District Project facilitator (GPSP Contracted supervisor – DPOPH)
- % of approved sub-Projects properly maintained 1&2 year after completion - % of small-scale investments financed under CAEIF showing positive financial results and assessed socially and environmentally sustainable (by type of activity)	-	-	85%	85%	85%	85%	Annually. Contracted supervisors rep. M&E reports	Contracted supervision and monitoring; specific surveys; MTR&PCR	Contracted supervisor - DPOPH ; GPSP; External evaluators
- % of NRM sub-Projects showing environmental benefits compared to baseline	-	-	-	10%		30%	Years 3 and 5	GPSP Monitoring; HH surveys; Spatial information; M&E reports;	GPSP; External evaluators
Component 4: - Establishment, membership and frequency of meeting of multi-sectoral Project and Provincial Steering Committees	-	Acceptable time table to be defined in the Project operation manual					Annually	Minutes of the SC Meetings; Supervision mission reports	Project coordinator; Supervision missions
- Timeliness and adequacy of annual work plans and reports (including M&E reports; expenditure and accounting reports)	-						Annually	Finance& procurement officers reports; Audits; Supervision missions reports	Finance& procurement officers; Auditors; M&E contractors; Supervision
- Timeliness of budget preparation at district and provincial level, and inclusion of budgets into annual government budget	-								

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5 - YR6**	**Frequency and Reports***	**Data Collection Instruments**	**Responsibility for Data Collection**
- Time required to release funds for approved budgets at provincial and district levels	-						Six-monthly		missions
- Time required for recruitment, training and entry into operation of key Project personnel and major service providers (including M&E)	-						Once		
Availability of a replication strategy and action plan before end of Project	-					*	Once	Audits; Supervision missions reports; Mid-Term Review report; consultations with stakeholders (at national, provincial and district levels; M&E reports; Financial reports;	GoM in collaboration with WB and potential other donors.

***: All data will be reported in the M&E contractors' reports.**

Annex 4: Detailed Project Description

The Project will be implemented in two stages across five districts within the Zambezi Valley region of Central Mozambique over a six year period. Closely integrated with ongoing decentralization policies (See Annex 4 Attachment 1) and district focused, the Project will achieve its objective of increasing the incomes of smallholder farmers within the Project area through three technical components, with a fourth component dedicated to management, coordination and monitoring. The three technical components comprise:

- The promotion and support of groups formed by small producers and other supply chain participants in such areas as marketing, savings and credit, and agribusiness development, as well as the strengthening of district level institutions which support them;
- The provision of support for broad-based market-led sustainable agricultural and natural resource development, including not only direct outreach to groups and agribusiness participants in production, marketing and other supply chain elements, but also encompassing use of indigenous natural resource knowledge with cutting-edge applied research, community level demonstration plots, training and the expansion of local extension capacity including farmer field school approaches;
- A demand-driven Community Agricultural and Environmental Investment Fund which will provide resources for agriculturally related infrastructure, small scale investment and improved natural resource management.

GEF funded incremental activities will be fully integrated into the IDA Project design and adopt the same Project approach and implementation arrangements. GEF has financed the development of natural resource baselines via a PDF-B grant and will finance complementary activities not addressed under IDA that specifically contribute to the sustainable management of land and natural resources, and support adaptation activities to climate change. These are both perceived as critical for securing sustainable increase in smallholders' income as well as the maintenance of the Zambezi Valley ecosystem's functions and resulting global environment benefits.

Project Area Characteristics:

The two Phase 1 districts of Mutarara (Tete Province) and Morrumbala (Zambezi Province) have a total population of almost 500,000[18] spread over 8 administrative posts and 21 localities (the latter being the smallest territorial division utilized by GOM). Population density is approximately 25 persons/km^2. This is considerably higher than in the proposed Phase 2 districts of Mopeia (Zambezia) and Meringue and Chemba (both in Sofala Province). These districts have a total population of less than 250,000 and a population density of around 12 persons/ km^2.

Overall, poverty rates throughout the Project area vary from a high of 66% in Mutarara to a low of 45% in the two Sofala districts. Literacy rates are low, averaging only 13% across the Project area, while female headed households account for an average of 16% of all households, reaching a high of 28% in the Sofala districts.

Nearly three quarters of the 131,000 agricultural households within the five districts are in Mutarara and Morrumbala. Across the Project area there is an average of 8,188 agricultural households per administrative post, rising as high as 15,750 in Morrumbala. Individual holdings

[18] Estimated as 477,940 as of 1/1/2005

are typically small, with an average of 61% of all agricultural households farming less than 1 hectare. Average holding sizes are smaller in Zambezia Province (with 72% having less than 1 hectare) than in Sofala and Tete.

Only Morrumbala (170,000 ha) and particularly Maringue (412,000 ha) have significant protected areas for forest or wildlife.

Project Components:

Each component is described in more detail below.

Component 1: Community Group Organization and Local Institutional Strengthening (Total: US$8.6 million; IDA: US$7.6 million; GEF: US$0.9 million; Government: US$0.1 million).

Component 1 aims to institutionally strengthen smallholders organized in community based production, marketing and savings and loan groups (CBOs) to secure access to technical and financial resources that contribute to the sustainable economic development of their members. Strengthening the capacity of CBOs to manage and control their access to support and business services from local institutions and service providers can significantly improve their opportunities for development. The sustainability of CBO activities will depend on their organizational cohesion, leadership, member motivation, official recognition and a secure, well managed basis for medium and longer term income generation.

The long-term vision is for some of these CBOs to develop as apex organizations, but any confederation would be on a demand driven basis and not prescribed by any service provider or organization. Organizational systems must evolve on a demand and need basis.

The component has three main sub-components: a) CBO capacity development; b) rural financing services, and; c) district agricultural planning and capacity development. This section, however, will only discuss the GEF-financed activities under sub-component c) since the other sub-components have already been detailed in the IDA credit's PAD.

c) District agricultural planning and capacity development (GEF financing: US$0.9 million). Under this sub-component, the Project will build capacities of government staff to identify and respond to agriculture and natural resource management related smallholder demands. Activities will include needs assessments, group training sessions, coaching and on-the-job training. The main output of the sub-component is a district level government staff fully trained in CDD approaches in sustainable agricultural development. District capacity development activities will be planned at district level and carried out by specialists contracted for specific tasks.

GEF OP 15 funds will be used to (i) complete the quantitative baseline data set compiled with PDF-B resources existing data layers that are of interest to the Project and district). Some data and maps already exist at various agencies in Mozambique but access to the data is very poor and it is difficult to judge the adequacy and quality of these data layers for the proposed activities. (ii) Establish the baselines for aboveground biodiversity using a tested rapid appraisal tool (Plant Functional Attributes), (iii) Document and geo-reference indigenous NRM and native biodiversity knowledge, and (iv) Quantify land cover change dynamics in attempt to identify deforestation and land degradation frontiers. A participatory approach that involves community members in the baseline surveys will be used to identify the improved crop, soil and water

management “best bet” interventions and to facilitate their contribution to local land use planning and uptake of Project findings

Geo-referenced data layers (soil productivity, vegetation cover, land use, water courses, areas prone to flooding and drought, roads and other infrastructure, settlements, crop distribution) obtained via remote sensing and field surveys will be compiled at the district levels. These activities will be initiated by the national level environment adviser in collaboration with the district level technical specialists and community groups and sub-contracts to consultants and service providers as required. In addition, the geo-referenced adapt will support the participatory development of communal land use maps at the community level. The geo-referenced data layers will also serve for the Project baseline and for M&E, especially for monitoring the global environmental objective. Activity plans will be developed at the community and interest group level that outline the sub-Projects they would like to undertake and submit for funding, the timeline of implementation and the technical assistance needed.

Component 2: Agricultural Production and Marketing Development (Total: US$6.4 million; IDA: US$3.9 million; GEF: US$2.5 million)

Activities under this component are concerned with the market-led growth of the agricultural supply chain, with a focus on enabling producers and other supply chain participants to sustainably increase the diversity, quantity and value of output generated or handled. Financing of small-scale investments to support such growth is provided in Component 3. Component 2 focuses instead on providing participants with the knowledge and market access required to achieve these goals. Key activities include: (a) agribusiness and market development; (b) strengthening of field extension services; (c) applied research, demonstrations and trial plots to identify and disseminate new technologies, and (d) improved cropping, agro pastoral, and agroforestry sustainably manage agricultural and forestry (Best Bet) systems.

This component will rely primarily on a strengthened extension service under the District Directorate of Agriculture (DDA) as the key mechanism for implementation, although there will be smaller service provision contracts in some specific areas (e.g. input supply development and natural resources management). The expansion of field extension staff levels and capacity is a key element in the PROAGRI II program, and guarantees will be sought that, through PROAGRI II, at least two extension staff will be in place per administrative post and one additional subject matter specialist (focusing on agribusiness and marketing) in each district headquarters prior to each districts’ entry into the Project. The Project will ensure the effectiveness of these staff through the provision of motorcycles for mobility and their operating costs, other resources for the conduct of field trials, demonstrations and related activities as well as through training of staff.

Extension staff will be supported by two Project-financed technical advisors working on a Project-wide basis on a part-time basis; one covering agribusiness and production, the other focusing on natural resource management issues.

Much of the first year of implementation in each district is being devoted to the training of extension staff, the initiation of research, trial and demonstration activities and the commissioning of market studies and supply chain analyses. As producer groups become more organized and start to define their investment priorities, and as small-scale local entrepreneurs become aware of opportunities offered by the Project, the extension services will place more emphasis on direct support to sub-Project preparation and implementation support (see Component 3) and the facilitation of market linkages.

d) Sustainably managed agricultural and forestry systems (GEF financing: US$2.5 million)

In order to ensure the long term sustainability of gains achieved through the Project, and in order to assist smallholder farmers and herders in adapting to anticipated climatic changes within the Zambezi Valley area, the Project will utilize GEF funding to support a range of activities that will enable participants to increase their awareness of, and response to, these issues. This sub-component will be implemented primarily through the contracting of a specialized environmental firms or NGOs who will work closely with the extension services and the community-based organizations service provider to raise awareness of the benefits of sustainable natural resource management approaches.

Such sustainable technologies may include: improved cultivation and conservation agriculture practices; improved water management for small scale irrigation and rain-fed production; crop diversification and non-traditional crops; improved fertilizer use efficiency and integrated pest control; improved land management; and adaptation of production systems to climate change. For livestock systems, possible areas would include promotion of increased livestock production linked to the sustainable management of grazing areas and agroforestry systems.

Major activities will include:

a) Contracting a Project-wide environmental specialist, two environmental technicians and a communications specialist, the latter to develop extension-related and media materials for the promotion of sustainably managed agricultural and forestry systems Provision would also be made for the procurement of equipment and vehicles to ensure the mobility and operational capacity of service provider staff as well as resources for operations costs incurred by service provider staff;
b) Under the management of Field Management Advisor and Environment Specialist, a number of training courses and workshops will be held for both extension staff and participating producers and herders in sustainable agricultural and forestry management;
c) In close collaboration with the extension services, this sub-component would finance the undertaking of a range of field research, trials and demonstrations to increase the use of environmentally sustainable agricultural technologies (see above) and show their financial profitability for adoptees. Studies would be expected to include the identification of constraints to the adoption of improved land and water management technologies such as contour ploughing, mulching, water harvesting and intercropping with legumes;
d) An awareness and communications program would be created and implemented to ensure wide diffusion of knowledge concerning these sustainable technologies.

The bulk of GEF OP 15 incremental funding will be used to provide technical support to facilitate the uptake of sustainable management of land and water resources through the adaptation of available "best bet" agroforestry, soil conservation and alternate energy sources and to ensure the priority linkages with global environmental benefits (carbon sequestration, above and below ground native biodiversity conservation). Special attention will be given to improving and diversifying cropping systems by coupling indigenous knowledge, species, and varieties with current natural resource management. Communities currently practice a range of extractive activities (collection of firewood, honey, and medicinal plants, charcoal burning) in existing forests, which often involve the use of fire and the occurrence of unintended forest fires. The proposed forest management activities will target the development and implementation (see component 3 below) of more sustainable extraction practices and alternative

cultivation/production practices for the currently extracted forest products. Agricultural intensification practices that facilitate nutrient cycling (e.g. the use of legume cover and intercrops, small amounts of fertilizer with cash crops), reduced weeds and pests (e.g. via crop rotations), and the use of high value-low volume crops to avoid nutrient exports will be promoted to provide alternatives to the current practice of slash and burn agriculture.

Under the proposed SPA component, the main goal is to strengthen the country's emerging NAPA priority activities (see Annex 4 – part 2), which are targeting the development of early warning systems for climate variability and climate change. The proposed SPA activities will strengthen the capacity of national partners to (i) identify the vulnerability of specific sectors (agriculture, forestry, fisheries, water supply and quality) to drought/flood prediction, erosion/landslide hot spots, infrastructure, re-forestation schemes by region, and (ii) to evaluate the tradeoffs between sectors as a basis for future policy interventions and financial investments.

The specific activities include the calibration and testing of basin and catchment level land cover dynamics-hydrology models (VIC, DHSVM) with participation (observation/measurements) by local communities and stakeholder agencies (The National Meteorological Agency, The National Directorate for Water, The Ministry for Coordination of Environmental Actions (MICOA), The National Institute for Disaster Management (INGC). Both VIC and DHVSM handle dynamic land use-land cover changes and have already been tested at basin to field scales in other regions (e.g. the Amazon and Mekong basins). In addition, the Erosion Productivity Impact Calculator (EPIC) Crop Model will be evaluated for use in the study of impacts of climate variability and climate change on local crop productivity and as a tool to simulate the impact of improved crop rotations as a mitigation strategy to changing rainfall. (see Annex 4 – Part 2 for details of the proposed activities and models).

Component 3: Community Agricultural and Environmental Investment Fund (Total: US$8.7 million; IDA: US$5.9 million; GEF: US$1.9 million; Beneficiaries: US$0.9 million).

The objective of the component is to provide for an Investment Advisor, preparation and implementation support for sub-Projects and a Fund to provide technical support and grants to facilitate accelerated agricultural development and sustainable land and water management in the Project area. These Fund investments will include: (i) improved agriculturally related public infrastructure (rural access, markets, and buildings), as well as communal infrastructure facilities (irrigation and storage); (ii) small-scale productive activities implemented through community-based groups or local entrepreneurs on the basis of contributory grants, including a range of agricultural and agribusiness activities; and (iii) support for improved natural resource management through contributory grants for investment and technical assistance. A portion of the fund (US$0.9 million or 12%) will be allocated to cover the costs related to consulting services needed for proposal design, evaluation and implementation support and supervision as required across all windows.

The Fund will benefit from district level structures and capacities developed under the DPFP, as well as supplementary support provided under other Project components. However, no disbursement under the fund is expected in the first year of implementation. Growing district budgets and capabilities will ensure sustainability of public investments beyond the Project period, while the strengthening of local credit mechanisms and linkages under Component 1 will provide resources for productive investments.

<u>d) Natural Resource Management (GEF funding US$1.7 million):</u>

GEF OP 15 investments will target improved natural resources management that result in verifiable global environmental benefits. These grants will be based on community demands guided by priority criteria to ensure global environmental benefits. Examples of "best bet" practices that are not only attractive to communities but also fulfill priority global benefit criteria include (i) in-situ conservation in biodiverse home gardens of important native fruit, medicinal, forage plant species identified by local communities, (ii) protection and/or restoration of degraded community managed areas such wetlands, and riparian and buffer zones and use rights for extractive products, (iii) improved, fireless honey collection methods to reduce wildfires from traditional honey collection practices, and (iv) conservation of habitats identified as important sources of medicinal plants.

The objective of these investments would be to improve both livelihoods and economic well being of smallholder farmers, and to preserve or restore ecosystem stability, functions and services. Proposed activities would be in coherence with the community and district land use plans which will be developed under Component 1. They would also respond to specific environmental criteria that will be established and disseminated to communities via the awareness and education campaign under Component 2.

Support will be provided through a natural resources management subject matter specialist within DDA (Component 2), and a Regional Environmental Specialist and two district level technical specialists will assist communities to develop sub-Projects proposals and provide support for sub-Project implementation as well as monitoring and evaluation of sub-Projects. The funds under this component would finance from 70% to 90% of the total sub-Project cost depending on the environmental benefits provided. Grants up to US$5,000 will be approved at the district level. Above this amount, and up to a proposed limit of US$20,000, grants will be approved by the Provincial Steering Committee. The beneficiaries will provide the remainder either in kind (manpower, etc.) or in cash. Ten percent of revenues from sales will be paid into a group managed reserve to cover maintenance costs or enable extension of the investment. Proposals for sub-Project financing under this window may aim to complement proposals for other windows or could be submitted at a later stage to complement a sub-Project already under implementation.

Component 4: Project Management, Coordination and Monitoring and Evaluation (Total: US$3.1 million; IDA: US$2.0 million; GEF: US$0.9 million; Government: US$0.2 million).

The Project will not utilize a dedicated Project implementation unit. Project coordination, management and monitoring will, therefore, be undertaken by government staff, individual advisors and contracted service providers (see Annex 6). Expenditures include consultancy and training ,goods and equipment as well as operating costs. Due to the district focus of the Project, technical management, coordination and monitoring roles are predominantly at the local level, while financial management will be supervised from national level.

This component will support the following activities: a) Capacity Building; Overall Project strategy will be the responsibility by an Inter-Ministerial Steering Committee, shared with the DPFP, and expanded to include additional ministries such as Industry and Commerce. The National Director of DNPDR will be named as the Project Director and will serve as Secretary to the steering committee on matters related to the Project. He/she will take primary responsibility for ensuring adequate technical and financial management, and will be supported by a Financial Management Specialist and accountant in the financial area and a Project area-based Field Management Advisor (FMA) in technical matters. At provincial level, the DNPDR representative, supported by a Provincial Financial Manager, will provide the key management functions, and act as Secretary for the Provincial Steering Committee, already established by

DPFP. Finally, at district level, Project management will be the responsibility of the District Administrator, supported by the District Facilitator (DF), a Project funded position under Component 1 and a district level financial officer.

Project coordination will be undertaken principally at two levels. Within the district, the DF will be principally responsible for coordination, linking together government technical agencies, service providers and district consultative planning participants. On a Project-wide level, the FMA, reporting to the Project Director and supported by a small group of on-call experts, would coordinate between DFs, provincial stakeholders, and the national level.

Project monitoring will also be undertaken at two levels; **internal** (inputs and outcomes) and **external** (process). Internal monitoring will closely follow the coordination roles, with the DF and the FMA having responsibilities in this area. The information collected – both directly and from service providers own monitoring processes - will comprise part of the annual reporting system of the Project and will include expenditure, input and performance data, as well as monitoring data derived under Component 1. External monitoring will be undertaken by an independent contractor reporting directly to the Inter-Ministerial Steering Committee and will focus on processes and outcomes. This work will be supported by the baseline study completed in February 2007, followed by similar studies prior to the mid-term and investment completion reviews.

The remote sensing quantitative baselines developed via the GEF PDF-B grant will serve as objective reference points to evaluate progress over the life of the Project and beyond. The SPA modeling component will provide an interactive predictive and analytical framework to assess current and emerging resource management issues during and beyond the lifetime of the Project. Therefore, this component will provide resources necessary to (i) design and implement a Remote Sensing and Geographical Information System (GIS) Database to monitor local and environmental indicators, (ii) design and implement a community-based monitoring system linked to the GIS database and (iii) design and implement a communication strategies.

GEF funds will be used to recruit a Senior Environmental Specialist (ES) who will be based with the Field Management Unit and two District Technical Facilitators (DTFs). The ES will support the two DTFs and interact closely with the Field Management Advisor and associated staff in the Field Management Unit. GEF funds will also be used to equip the technical specialists who will work across all five districts with vehicles, motor cycles, GPS units etc., including the cost associated with operating them.

Annex 4 - Attachment 1: Elements of the Participation Plan

The participation plan was developed and integrated into the Project implementation manual. The participation plan was designed to engage all district stakeholders in a dialogue and provide them with a platform for interaction, planning, and decision-making in view of a sustainable agricultural development in the Project districts. A preliminary list of stakeholders and their role is provided in the following table.

Table A. Preliminary list of participating stakeholders and their role in the Project implementation

Stakeholder	Relevance to the Project	Key issue for the Project
Administrative Post Level Stakeholders		
Community Consultative Forum Leaders of the communities existing in the Administrative Post (AP).	Defines priority programs for the AP.	Is informed and consulted within the process of awarding a matching grant to a CBO or private entrepreneur.
AP Office AP Administrator and 2-3 administrative officers.	Establishes the linkage between the District Administration and the communities. Collects taxes.	• Ensures the provision of basic services
Basic public services Small numbers of public officers	Collection of information for the district MIS system.	• Provision of basic services
Service provider for group formation and development	NGO contracted with resources from the Project	• Promote the formation and institutional organization of CBO. • Issues opinion about the level of organization and leadership of a CBO that have submitted and investment proposal.
Communities/CBO Groups of farmers with varied levels of internal organization and leadership	Main beneficiaries	• Identification of the needs of investment. • Design the investment with support of TA financed by the Project. • Implementation of the proposed investment and subsequent operation.
District Government Stakeholders		
District Administration and District Consultative Councils Community leaders, District Administrators, Administrative Post and Locality Chiefs, Heads of District directorates and services	Key authority at district level, district planning and Project implementation coordination Formulates guidelines and priorities for district development. Evaluation and approval of District Development Plan (DDP)	• To coordinate the district development plan implementation • To facilitate participatory district planning • To facilitate integration within the communities and traditional leaders • To facilitate establishment of local community associations and NRM committees • To approve specific proposals of public nature investments to be carried out with funds made available by the Project
District Technical Planning Team	Project implementation	• To implement the district land use

Technical staff nominated by the District Administrator		planning in coordination with the District Officers from various Ministries • To liaise with the contracted service provider • To oversight and facilitate the outputs of the district experts' work
Local/Traditional Authorities	Facilitate Project implementation	• To facilitate Project implementation • To persuade and mobilize community members to adhere to the Project • Provide local knowledge on land use strategy and natural resource use
District Administration (DA) District Administrator, District Permanent Secretary and district services (Includes Agriculture).	Governs the district (*scope of decision making in evolution)*. Ensures provision of services. Collects taxes.	• Will host the Project District Facilitator
Committee for Technical Evaluation of Proposals A group of district technical staff with recognized competence	Participation in Project implementation (component 3)	• Issues technical evaluation and recommendations about the proposals submitted for financing from CAEIF
district Agricultural services Extension services , forestry services, livestock services land administration services	Promotes facilitates or directly delivers agriculture services. Collects agricultural statistical data. Provides Technical assistance.	• Will have extensive responsibilities under Component 2
Commodity/product for a Multi stakeholder group	Promotion of production & marketing of a specific product or group of products	• Discusses and identifies intervention of public, private or public-private nature to be recommended for funding by the CAEIF
Civil Society Stakeholders		
Community Based Organizations Existing organizations e.g. - ACODEMAZA/ACODEMADE – Farmers Association of Zambézia/Derre	Project implementation Provide experience	• To promote exchange programs with other communities • To represent community interests • To implement Project activities • To benefit from the use of natural resources • To establish the link between the Project and local community

Smallholder farmers	Beneficiaries	• Express demand for Project intervention and participate in the decision making and implementation of Project activities
Marginalized population Women, youth, HIV/AIDS infected, decapitated people	Beneficiaries	• Enhanced participation in decision making and implementation of Project activities
Private Sector	Establishment of cost effective methods for benefit generation	• To provide business opportunities for local community members • To facilitate employment to local communities • To establish partnerships with CBO's and Civil Society for implementation of Project activities
Provincial Government Stakeholders		
Provincial Government (PG) Chaired by the Provincial Governor, and including the Prov. Permanent Secretary, and Heads of Provincial Directorates	Roles and functions in evolution. Coordination of activities of the various provincial Directorates and services. Approves Provincial Plan of Development and monitors its implementation.	• Formal provincial level oversight of the performance of the District. Administration of the Project districts.
DPFP Steering Committee Chaired by the PPS and includes Agriculture, Public Works, Finance, State Administration, Environmental Coordination	Consultative and Coordination Forum for activities oriented to districts but above their scope of decision	• Would be used for oversight of the performance of district administrations of Project districts
Provincial Directorate for Agriculture (DPA)	Implementation of land use plan in line with PROAGRI	• To provide technical expertise in agricultural land use activities • To facilitate integration of the district land use planning into the provincial and national land use planning • Participate in the provincial steering committee
Provincial Directorate for Environment (DPCA)	Technical assistance and Project implementation	• To provide technical Assistance for the evaluation of the • Participate in the provincial steering committee • Facilitate the NAPA information

		and adaptation strategy for the province
Provincial Directorate for Public Works	Infrastructure planning, building and maintenance	• To facilitate the coordination of activities related to infrastructure development and maintenance
Provincial Directorate of Planning and Finance (DPPF) Encompasses the Provincial Rural Development Department, Provincial Departments of Finance and Taxes	Supports the Provincial Government to prepare the Provincial Development Plan. Supports and represents PG in its relationship with Ministry of Finance and MPD.	• Manages provincial budget allocation and execution at provincial level
Provincial Department of Rural Development (PDDR)	In the scope of functions of the DPPF formulate and ensure implementation of programs relevant for rural development that do not fall under the mandate of the provincial directorates and services.	• Will host the provincial level accountant and procurement officer in Quelimane. • This department will host the TA to be posted at regional level.
Government: national level (Line ministries and their regional officers) Stakeholders		
Ministry of Agriculture (MINAG) - DNFFB – Department of Forestry - DINAGECA – Department of Lands - DNER – Department of Extension - DEA – Department of Economy - IIAM – Agricultural Research Institute	- create capacity at district level - support to coordination, - provide mechanisms of technology transfer and technical assistance - promote implementation of regulation and laws	• To facilitate the implementation of the Project activities at provincial and district level involving all departments • Mainstream the Project activities within MINAG core activities • Participate and chair the district forum for sustainable natural resource management • Facilitate the application of PROAGRI II strategic environmental assessment recommendations in the Project area • Supervise implementation of regulations and laws. • Provide technical assistance and conduct research
Ministry of Environmental Affairs (MICOA)	Coordinate SEA, EIA, and supervise the implementation of environmental production practices, mainstream environment concerns within agriculture	• To coordinate the implementation of the Environment Policies and the ecological sustainability of the Project activities • Establish the link with NAP (UNCCD), NAPA (UNFCCC), NBSAP (CBD), strive for synergy • To evaluate the EIA and the strategic environmental assessment
Ministry of Industry and Commerce	Together with MINAG-DEA identify market opportunities (locally or abroad) for local	• To promote local processing of agricultural and natural resource to create job opportunities for local communities

	products; Promote local processing of natural resource and agricultural products	• To facilitate the establishment of small/medium business based on natural resources for community associations
Ministry of Planning and Development (MPD) National directorate for Planning and Budget, National Statistical Institute, Centre for Investment Promotion	Implementing agency, responsibility for integrated socio-economic development at all levels Coordinates planning and policy formulation. Encompasses DNPDR and oversees its activities.	• To integrate the Project activities within the district development process • To provide assistance with the decentralization process • periodically evaluate progress and identify constraints faced by the Project based on the reports presented by the director of DNPDR
National Directorate for Promotion of Rural Development Several Departments and PIUs (structure under review)	Supports MPD in the formulation of Rural Development policies. Responsible for the implementation of national rural-oriented programs not falling under the mandate of sector ministries	• Appointed by MPD to implement the Project. • New Administration and Finance Section to be developed with support for the Project (TA on FM and Procurement)
Ministry of Finance	Provide the link between the Financing Agency and the Project implementation team	• To coordinate the design of the district disaster preparedness • To facilitate the disbursement of Credit funds for Project implementation • To create fiscal incentives for communities to engage in the formal market • To monitor and audit the Project accounts
Ministry of State Administration	Coordinate with INGC, the district, and local authorities to identify safer areas and in accordance to the district preparedness plan, to settle people displaced by floods	• To facilitate the decentralization process and provide link with the local authorities
Technical Inter-ministerial Committee Central level, technical representatives of concerned ministries. Created for DPFP	Consultation and coordination at technical level.	• Identification of issues requiring specific action at ministry level.
Support organizations		
INGC	Assist affected communities and provide capacity for the district technical unit to prepare	• To provide technical and legal assistance for the set up of the district disaster preparedness

	the district disaster preparedness plan	• To coordinate the design of the district disaster preparedness
University Eduardo Mondlane - Faculty of Agronomy and Forestry	Training and technical at all levels during planning and implementation of the district development plan	• To conduct research in all agricultural aspects including social and cultural aspects • Coordinate with all departments of MINAG to identify research issues • To conduct the biodiversity assessment in the Project area
Leading Research Institutions specialized in advanced remote sensing and hydrology modeling	Baseline surveys (PDF-B) dynamic hydrology modeling to support country NAPA and landscape level climate risk impact analyses; and training of personnel at local institutions and university.	• Baseline natural resource maps • Digital elevation maps for each district • Distributed Hydrology Vegetation Soil model calibrated for Zambezi valley and Project area
International Research Organization (ICRAF, CIMMYT ICRISAT)	Research, training and implementation of agriculture an agroforestry, technology transfer with IIAM and the University	• To conduct research • Provide information on regional experiences • Provide training of technical agents and farmers

Annex 4 - Attachment 2: Special Priority on Adaptation Activities

The activities proposed below under SPA funding are synergistic with the specific objectives and activities proposed under Mozambique's draft NAPA. The objectives of the NAPA are to: (i) Strengthen the country's (climate) early warning system for extreme events; (ii) Strengthen the capacity of small holder farmers to manage the adverse effects of climate change; (iii) Promote the use of renewable energy for water pumping and lighting in rural and periurban areas, (iv) Promote reforestation; (v) Promote measures to collect and conserve rainwater; (vi) Promote action to stop and prevent soil erosion; (vii) Promote the integration of climate change issues in the planning context of decentralized institutions and programs.

The Mozambique NAPA has proposed 4 major program activities to meet the above objectives in the short to medium term. These include: (i) Improved collection of meteorological data and generation of weather forecasts (including extreme events) and communication of information to stakeholders especially in vulnerable areas, (ii) Improved capacity of farmers and livestock herders to collect and store water for enhanced mitigation of drought effects, (iii) Mapping of land cover dynamics and erosion vulnerability in coastal regions, (iv) Improved characterization and use of hydrological resources for irrigation, water storage, and sustainable use of river margins and (v) provide training opportunities to local government staff and community leaders.

The activities proposed under the SPA component of this PAD are aimed at reinforcing the national and long term goals of the NAPA objectives with respect to the following key issues: (i) Provide training and improve the national capacity to identify, characterize and manage hydrology at a basin scale e.g. the Zambezi. (ii) create, train and sustain a national capacity to model the interactive impacts of climate change and land cover land use change and assess the priority mitigation responses, and (iii) Contribute to strengthening of a national data base of land cover and land use change dynamics, hydrology, and climate information to support the collaborative activities of national agencies (e.g. National Meteorological Agency, CENACARTA, National Directorate of Water, ARA Zambezi, GPZ) and policy makers.

Specific SPA activities include:

1. *Development of a "Dynamic (Landscape-Water Resource) Analysis Framework" for the Zambezi River basin: Predictions of Consequences of Climate Variability and Landuse/Landcover Change*

The objective here is to assess the vulnerability of specific sectors (agriculture, forestry, fisheries, water supply and quality) of the Zambezi basin to potential drought, flooding, landslides, infrastructure, and re-forestation schemes, under both current and possible future conditions. With this information, the next objective is to evaluate the tradeoffs between sectors as a basis for future policy interventions and financial investments.

Contemporary geospatially-explicit, process-based hydrology models (including dams and irrigation schemes) provide a robust basis for analysis of changes in the water flow and landscape dynamics of river basins as a function of changes in land use and land cover and regional climatology. While they address the detailed movement of water across the landscape, such models are "more" than just hydrology models. The model can be seen as a multi-layered representation of characteristics and processes in a drainage basin that allows us to examine intersections of the data required for describing a basin's topographic and landscape features and its climatology patterns. Overall, the resulting modeling environment can be developed as a

"Dynamic (Landscape-Water Resources) Analysis Framework." Because of the fundamental processes and detailed information represented in a functional Dynamic Analysis Framework, a series of critical problems can be examined that may result from climate variability and land use/land cover change:

- What would be the impacts of changes in agriculture (including irrigation) and forestry practices on local and regional water balances? E.g., will reforestation lead to an increase or to a decrease in stream flow?
- If some indication of climate over a growing season was provided, could crop selection (and fire management) be improved?
- How would changes in streamflow affect fisheries (including through changes in water levels of nursery areas)?
- Can floods or droughts be predicated, or at least anticipated, one or two months into the future, as an early-warning system? These models compute not only stream discharge, but such intermediate products as soil moisture and evapotranspiration. If a model is maintained in an operational mode, the current conditions of soil moisture (the antecedent for floods or drought) can be monitored. If the hydrology modeled is then driven by forecasts from regional climate models (see below), then near-future potential conditions can be tracked, and warnings given.
- What would future climate bring? While predictions of specific future climates are uncertain, consequences of different scenarios can be evaluated.
- How would developments of infrastructure affect downstream flow, water quality, and fisheries resources?
- How would changes in land use practices, with varying climate, affect water supply and water quality?

2. A Dynamic Analysis Framework based on the VIC/DHSVM Hydrology Models

The geospatially-explicit, process based hydrology models referred to above compute the water and energy balance of a spatial unit of the landscape (a "pixel"), as a function of landscape structure (topography, soils) and vegetation properties, and are driven ("forced") by a surface climatology. As such, our Dynamic Analysis Framework can be thought of as the intersection of a physical template module (describing static properties of topography and soils), a land use/land cover module (describing not only what is present, but the biophysical attributes thereof), a surface climate module (providing the drivers for the land surface), and, finally, the hydrology models themselves. The following discussion focuses on VIC, with a brief summary of DHSVM (where the principles are very comparable). This discussion will make clear how water movement, climate, and the landscape all intersect.

2.1. Geospatial/Process Based Hydrology Models

Here we describe two such models, VIC and, more briefly, DHSVM. The difference between them is based on the scale of the river basin represented. While it is not discussed below, biogeochemistry and sediment mobilization sub-models are being developed, which can address such issues as water quality and erosion/landslides.

The VIC (Variable Infiltration Capacity) model is a semi-distributed macro-scale hydrologic model, which represents explicitly the effects of vegetation, topography, and soils on the exchange of moisture and energy between the land and atmosphere. As compared with other so-called soil-vegetation-atmosphere transfer schemes (SVATS), VIC represents in more detail the

generation of streamflow, and its sensitivities to the above factors. The VIC model has been applied to all river basins in the U.S. the entire country of China, the pan-Arctic region, the Mekong, and the entire Earth (at 1/2° spatial resolution. The VIC model can be operated in either one of two modes: in the energy balance mode, the surface energy budget is closed by iterating over an effective surface temperature, and in the water balance mode the effective surface temperature is simply approximated by the surface air temperature.

Some of the soil parameters in VIC generally cannot be estimated directly, and must be adjusted by calibration, typically the depth of each soil layer, the maximum velocity of baseflow, the fraction of baseflow where nonlinear baseflow begins, and the parameter of the variable infiltration curve. Calibration and validation are typically done with different periods of flow observations (and are, of course, dependent on data available).

The DHSVM (Distributed Hydrology Soil Vegetation Model) is intended for small to moderate drainage areas (typically less than about 10,000 km^2), over which digital topographic data allows explicit representation of surface and subsurface flows. DHSVM is utilized for stream flow forecasting and for addressing hydrologic effects of land management or of climate change. The model has been applied on several basins in the USA and in British Columbia, and to the Mae Chaem basin, of northwestern Thailand. The model simulates soil moisture, snow cover, runoff, and evapotranspiration on a sub-daily time scale. It accounts for topographic and vegetation effects on a pixel-by-pixel basis, with a typical resolution of 30 to 150 m. Snow accumulation and snow melt, where needed, are calculated by a two-layer energy-balance model.

To operate, both models require their respective physical template, land use/land cover, and surface climate modules. These are briefly outlined in the next sections, with an emphasis on VIC (given the overall size of the Zambezi).

2.2. River basin Template

The first step in the construction of a river basin model is to derive a (digital) river network and so-called flow accumulation grid. Runoff simulated by VIC is routed from each model grid cell to one of its eight neighboring cells, according to the local "flow direction." The VIC routing network has typically been derived from high resolution USGS GTOPO30; 30 arc second data, aggregated to the model grid resolution of 1/12 degree latitude and longitude (roughly, 10 x 10 km, in the tropics). The recent availability of SRTM data (90-m) will generally provide enhanced products (though not automatic solutions, especially in flat, forested regions). The soil parameters can be measured directly (rare), or use assigned attributes, typically based on soil texture, which can be derived in turn from existing global soil maps.

2.3. Vegetation Attributes

A critical intersection between land use planning and the hydrologic cycle is represented by land cover. Landcover itself is typically derived from multiple sources, typically involving local surveys and satellites. At broad scales, landcover products from MODIS can provide a broad overview. Closer examination frequently reveals discrepancies. Data from higher-resolution satellites, such as LANDSAT, are often used, producing composite products (here illustrated fro the Mekong). The overall development of a highly-resolved satellite-based landcover analysis for this Project is covered elsewhere in this report.

The Leaf Area Index (LAI) is one of the vegetation parameters to which VI C is most sensitive. It controls not only precipitation (solid and liquid) interception, but also canopy resistance to

transpiration, and the attenuation of solar radiation through the vegetation cover. For modeling purposes, LAI can be derived from lookup tables (where each vegetation type is assigned a seasonal LAI, based on literature values). More recently, it has become possible to use the standard 8-day, 1 km MODIS satellite LAI product (with caveats for cloud covers). A series of parameters are inferred for each vegetation class, typically from literature values. Vegetation height is used by VIC as the basis for determining roughness length (the height above the ground where wind speed is reduced to zero due to surface resistance) and displacement height (height above the ground were wind speed is not significantly affected by surface roughness) both of which are important parameters in its evapotranspiration formulation. Maximum rooting depth affects the ability of the vegetation to extract moisture from the three soil layers, and hence affects evapotranspiration, and the partitioning of precipitation into runoff and evapotranspiration.

2.4. Surface Climatology

A critical element in the development of a river basin model is, of course, the surface climatology. The meteorological data used to drive VIC are daily precipitation, maximum and minimum temperature, and mean wind speed (other forcing data; e.g., downward solar and longwave radiation, humidity, can be derived). Ideally, local surface observations would be sufficient to drive a model. But these are rarely available in adequate quantity. So-called reanalysis products, such as from the NOAA Climate Prediction Center Summary of the Day data archived at the National Center for Atmospheric Research (NCAR) can be used. Hence one of the major gaps in our ability to understand regional-scale land-surface processes is that climatological distributions of rainfall, temperature, and solar radiation are insufficiently resolved in conventional re-analysis products, particularly in regions of intense topography and fragmented landscapes. An emerging area is the use of regional scale, or mesoscale, climate models. For example, the regional scale Weather Research and Forecasting (WRF) model is a state-of-the-art atmospheric model designed for use on regional grids. The model is routinely applied for real-time forecasts at the National Center for Atmospheric Research (NCAR) on grid sizes down to a few kilometers, especially for central US spring-time convection and Atlantic hurricanes. WRF does well at simulating the Asian and Australia monsoons, and could be extended to east Africa.

Process Crop Models: Erosion Productivity Impact Calculator (EPIC)

EPIC is a generalized crop model that simulates daily crop growth on a hectare scale. Like most process plant growth models, it predicts plant biomass by simulating carbon fixation by photosynthesis, maintenance respiration, and growth respiration. Several different crops may be grown in rotation within one model execution. It uses the concept of light-use efficiency as a function of photosynthetically available radiation (PAR) to predict biomass. EPIC has been modified to simulate the direct effects of atmospheric carbon dioxide on plant growth and water use. Crop management is explicitly incorporated into the model.

This approach is useful for evaluating a limited number of agronomic adaptations to climate change, such as changes in planting dates, modifying rotations (i.e., switching cultivars and crop species), changing irrigation practices, and changing tillage operations. The parameter files are extremely sensitive to local conditions and EPIC can give grossly misleading results when relying on default settings as it is being tailored to different locations and cropping systems.

Applications Drought assessment, soil loss tolerance tool, global climate change analysis, farm level planning, drought impacts on residue cover, and nutrient and pesticide movement estimates for alternative farming systems for water quality analysis.

Annex 5: Project Costs

Project Costs Summary

	Local	Foreign	Total	Of which GEF
COMPONENT 1: Community group organization and local institutions strengthening	**5.8**	**2.6**	**8.4**	**0.85**
1.1 CBO capacity development	2.6	1.1	3.7	
1.2 Rural financial services	0.8	0.4	1.2	
1.3 District capacity development	1.8	0.8	2.6	
1.4 Participatory Land Use Planning	0.6	0.3	0.9	
COMPONENT 2: Agricultural Production and Marketing Development	**4.1**	**2.1**	**6.2**	**2.4**
2.1 Agribusiness & market development	0.5	0.3	0.8	
2.2 Extension Services Strengthening and Applied Research	1.0	0.5	1.5	
2.3 Sustainably managed agricultural & forest systems	1.0	0.5	1.5	
2.4 Sustainable Management of Land and Natural Resources	1.6	0.8	2.4	
COMPONENT 3: Community Agricultural and Environment Investment Fund	**6.7**	**1.9**	**8.6**	**1.8**
3.1 Support to CAIEF implementation	1.2	0.3	1.5	
3.2 CAIEF investment	4.1	1.2	5.3	
3.3 Sub-projects addressing Sustainable NRM	1.4	0.4	1.8	
COMPONENT 4: Project Management, Coordination and Monitoring & Evaluation	**1.8**	**0.7**	**2.5**	**0.85**
4.1 Project coordination	1.0	0.4	1.4	
4.2 External M&E	0.4	0.2	0.76	
4.3 Communication & training	0.1	0.0	0.1	
4.4 GEF activities : management, monitoring and training	0.3	0.1	0.4	
PROJECT PREPARATION FACILITY	**0.4**	**0.2**	**0.6**	
Total Baseline Cost	18.8	7.5	26.3	5.9
Price Contingencies	0.8	0.3	1.1	0.3
Total Project Costs[19]	**19.6**	**7.8**	**27.4**	**6.2**

[19] Identifiable taxes and duties are US$3.6 million and the total Project cost, net of taxes, is US$24.1 million.

	IDA		GEF		Benef.		Govt		Total	
	Amount	**%**	**Am.**	**%**	**Am.**	**%**	**Am.**	**%**	**Am.**	**%**
COMP 1: Community group org. and local institutions strengthening	7.6	88	0.9	10	0.0	0	0.1	1	8.6	31
COMP 2: Agricultural production & marketing development	3.9	61	2.5	39	0.0	0	0.0	0	6.4	23
COMP 3: Community agricultural and environmental inv. fund	5.9	68	1.9	22	0.9	10	0.0	0	8.7	32
COMP 4: Project management, coordination, M&E	2.0	65	0.9	29	0.0	0	0.2	6	3.1	11
Project Preparation Facility	0.6	100	0.0	0	0.0	0	0.0	0	0.6	2
Total PROJECT COSTS	20.0	73	6.2	23	0.9	3	0.3	1	27.4	100

[20] As costs have been rounded, some of the numbers may not add-up.

Annex 6: Implementation Arrangements

Background

Overall responsibility for the implementation of the Project will lie with the National Directorate for the Promotion of Rural Development (DNPDR) of the Ministry of Planning and Development (MPD). Below are the detailed implementation arrangements at the district, province and national levels Since the GEF activities represent an integral part of the overall project, the proposed implementation arrangements apply to both IDA credit as well as GEF grant funds.

District Level Implementation

The focus of all Project activities will be at the district (see Diagram 1). Extensive collaboration will take place within the structures and processes established as part of the GOM's decentralization laws and through the DPFP (see box) to ensure complementarity and avoid duplication of institution building activities and ensure adherence to established decentralization channels. In particular, the Project will expand the role of the District Technical Team (DTT) to mainstream agricultural and environmental aspects within the planning process. A key Project funded position is the **District Facilitator (DF)** whose role is to ensure that activities funded or promoted under the Project are fully integrated in district planning processes and coordinated by appropriate district structures and institutions.

Decentralized Planning and Finance Project (DPFP) – District level structures and staffing

Under the current DPFP Project, decentralization is being supported through strengthened district government capacity and the creation of participatory planning processes in each district. Key elements of this process include administrative post and district consultative councils (now mandated under the regulations of 2005), supported by a District Technical Team (DTT), with responsibility for supporting district planning processes. The DTT is chaired by the District Administrator or his nominee, and includes representatives from all district level technical agencies. The planning process results in a number of documents, including a strategic development plan, a three year rolling plan, and an annual investment plan which provide the basis for public sector expenditure within the district.

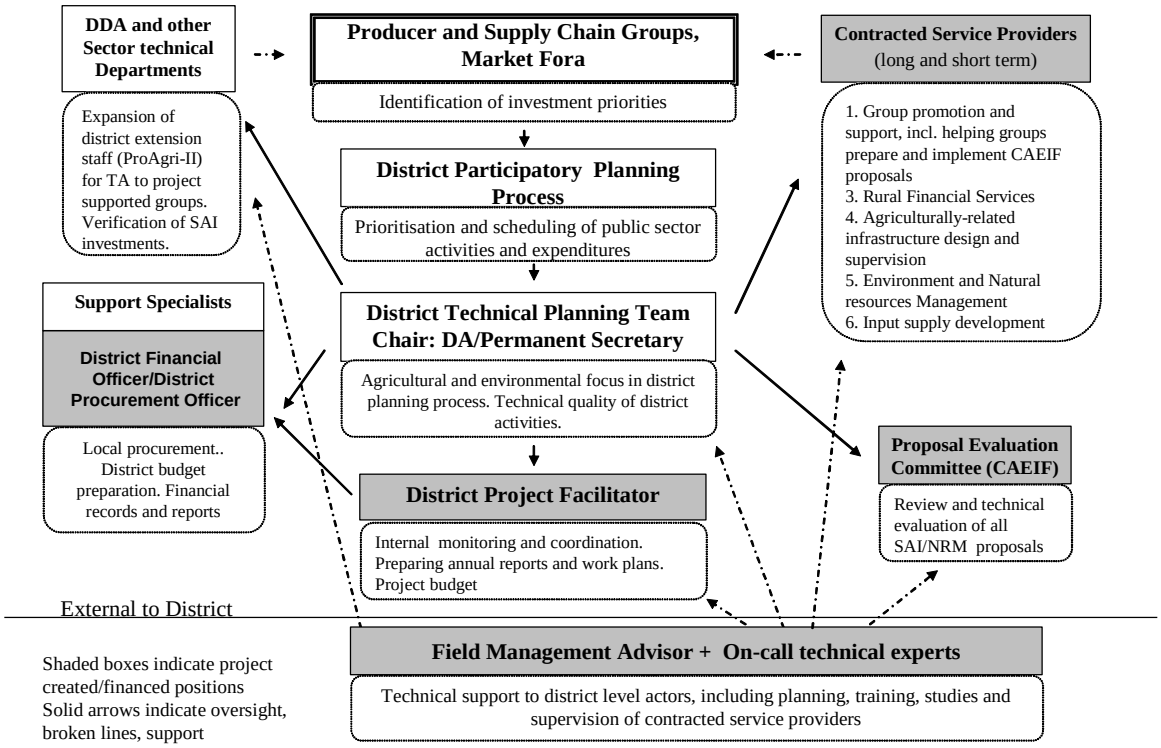
The DPFP also provides for Local Investment Grants to finance infrastructure and small-scale investments though a series of grant windows and created two new support positions at district level; a works/procurement officer, and an accountant. Although DPFP financed during the Project, these posts will eventually be absorbed into the district staffing.

The DF will report to the District Administrator and the Project Director and work in close collaboration with the DTT and relevant district technical departments (Agriculture[21], Public Works and Housing) to prepare annual district Project work plans and reports, manage internal monitoring of Project activities, formulate annual Project budgets and oversee the preparation of

[21] Government plans to add responsibilities for Industry and Commerce to the District Agriculture Directorate, this creating a District Directorate for Economic Activities (DDAE). However, the two Ministries will continue to maintain their separate identities at higher levels.

local contracts and related disbursements[22]. He/she will be supported in these tasks by two full-time positions created in the district administration and funded for the first three years of implementation by the Project or by the DPFP. One will be a **District Accountant**, the other a **District Procurement Officer**. They will work in close collaboration with the procurement/works officer and accountant recruited to support the DPFP[23].

Diagram 1 DISTRICT LEVEL STRUCTURE



Support will be provided to the primary beneficiaries through a number of service providers over the six year implementation period. Their performance will be monitored by the DF and supervised by specialist advisors linked to the **Field Management Advisor, a regionally-based position**. These advisors will be responsible for defining training requirements, methodological tools, reference materials and other support to both public sector and service provider staff at the district level.

The operation of the **Community Agricultural and Environmental Investment Fund** (CAEIF)[24] will be largely a district responsibility, although approval of larger sub-Projects and technical support – including some contracting - would occur at provincial level. Agriculturally-related infrastructure proposals would be fully integrated into the district participatory planning process, and their inclusion in approved annual investment plans will be supported by the creation of a series of DDA-led Marketing Fora at administrative post level which would identify

[22] Detailed terms of reference are provided in the Implementation working paper and Operational manual.

[23] Consideration was given to relying on the existing DPFP support staff, but current workloads were considered to render this inadvisable.

[24] See Working Paper 5: Community Agricultural and Environmental Investment Fund (CAEIF)

infrastructure bottlenecks to agricultural development and submit investment concepts to the planning process for preparation and approval.

For those proposals under the small-scale agricultural investment and natural resources management windows, which would support private investments, a **District Proposal Evaluation Committee**, comprising relevant technical personnel will be created and trained, while procurement would be carried out by the District Procurement officer under DF supervision

Provincial Level Implementation

The importance of the Provincial level government and associated agencies for Project implementation arises principally from two factors. Firstly, provincial technical agencies represent all national ministries, including a number (e.g. Public Works and Housing, Women and Social Action, Environment) which currently have no staff at district level. These provincial directorates are reasonably well staffed with trained and experienced technical personnel. If good working relations are established with the directors of the agencies, and some support for travel and other expenses are provided, these staff can play important roles in implementation. Secondly, district governments still lack banking facilities and, often, technical skills, to manage budgetary resources. Financial resources will therefore pass from central level to provincial level where both provincial and district level budgets must be amalgamated and supervised. All government salaries and budgeted recurrent expenses are paid from provincial level.

Adequate management of financial resources at provincial level in the case of this Project is facilitated by the continued union of the planning and finance directorate (now separate ministries at national level) and by the existence of a **Provincial Inter-Ministerial Steering Committee** already established for supervision of the DPFP Project. Implementation arrangements for this Project will utilize similar arrangements, including the services of the steering committee. The Provincial Representative of DNPDR would act as **Provincial Project Coordinator (PPC)**. He/she will be responsible for; (i) preparing provincial level plans and reports based on district documentation and provincial activities; (ii) ensuring the timely flow of funds from national to provincial level; (iii) disbursement of provincial resources to district level accounts and payment of contracts. He/she will be supported in these tasks by two full-time support personnel located within the DNPDR; a Provincial Accountant and a Provincial Procurement officer. These two positions could be initially funded by the Project at standard government rates, but would eventually be absorbed into DNPDR personnel, if necessary.

A key implementation role based in one of the district capitals will be that of the **Field Management Advisor (FMA)**, supported by an associated pool of short and medium term contracted specialists.. The FMA will be based in Morrumbala, capital of the district with the same name. The FMA, who will be recruited on a full-time basis over the six year implementation period, will work under the general supervision of the Project Director, and in close collaboration with Provincial Coordinators and especially the five District Facilitators. He/she will be supported by a number of technical advisors with responsibilities for coordination, supervision and support to district level service providers. These positions would be primarily part-time, although several would be full time during the first 2-3 years of implementation. They include:

- Group Promotion specialist– 42 months over 6 years (IDA financed)
- District Capacity Development specialist – 21 months over 6 years (IDA Financed)
- Agribusiness and Production specialist – 42 months over 6 years (IDA financed)

- Environmental specialist – 42 months over 6 years (GEF financed)
- Community Agricultural and Environmental Fund specialist – 27 months over 6 years (IDA Financed)
- Infrastructure specialist – 11 months over 6 years (IDA financed)
- Communications specialist – 72 months over 6 years (GEF financed)

The role of the FMA and associated experts is based upon lessons learnt from other Projects – in particular DPFP and PAMA – as to the importance of technical support to district level actors. They will ensure that implementation quality and performance is maintained by providing relevant technical agencies and contracted service providers with training, methodological support, reference materials and guidance. The FMA would also provide oversight of multi-district contracts (either provincial or Project-wide) for district level service providers[25]. Contracting of these service providers would, however, be undertaken by the Project Director and his staff, based upon the reports provided by the Technical Coordinator, and the approval of the steering committee.

In addition, a regional-level **Regional Procurement Advisor** will also be recruited and financed by the Project for the first three years of implementation. Working under the supervision of the National Procurement Specialist, the regional officer would supervise and support the provincial and district level procurement officers.

National

Given the central role of the district in Project implementation, implementation tasks and roles at the national level will be largely concerned with overall Project strategy as well as management and oversight of technical, financial and procurement activities.

At the national level an existing **Inter-Ministerial Steering Committee**, created for the DPFP and which includes senior officials from MPD, Finance, Agriculture, Public Works and Housing, and State Administration, will be expanded to include representatives of the ministries of Women and Social Action, Industry and Commerce, and Environment - the last as focal point for the GEF, United Nations Framework Convention on Climate Change (UNFCCC) United Nations Convention to Combat Desertification (UNCCD). The key role of the steering committee is to ensure that overall strategic direction of the Project is appropriate; approve work plans, budgets, reports and contracts that will be approved at the national level i.e. technical assistance contracts for NGOs and service providers.

The National Director of DNPDR will be appointed **Project Director** and will act as Secretary to the steering committee on matters related to the Project. He and his staff will be responsible for providing the steering committee with all required documentation. The Director will be supported by a full-time **Assistant**, provided by DNPDR.

In order to comply with World Bank and national financial reporting and procurement requirements as well as to train national staff and supervise district and provincial level activities, two full time staff, comprising a **Financial Management Specialist** and a National Procurement Management Specialist, has been recruited using Project funds to support this work for a period of from 2-3 years. The FMS is supported by a nationally funded **Accountant**.

[25] Detailed terms of reference for the FMA are provided in the Implementation working paper and Operational manual, Other key advisors for Components 1 and 2 and for infrastructure are provided in the appropriate working papers.

Annex 7: Financial Management and Disbursement Arrangements

This section summarizes the overall financial management arrangements for the proposed Project. The Project will be implemented at three levels; national, provincial, and district (see Annex 6). At the national level, implementation tasks will largely be concerned with financial management and central oversight of the whole Project. Overall coordination, planning, and financial management will be the responsibility of the National Directorate for the Promotion of Rural Development (DNPDR) of the Ministry of Planning and Development (MPD). The Project has also been designed to closely complement the activities of the ongoing World Bank- financed Decentralized Planning and Finance Project (DFFP), which is also being implemented through the MPD.

At provincial level, the main tasks will include provision of technical capacity especially to manage budgetary resources, as well as banking facilities not present in districts. Management of resources will be facilitated through established structures of the planning and finance directorate, and through the existence of Provincial Steering Committees established under the DPFP.

The focus of implementation will be at district level, using existing local structures including those created under the DPFP. One of the objectives of the DPFP is the provision of training courses and operational support for financial administration personnel at district level. The Project's Operational Manual defines in detail the minimum requirements that a beneficiary community should fulfill in the area of financial management. The use guidelines, including simple hand-written records of receipts and payments would be encouraged.

The Project uses existing budgetary structures and processes established as part of the government of Mozambique's decentralization framework. The proposed financial management arrangements will similarly make extensive use of the existing government structures at all levels of Project implementation to manage Project resources. The Project is therefore making effective and extensive use of the improvements in public financial management brought by the SISTAFE system for the management of state finances. Since May 2007, DNPDR became a SISTAFE Operating unit, having had the required equipment installed and relevant staff trained.

Financial Management in the Government of Mozambique

A Public Financial Management Assessment conducted in September 2004 (as follow-on to the 2001 CFAA) concluded that the overall public sector financial management risk remained high. Management of the economy was quite satisfactory, but comprehensiveness and transparency of the budget was poor, the medium-term planning and budgeting was weak, while budget execution and accounting and reporting presented quite serious weaknesses.

At the same time, a number of reforms were moving ahead in a very structured and comprehensive manner. This included a new Financial Management law, the key reform of which was the introduction and implementation of a computerized integrated financial management information system, e-SISTAFE. The government has completed a number of key preparatory reforms including: (i) issued regulations for the Financial Management law; (ii) initiated the introduction of a new and more-detailed functional classifier into the budget; (iii) started to formulate the budget in current prices; (iv) introduced restrictions on bank accounts held by public institutions; (v) started to incorporate off-budget revenues as well as donor-funded expenditures into the budget; (vi) initiated training for budget staff in double-entry accounting; and (vii) established a consolidated electronic treasury account to improve control of treasury operations and cash management.

One key reform has been the introduction and implementation of a computerized integrated financial management information system, e-SISTAFE. This has been rolled out in all ministries at central and provincial level. The Bank is part of a group of donors which has financed selected components of the system, and is also part of a Quality Assurance Group established to provide an independent view of the management, progress, and achievements of the SISTAFE project. A report of this grouping issued in November 2005, noted the satisfactory production of budget execution reports for the period January to August 2005.

A report on the Assessment of Financial Management for 2004/05 using the Public Expenditure and Financial Accountability (PEFA) methodology concluded that there have been improvements in a number of important areas which were beginning to have an impact. The budget was a credible document with final out-turns reasonably close to initial approvals; there was also a steady improvement in revenue collection and administration. Fundamental weaknesses remained in the quality of the public financial management systems (PFM) especially in internal control systems, limited coverage of the external audit, and the high-level of off-budget spending mainly from external project finance. The report noted that the quality of the PFM was expected to continue improving as a natural consequence of ongoing reforms such as e-SISTAFE; however, this would take time.

Risk Assessment

One of the major risks of using the established government structures is that of delays in the release of Project funds from the Single Treasury Account to the Provincial Treasury Account and ultimately to the intended beneficiaries. Experience to date has shown that there has been an improvement in the flow of funds from treasury since the introduction of the electronic treasury account brought about by the roll-out of e-SISTAFE. Requests for payments, including those for transfer of funds, are usually completed within days as long as they meet the electronically built-in authorization criteria which include approved budgets and availability of funds under those budget codes. A number of donor-financed projects are already channeling resources through the single treasury account. The Bank-financed Project PROAGRI, which closed in December 2006, was a sector-wide program where a number of other donors, including the government, subscribe to a common fund and thus were disbursing through existing government channels. Therefore, experience has already been gained in the use of the government systems, which will be brought to bear on the proposed Project.

The risk rating for the Project in the area of financial management is medium, reflecting the general weak implementation capacity at the district level at which most of the activities will be taking place. Capacity and experience at central level is being put in place and being strengthened to address identified weaknesses and provide the necessary expertise during Project implementation. Mitigating factors to address identified risks are detailed below and include the use of already existing structures established at all levels of government.

	RISK RATING				*PCN Risk Rating*	*Risk Mitigating Measures*
	H	***S***	***M***	***L***		
1. INHERENT RISKS						
Country Level			X		High	Ongoing reforms including SISTAFE
Entity Level		X			Medium	DNDPR/DPFP interface
Project Level		X			High	Pilot, additional resources
OVERALL INHERENT RISK		X			High	
2. CONTROL RISKS						
Budget			X		Medium	Use of government enhanced system through SISTAFE
Accounting		X			Medium	Need for Project –specific system
Internal Controls			X		High	Subsequent releases based on accountability
Funds Flow			X		High	Use of government established system
Financial Reporting		X			Medium	Reliance on good accounting system
Auditing			X		High	Project-specific audit requirement using private external auditors
OVERALL CONTROL RISK		X	X		Medium/ High	Overall rating modest to substantial and will reduce further before effectiveness.

H – High S – Substantial M – Modest L – Low

Country-Specific

Pre-2002 assessments have alluded to the weaknesses in the public financial management (PFM). However, a number of reforms instituted by the government have started to yield gains in the quality of PFM. This is confirmed by recent independent reviews which have confirmed the continuing improvements in important areas of PFM, as well as the expected continued improving as a natural consequence of ongoing reforms such as e-SISTAFE.

Entity-Specific

The Project is being implemented at different levels of government with the main activities being carried out in two phases, with two districts in phase one and three in phase two. The DPFP Project covers the four provinces of the Zambezi Region and the districts will therefore also receive support from the structures being established under the DPFP Project. The phasing of the Project, coupled with the use of existing structures should address the weak financial management and accounting environment at these levels. In addition, key staff in accounting and procurement will be recruited to provide additional capacity to the Project.

Project Specific

The Project will be implemented by a number of agencies of varying degrees of capabilities. The Project also involves numerous small transactions. There is therefore need for an effective coordination by the DNPDR of these agencies especially on the use and accounting for the use of funds. A number of lessons have been learnt from the implementation of the DPFP Project which will be brought to bear on the new Project. This includes improving the monitoring and

evaluation function, of which financial information will be a key input. The DNPDR will support additional supervision and guidance activities, at both central, provincial and district level, including clear guidelines and definition of roles of the DNPDR, its staff and relationships to other agencies and units.

Staffing

At national level, the DNPDR has established a Financial and Administration Unit. The unit financial management capacity is comprised of three accountants and the recruitment process of an economist is underway to strengthen the unit. The Project is also financing a Senior Financial Management Specialist, through a two years TA contract. He is responsible for: (i) training of the DNPDR Financial and Administration staff and (ii) the establishment and maintenance of the Project's financial management system.

A regional accountant will be appointed to support and train the Accountants at districts and will be located in one of participating provinces. For each participating district, an accountant has been appointed for the Project under government compensation conditions.

Planning and Budgeting

A Project budget has been drawn up and is included in the PAD and in the Operations Manual (full set of Costab tables). The Project annual budgets will be drawn from the Operations Manual and disbursement schedule. The annual budget will be prepared based on the policy guidelines and regulations issued by the Ministry of Finance.

Accounting Systems and Procedures

The accounting systems, policies and procedures employed by DNPDR in accounting and managing the Credit funds are documented in a specific section of the Project Operations Manual. The manual describes the accounting system, internal control procedures, basis of accounting, standards to be followed, and policies and procedures that guide activities of the current Project and ensure staff accountability. In addition, the manual documents the arrangements that have been made for recording Project impacts, outcomes, outputs, and inputs that are required to assess progress toward the achievement of Project objectives. It also documents the procedures undertaken for the replenishment of the Special Accounts.

The government of Mozambique is undertaking a public sector administration reform, SISTAFE, which among other things, is aimed at improving public financial management. This would integrate budgeting, treasury management and accounting, through a computerized management information system, and also introduce a new internal control regime to support improved public financial management. The program accounting policies and procedures outlined in the financial procedures section of the Operations Manual are taking into account this government initiative and the program is using e-SISTAFE to account for funds received under IDA credit.

Reporting and Monitoring

The financial transactions relating to this operation would be recorded and monitored using a separate management and accounting system. The Finance Management Specialist would determine: the Project's Chart of Accounts as well as the format and content of quarterly reports and annual financial statements. These reports have already been discussed and agreed with DNPDR and include financial statements (e.g. sources and application of funds; expenditure

classified by Project components, disbursement categories, expenditure types, and comparison with budgets). The reports would closely follow sample formats that are given in the World Bank's *"Financial Monitoring Reports for World Bank-Financed Projects: Guidelines for Borrowers"*.

The starting point for information gathering for reporting and monitoring would be at the community level. Simple formats would be created linking financial information with physical progress and to be submitted as part of the tranched disbursement arrangements. These would be submitted to the District Administration as detailed below in the Funds Flow and Reporting Chart. The reporting arrangements would eventually serve a dual purpose; firstly to be used for reporting requirements to the government for the use of funds as well as subsequent release of additional funding. The documents would also serve as a basis for the preparation of Financial Monitoring Reports (FMRs) by DNPDR to be used for subsequent replenishment of the two special accounts associated with the Project. Details of the reporting requirements, including the formats, content, as well as frequency, are documented in the Operational Manual. Since the first withdrawal of funds from the IDA credit took place in mid-April, the first FMR will be prepared and submitted before July 30, 2007.

Auditing Arrangements

Internal Auditing

There is no internal audit function envisaged for the program. However, internal auditing across the entire government (including Projects) is the responsibility of the Inspectorate General of Finance (*Inspecção Geral das Finanças-IGF*). The IGF is understaffed and has limited capacity to oversee program implementation. There will therefore be need for thorough supervision, as well as quality assurance of the program.

External Auditing

The annual financial statements of the Project will be audited by independent auditors, acceptable to the Bank, in accordance with acceptable auditing standards. The external audit will be conducted using terms of reference acceptable to the bank. Auditors will be required to issue a single opinion on the program's financial statements, as per the guidelines "*Financial Management Practices in World bank-Financed Investment Operations*", of November 3, 2005. In addition, auditors will be required to issue a management letter, highlighting any identified internal control weaknesses, which will contribute to the strengthening of the control environment. The auditor's report will be submitted to the Bank no later than six months after the end of each fiscal year. The proceeds of the IDA credit may be used to finance audit costs.

Impact of Procurement Arrangements

The Project would involve numerous payments at district level. The proposed fund flows recognize the requirements for resources to be available at this level where most of the Project activities will be taking place.

Retroactive Financing

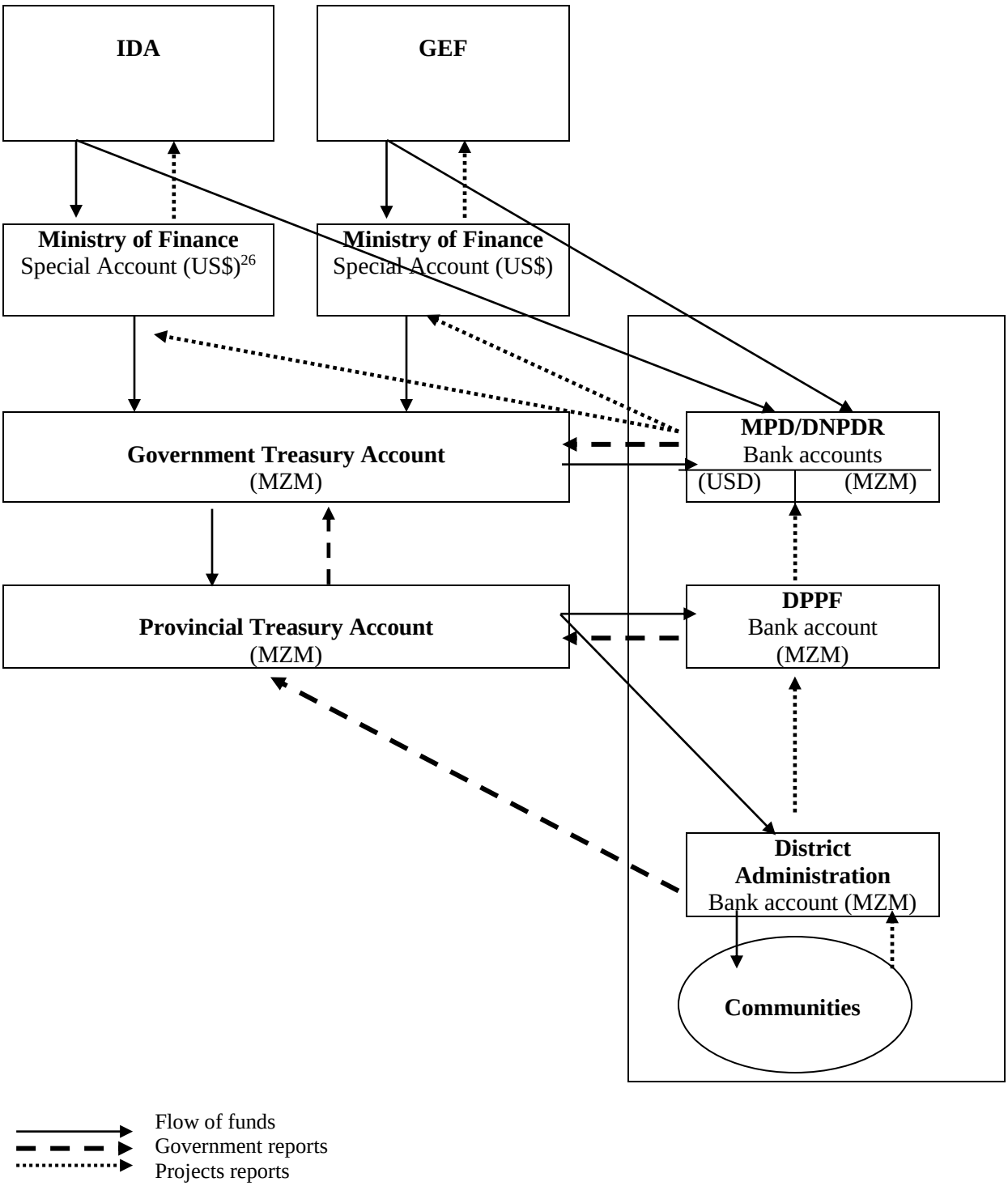
Retroactive financing of US$100,000 has been requested for Project start-up activities.

Financial Management Action Plan

Detailed below is issue that will need to be addressed to cater for the proposed Project.

	Action	**Responsibility**	**Completion date**
1	Adjust the financial management and accounting systems, including a Chart of Accounts, to be able to identify project activities, and disbursement categories under GEF grant	**DNPDR**	Effectiveness condition

Funds Flow and Reporting Chart



[26] Funds will be advanced from the Special Accounts to the Treasury Account every quarter in amounts not to exceed the forecasted local currency expenditures for the forthcoming quarter. The advance will be meant to cover Project expenditures for 6 months as indicated in the initial six-month cash flow forecast on the Operations Manual. Subsequent advances will be based on quarterly reports approved by DNPDPR.
Payments in foreign currency will be made from Designated Account to be managed by DNPDR.

Disbursement Arrangements

The table below shows the allocation of the proceeds of the GEF grant. The proceeds of the grant will be disbursed over six years from FY08 through FY14. The annual estimated disbursements are indicated in a table on the first page of this document.

Category	Amount of Credit Allocated	Percentages of Expenditures to be Financed
	GEF USD million	
1) Goods, consultants' services and training for Component 1 (d)	0.9	100%
(2) Works, goods, consultants' services and operating costs for Component 2,(d)	2.5	100%
(3) For Component 3: (a) SubProject Grants for First Phase Districts and Provinces for Component 3(c) (b) SubProject Grants for Second Phase Districts and Provinces for Component 3(c) (c) Consultants' services for Component 3 (c)	 0.7 0.9 0.3	100%
(4) Goods, consultant services including audits, training and operating costs for Component 4, (e), (f) and (g)	0.9	100%
(5) Refund of Project Preparation Advance	-	
TOTAL	6.2	

Bank Accounts

The following bank accounts will be maintained for the purposes of implementing the Project:

- Designated Account A: To be managed by Ministry of Finance, and denominated in US dollars, disbursements from the GEF grant will be deposited in this account to finance local expenditures under the relevant components; and
- Designated Account B: To be managed by DNPDR, and denominated in US dollars, disbursements from the GEF grant will be deposited in this account to finance foreign expenditures.

Disbursement of GEF Funds

Disbursement of the GEF Project fund (like the IDA funds) will be done based on Financial Monitoring Reports (FMRs) that integrate Project accounting, procurement, contract management, disbursement and audit with physical progress of Project implementation.

The FMRs will include information under three main categories: a Project financial statement which includes a summary of sources and uses of funds, an updated six-month forecast, Designated Account activity and reconciliation statements; a statement of eligible expenditures

by disbursement category; a Project progress report explaining variances between actual physical and financial progress versus forecasts; and a procurement management report showing procurement status and contract commitments.

An advance will be made to each Designated Account at the inception of the Project. The advance will be meant to cover Project expenditures for 6 months as indicated in the initial six-month cash flow forecast. After every subsequent quarter, the Project will submit FMRs which include a cash flow forecast for the following 6 month period. The cash request at the reporting date will be the amount required for the forecast period as shown in the approved FMRs less the balance in the Special Account at the end of the quarter. Subsequent disbursements of the GEF grant will be made in respect of this request.

Disbursement of Funds to and from the Single Treasury Account

Activities to be financed by the Grant will be indicated in the annual plans drawn up in accordance with existing financial and accounting regulations. The consolidated work plans will include those of each district, province and those at the center. These will be submitted to the Ministry of Finance approval. Based on these approved work plans, the MOF will advance to the Government Treasury Account an amount equal to the forecasted local currency expenditures for a three month period. All other funds advanced by GEF to the Designated Account A will remain in the MOF Designated Account. Once these work plans (and other relevant documentation e.g. accountability for grants previously disbursed) are reviewed and approved by the DNPDR, a request will be sent to the Treasury Department for funds to be released. The Treasury Department will then arrange a transfer of funds on the Treasury in favor of the DNPDR at the center, or to the relevant Provincial Treasury Account. Each provincial DPPF will then request for a transfer to a Project bank account for activities at the provincial and district level respectively. The provinces and districts will receive an initial advance after meeting the disbursement conditions, and subsequent replenishments upon presentation of adequate documentation of expenditures incurred. Due to decentralized nature of fund flows, an adequate financial management system is required to ensure the reports on expenditures to be incurred at provincial and district levels are prepared and submitted to the DNPDR in a timely manner.

Disbursement of Funds to the Communities

Flow of funds to the districts and communities pose the greatest risk under the Project due to the large number of small-value transactions, scattered locations as well as the country‘s banking network. The general rule is that funds should be channeled to the level where activities are actually carried out. Funds would therefore be transferred to the bank accounts of the entity in charge of implementation (district government or community). The flow of funds from Government Treasury Account through the Provincial treasury Account to the district would be against schedules of approved expenditures at that level, including those for community sub-Projects. In addition, funding would be tranched with subsequent payments based on progress reports (physical and financial). As part of the Operational Manual alluded to above, the DNPDR have detailed the obligations of the districts covering issues such as funds flow, supervision, reporting.

The guiding principle between communities and the districts would be the financing agreement which will serve as the basis for disbursement of funds. This would document a comprehensive list of activities, timing, estimated costs, and a listing of responsibilities. Disbursement would also be tranched after accounting for previous releases.

Foreign Exchange Payments

Payments in foreign currency will be made by DNPDR using the USD funds in the Designated Account B to be opened and maintained by them. Activities at the community, district and provincial level to be financed using foreign currency will be included in the annual plans referred to above, and submitted to the DNDPDR for consolidation. The option of disbursing the funds through direct payments from the GEF grant will only be made for expenditures above the threshold specified in the Disbursement Letter. Withdrawal applications for such payments will be accompanied by relevant supporting documents such as copies of the contract, contractors' invoices and appropriate certifications.

Costs and Disbursement profile is in Annex 5.

Conclusion

The overall conclusion of the financial management assessment is that in order to establish an acceptable control environment and to mitigate the financial management risk, the measures outlined in the Financial Management Action Plan presently should be implemented.

Supervision

Financial management supervision will be carried out regularly by the Bank Financial Management Specialist (FMS) at least twice a year, which will consist of following:

- Review financial management arrangements of the project;
- Review the Audit Reports and Management Letters from the external auditors and follow-up on material accountability issues by engaging with the TTL, Client, and/or Auditors;
- Review the financial component of the quarterly FMR as soon as they are submitted to the World Bank; and
- Conduct the transactions review, including SOEs, on a sample basis to ensure that individual expenditures which comprise the project transaction are fully supported, properly authorized, eligible under the Financing Agreements, and appropriately accounted for.

Annex 8: Procurement Arrangements

A. General

Procurement for the proposed Project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004, revised October 2006; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, revised October 2006, and the provisions stipulated in the Legal Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Grant, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity.

The procurement system in Mozambique has been under reform in the last year based on the recommendations of the 2002 Country Procurement Assessment Report (CPAR) that was endorsed by the Government and Development Partners. The Government enacted the Procurement Law (Regulamento) replacing all previous procurement legislations. This law covers procurement for both government agencies under central government and local authorities. It became effective on June 13, 2006 i.e. six months after its publication in the Gazette on December 13, 2005.

The Government also issued by decrees in the Gazette on September 8, 2006 a number of Standard Bidding Documents (SBDs) for Works (large and small size), Goods and Non Consulting Services (normal and small size), Drugs and Medical Goods and Consulting Services. These SBDs are generally consistent with Bank Guidelines. However some clauses related to the use of national preference should be addressed to ensure that (i) domestic preference applies only for International Competitive Bidding (ICB) procedure and that under National Competitive Bidding (NCB) domestic preference shall not apply even when foreigners do participate; (ii) domestic preference for locally manufactured goods shall be applied only for ICB without limitation to the nationality of the goods' manufacturer and (iii) for ICB, the bidding documents as well as the advertisement shall also be made available in English.

Government Procurement Systems may be used under NCB, provided that the exceptions above are taken into consideration.

Procurement of Works: Works procured under this Project would include: agriculture-related infrastructure, rural access roads, markets, construction and rehabilitation of buildings, small scale irrigation systems and storage systems.

The procurement will be done using the Bank's SBDs for all ICB. Under NCB, Government bidding documents in Portuguese may be used. Contracts estimated to cost more than $500,000 each and procured under ICB procedures are not expected. For contracts estimated to cost less than US$500,000 equivalent per contract, NCB procedures will apply.

The works may also include minor rehabilitation of infrastructure. The value of the individual contracts is not expected to be higher than US$50,000 equivalent and may be procured using shopping procedures, under lump sum, fixed price contracts awarded on the basis of quotations received from at least three qualified contractors.

Works to be procured under the Community Agricultural and Environmental Investment Fund (CAEIF) will be carried out in accordance to the procedures laid out in the Project Operations Manual.

Procurement of Goods: Goods procured under this Project would include (amongst others): office furniture/equipment, information technology equipment, vehicles, motorcycles, bicycles, and communications material. The procurement will be done using the Bank's SBD for all ICB. Under NCB Government bidding documents in Portuguese may be used.

Contracts estimated to cost less than US$200,000 equivalent per contract will be procured through NCB procedures, while contracts costing less than US$50,000 equivalent per contract will be procured through shopping method. Goods to be procured under the CAEIF will be carried out in accordance with the procedures laid out in the Project Operations Manual.

Procurement of non-consulting services: Non-consulting services procured under the Project are marginal and are essentially for communication or dissemination activities to local communities through designated media, such as radio or television broadcasting. Where competitive bids will not be sought, the award of contracts may be done through direct contracting with the Bank's prior review.

Selection of Consultants: Consultant Services financed under the Project will include (amongst others): the community-based organization capacity development, rural financial services, district capacity development, production and post-harvest extension, agribusiness and market development, sustainable managed agricultural and forestry systems, monitoring and evaluation systems, communication strategies, training, audits, land use planning and hydrological modeling, design and implementation of remote sensing and GIS systems and project evaluation.

NGOs may, in partnership with smaller local organizations at the field level, be employed to provide facilitation and community capacity development services across the project area.

All consulting service contracts costing more than US$100,000 equivalent for firms will be awarded through the Quality and Cost Based Selection (QCBS) method. Contracts for highly specialized assignments estimated to cost less than US$100,000 equivalent may be contracted through the Consultants' Qualification (CQ) method.

Least-Cost Selection (LCS) will be used for selecting consultants for assignments of a standard or routine nature (i.e. auditing services), where well-established practices and standards exist, and which are estimated to cost less than US$100,000.

Single Source Selection (SSS) may be employed with prior approval of the Bank and will be in accordance with paragraphs 3.9 to 3.12 of the Consultant Guidelines.

All services of individual consultants (IC) will be procured under individual contracts in accordance with the provisions of paragraphs 5.1 to 5.4 of the Guidelines.

Short lists of consultants for services estimated to cost less than US$100,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Consultant's services that may be identified under the CAEIF will also be carried out in accordance with the procedures laid out in the Project Operations Manual.

Training Workshops: This category would cover all costs related to the carrying out of training and workshops, i.e. resources required to organize and deliver the workshops, per diem and travel costs of participants etc. Training programs would be part of the Project's Annual Work Plan and Budget and will be included in the procurement plan. Prior review of all activities, including proposed budgets, agenda, participants, location of training and other relevant details will be required only on an annual basis.

Operating Costs: Operating costs for the project implementation unit shall consist of maintenance of information systems, office supplies, insurance, operation and maintenance costs for vehicles and equipment, travel expenses and salaries of support staff (excl. salaries of civil servants) and subsistence expenditures.

The procurement procedures and SBDs to be used for each procurement method, as well as model contracts for works and goods procured, are presented in the Project Operations Manual.

B. Assessment of the capacity to implement procurement

The overall responsibility of carrying out procurement activities will rest with the National Directorate for the Promotion of Rural Development (DNPDR) of the Ministry of Planning and Development (MPD). The National Director of DNPDR will be the Project Director and will be supported by four full time staff, namely an accountant, two procurement officers (one for capacity building purposes, the other as a permanent staff), and a financial manager.

Procurement activities will be managed by the procurement officer who will be responsible for the overall procurement activities. The Procurement Officer has some experience with Bank-financed projects and has been selected competitively. In addition to carrying out normal procurement activities, he will also be responsible for coaching and training of staff at the central and regional (provincial) levels. A staff member will be identified within DNPDR or recruited by DNPDR to take over this function after approximately 2 years of project implementation.

At the Regional level, covering the three beneficiary provinces, there will be two procurement officers, one identified and integrated in the future Provincial Directorate for the Promotion of Rural Development and an experienced short-term procurement consultant that will, in addition to managing all the procurement activities under the Project at the regional level, train the counterpart at the regional level as well as train, coach and oversee the activities at the district level.

At the district level, each of the districts will identify a medium level technician to handle small scale procurement activities. The technicians will be integrated with the District Administration as civil servants. The District Facilitator will oversee the activities of the technician. However, coaching and guidance and overall supervision responsibility of the district procurement personnel will rest with the central level procurement consultant throughout the duration of his contract and thereafter with the central level procurement officer. In addition, in the beneficiary districts already implementing the Bank-financed Decentralization Planning and Finance Project (DPFP), it is expected that the fiduciary DPFP staff will provide some support, as both projects are within the same ministry.

The size of anticipated contracts at this level will be small and will not attract international competition. In the event of contracts requiring international competition, the procurement activities will be managed at the central level.

While the regional procurement officer is not identified, the central level procurement consultant will have the full responsibility of the procurement activities at the regional level.

To mitigate the risk associated with the implementation of procurement activities, the following action plan was developed:

Procurement Management Action Plan to Mitigate Procurement Risk:

Risk	Mitigation/Action	Due Date	Comments
1. Implementation capacity in procurement at regional level not established	Recruit procurement officer at the regional level prior to starting sub-projects.	Before first CAEIF sub-project proposal.	Until recruitment is effected, Central level procurement consultant will be responsible for the procurement activities at the regional level
2. Procurement documentation not filed systematically and adequately.	Measures taken to improve procurement filing and record keeping system are in effect.	3 months after Effectiveness	Procedure clearly described in the Operations Manual. Report on Contract Monitoring submitted quarterly
3. Procedures for procurement not properly established	Update the Operations Manual, acceptable to the Bank	Review Operations Manual at Negotiations	Training and monitoring carried out by Bank team within 6 months after effectiveness
4. Procurement staff not involved in all stages of procurement	Ensure that Operations Manual establish a documentation flow, with procurement staff mainstreamed in the process of payment certification of invoices	Review Operations Manual at Negotiations	Procedure described in the Operations Manual

The overall project risk for procurement is High. After one year of project implementation an assessment of the agency will be made to re-assess the project risk.

C. Procurement Plan

The Borrower, at appraisal, developed a procurement plan covering the initial 18 months of the Project implementation which provides the basis for the procurement methods. This plan has been agreed on between the Borrower and the Project Team and is available at DNPDR. It will also be available in the Project's database and in the Bank's external website. The Procurement Plan will be updated in agreement with the Project Team annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

In addition to the prior review supervision to be carried out by Bank staff, and given the capacity assessment of the Implementing Agency, it is recommended that semi-annual supervision missions visit the field to carry out a post review of procurement actions.

Table A: Project Costs by Procurement Arrangement (US$m)

Expenditure Category	ICB	NCB	OTHER	TOTAL
Consulting Services			2.23	2.23
Goods		0.29	0.60	0.89
Training			0.40	0.40
Operating Costs			0.26	0.26
Grants			2.42	2.42
TOTAL		0.29	5.91	6.20

Table B: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value Threshold (US$)	Procurement Method	Contracts Subject to Prior Review (US$)
1. Works	>500,000	ICB	All
	<500,000	NCB	All above $150,000
			None
	<50,000	Shopping	
2. Goods and	>200,000	ICB	All
Services	50,000-200,000	NCB	All above $150,000
	<50,000	Shopping	None
		Direct Contracting	All
3. Consulting Services			
Firms	>100,000	QCBS	All
	<100,000	QCBS and CQS	None
	<100,000	LCS	None
Individual Cons.	>50,000	IC	All
	<50,000	IC	None
		SSS	All

ICB – International Competitive Bidding; NCB – National Competitive Bidding;
QCBS – Quality and Cost-Based Selection; QCS – Selection Based on Consultants Qualifications
LCS – Least Cost Selection; IC – Individual Consultants; SSS – Single Source Selection

Annex 9: Economic and Financial Analysis

Benefits and Beneficiaries

Beneficiaries

Smallholder farmers. It is expected that the Project will directly benefit some 20,000 smallholder households, i.e. about 100,000 persons[27], through group promotion, agricultural extension and local rural finance services. Participating smallholder farmers will also benefit from secure input supply and markets for their produce through Project supported investments in value chain development. In addition, it is expected that the saving and credit groups and their unions, originally supported under the Project, will not only benefit the agricultural sector but support a broad economical growth and will continue to extend their activities and membership after the Project completion. Finally, several interventions will benefit a large part of the population in the target districts, well above the 20,000 direct beneficiaries. This would be the case, in particular, of investments in rural road rehabilitation, awareness raising and information campaigns via rural radios. It is expected that half of the agricultural households in the target districts - i.e. about 65,000 households[28] - would at least indirectly benefit from the Project interventions.

Local traders and transporters. Local traders already involved in agricultural produce or input marketing, or those who are potentially interested, would receive a direct support from the Project. This would be achieved through targeted training on both business and technical aspects, as well as matching grants for technical assistance and investment. It is estimated that about 200 traders would be supported under the Project. Transporters of agricultural produce will benefit from an improved road network which will result in an increased outreach. Both traders and transporters would be involved in the market forums and would participate in the identification of key bottleneck for agricultural development.

Partner agribusinesses. A large proportion of the target smallholders are already participating in contract farming arrangements through buying agreements (for sesame) or out grower schemes (cotton, tobacco and paprika). Certain Project activities - such as the promotion of balanced crop rotations - will be implemented in partnership with interested agribusinesses. Partner agribusinesses will benefit from (i) increased and more secure raw material availability, (ii) improved produce quality, and (iii) reduced transport costs through improved feeder road network in high agricultural potential areas.

Benefits

The main benefits expected under the Project are increases in income for the households that will adopt the new technologies and production methods promoted through the increased outreach of extension services. Household incomes will also benefit from improvements in the supply chain. The Project would generate direct benefits to smallholders through increased production of commercial crops, including high-value crops, reduced losses and increased farm-gate prices. In addition, intensification of smallholder production systems would have a positive impact on food security. Finally, diversification of farm production systems would reduce the reliance on maize

[27] Assuming an average of 5 persons per household.

[28] It is expected that the Project would benefit 5 districts, out of which 2 have been identified (Morrumbala in Zambezia province, and Mutarara in Tete). The economic and financial analyses are based on the assumption that Mopeia, Merigue and

and other staple crops for farm incomes and vulnerability against external shocks. This, combined with improved access to markets, would help smallholder farmers make better production decisions that would reduce farmers' income variability.

The Project is expected to contribute to increased foreign exchange earnings by increasing the volume and value of cash crops marketed through the agro-businesses and traders to regional and global markets. Increased agricultural production volumes as well as agribusinesses and commercial activities would have a positive impact on government's revenues. Finally, the Project would also create new employment in the local commercial and agro-processing sector, by supporting supply chains expansion and directly or indirectly facilitating new investments.

Crop, livestock & agro-processing enterprises

Crops, livestock productions and income generating activities supported under the Project will be identified though a market-led and demand driven approach. As a consequence, it is not possible at this stage to identify and quantify precisely the activities which would be supported by the Project. However, the agro-ecological and economic conditions prevailing in the target districts are suitable to develop a number of profitable market-led activities.

Maize. Maize is produced by almost all smallholder farmers in the target area. It is both the major staple crop and a significant source of income. Recent analyses demonstrate that maize will continue to be a major commercial crop in the future decade in Mozambique due to rapid growth in the urban share of the population, income growth[29], and increasing demand in the neighboring SADC countries. It is likely that Malawi, Zambia and Zimbabwe will face frequent maize shortfalls in the foreseeable future which is expected to increase prices as a consequence. Malawi, in particular, has an increasing food gap, as agricultural food crop production cannot keep up with the population growth[30]. Lesser domestic resource costs in Mozambique gives the country a comparative advantage in maize production. Mozambique provides, in particular, 75% of the informal maize traded within SADC and supply Malawi with 95% of its informal maize import[31]. With a more consistent production pattern, Mozambique has a good opportunity of developing the regional maize export further[32]. Given its location, the Project area is well suited to target the Malawian market. Informal cross-border exchanges are already a common practice. According to the District Directorate of Agriculture and Rural Development, the production of maize in Morrumbala amounts to 32,000 tons, 50% of which can be commercialized. Of the commercialized maize, 70% is destined for Malawi. It should be noted that maize is subject to wide fluctuations in price which reflects varying demand in the deficit producing districts of central Mozambique and southern Malawi. During years of increased supplies the price may fall below 1,500 MZM/kg in the harvest period (from an average 2,800 MZT/kg). Support to maize storage and market information may help mitigate such fluctuations. It is expected that the Project will have a positive impact on maize production and marketing. Improvements in transport, through feeder roads rehabilitation, will have a positive impact on maize farm-gate prices due to maize low value par kg and subsequent high transportation costs.

---

[29] David Tschirley, Danilo Abdula, and Michael T. Weber; *Improving Production and Marketing to Enhance Food Security in Mozambique*; Research Results of the Policy Analysis Department, Ministry of Agriculture, Directorate of Economics; 17 September 2005.

[30] Malawi has one of the highest population density in Sub-Saharian Africa and

[31] *Impact of policies of Neighbouring countries on Agriculture growth*; Republic of Mozambique, the World Bank; June 2005

[32] Idem.

Cotton. Cotton is the most important cash crop in the target area. It is estimated that approximately 10,000 smallholders in Mutarara and 13,500 smallholders in Morrumbala grow cotton, which represents respectively about 34% and 20% of the agricultural households (i.e. 26% in average). The cotton value chain is organized through firms that operate contract farming schemes with smallholder farmers. Two cotton companies operate in the potential Project area, one in Tete and Zambezia Provinces (DUNAVANT-Mozambique) and the other in Northern Sofala Province (CNA).[33] Each ginnery has a concession which is, at least theoretically, a legal monopoly for the purchase of seed cotton with a minimum purchase price set by Government authorities (5000 MZM/kg for category 1 and 3500 MZM/kg for category 2). A recent economic analysis highlighted the fact that ginning capacity is well above actual needs and the average volume of activity per ginnery very low, likely resulting in high overheads for the cotton companies and limited economies of scale. In addition, risks of side-selling tend to minimize the extension services and inputs supply to farmers. Yields obtained at present (around 0.5 to 0.6 MT/ha in average) are well below yields obtained in other sub-Saharan countries such as Burkina Faso (average yields above 1 MT/ha) but compare with the neighboring countries (Zambia). The analysis above mentioned demonstrated that cotton production is competitive in Mozambique with a domestic resource cost (DRC) of 0.76[34]. In addition, there is a significant scope for improvement in cotton yields and quality through improved cropping systems, including improved crop rotations, which would be promoted under the Project. Finally, the price Projections appear positive in the medium term: The Cotlook A index is expected cotton price to average $1.20/kg during 2005 - down from $1.37/kg during 2004 - and progressively recover with $1.24 during 2006, $1.29/kg and $1.33/kg in 2007 and 2008, as increased demand will remove some of the price pressure from the cotton market[35].

Paprika & sesame. Paprika and sesame production have been promoted as smallholder crops by a number of NGOs in the last decade. Such high-value crops are subject to buying agreements and/or out grower schemes with private agribusinesses. Both crops are present in the target districts, with agribusinesses interested in purchasing them (V&M and Export Marketing buying sesame, and Pimenta de Mozambique buying paprika). The importance of paprika and sesame as potential cash crops is also due to the fact that they have minimal competition with food crops in relation to the available household labor. Recent analyses show that sesame is a highly profitable crop for smallholders with a relatively large scope for expansion. In addition, sesame can be relay-intercropped with maize, with very limited additional labor requirements. Paprika price Projections on the international market are encouraging for smallholder income growth. In spite of historic fluctuations between $1.60 and $2.40 per kg over the past decade, further downward price volatility risk is assumed to be low since current prices lie already at the low end of historic norms[36]. The promotion of paprika production, under the Project, would be considered with circumspection as past experiences in Northern Mozambique has been troubled by delayed purchase by the promoting companies.

---

33 *The economics of smallholder households in tobacco and cotton growing areas of the Zambezi Valley of Mozambique* – draft for review – by Rui Benfica, Julieta Zandamela, Arlindo Miguel, Natércia de Sousa, Research report no.59e, Ministry of Agriculture of Mozambique, Directorate of Economics, August 2005.

34 *Economic analysis of comparative advantage for major agriculture cash crops in Mozambique*, Nicolas Gergely, May 2005.

35 *Commodity market brief; Cotton*, Development Prospect Group, the World Bank, 31 October 2005

36 *Opportunities for Smallholder Income Growth in Zambia's Paprika Subsector*, Peter Manda and Steven Haggblade, IDE Zambia, October 2003.

Vegetable. Programs supporting vegetable production, through improved farming systems and irrigation methods, demonstrated the profitability of such crops in locations with proper market linkages. Usage of treadle pumps, in particular, was shown to be profitable in a number of studies. The development of off-season vegetable production in upland areas appears particularly profitable when technical aspects are well managed, with margins around 550 per ha for the major crops in the dry season and higher margins off season.[37]

Rice. Rainfed rice production is practiced in the lowland area in Zambezia province (e.g. in Mopeia district). A recent economic analysis[38] of rainfed rice production in Zambezia combined with small-scale processing by dehuller shows that the current production system is not profitable. If family labor is fully costed, the growth margin of this cropping system is negative and the return per day of work well below the average daily wage. The improved model (which implies construction of water control devices, technical advice for farmers and the existence of a credit scheme for the payment of inputs) shows a considerable scope for improvement: rice would become profitable for farmers with a return per day of work of 1.5 time the daily wage; the global profit accumulated along the value chain would amount to 25% of the retail price, both in economic and financial terms; the DRC would be around 0.5, showing a substantial comparative advantage. The Project will support local demand to improve rice production and marketing. Specific studies will be conducted to ensure that any new variety introduced would suit the local taste.

Dry beans, cowpeas & pigeon peas. Beans and peas production is traditional in the Project area. In particular pigeon peas - of both annual and perennial varieties - are wide-spread. There is an important scope for improvement in dry bean and pea production and marketing, by increasing the range of varieties and improving cleaning. Export of dry beans and peas to Malawi is relatively limited at present. However, Mozambique has a comparative advantage in the production of dry beans and peas[39]. In addition, the installation of a processing industry in Gurue district creates new opportunities for pigeon peas produced in Morrumbala.

Maize mills. Recent analyses[40] showed that maize meal prices are extremely high in Mozambique. The most common maize meal brand cost close to US$800/MT throughout the country at the beginning of 2005, while the cheapest cost close to US$440. Maize grain at retail cost close to US$280/MT during the same period in Maputo. These prices compare to levels between US$270 and US$330 for comparable meals in Zambia, and grain prices of US$190. Thus, the differential between prices of maize grain and maize meals in Mozambique is much greater than that in other developing countries of the region. The maize milling industry in the Center and South is extremely concentrated, which may contribute to the very high maize meal prices. In such a context, the development of small local maize mills appears profitable.

Animal traction. The use of animal and mechanical traction is not very common among smallholder farmers in the region, with less that 5% of the households using animal traction. However, Mozambique has an excellent potential for animal traction development. Neighboring Zimbabwe, Malawi, Zambia and South-Africa have active networks in the promotion of animal

---

37 Sources: ACDI/VOCA & World Vision.

38 *Economic analysis of comparative advantage for major agriculture cash crops in Mozambique*, Nicolas Gergely, May 2005.

39 *Impact of policies of Neighbouring countries on Agriculture growth*; Republic of Mozambique, the World Bank; June 2005.

40 David Tschirley, Danilo Abdula, and Michael T. Weber; *Improving Production and Marketing to Enhance Food Security in Mozambique*; Research Results of the Policy Analysis Department, Ministry of Agriculture, Directorate of Economics; 17 September 2005.

traction. Mozambique can learn from these experiences of the neighboring countries. After a long period of decline, especially due to the civil conflict, the cattle population is growing. In the target district of Mutarara, for example, the cattle present before the civil war - estimated to more than 17,000 head in 1973 - was decimated during the war, and had declined to 650 head in 1995. Two NGOs - Vetaid and World Vision - implemented a restocking programme, which was considered successful raising the cattle population to 3000 head in 1999 and 9000 in 2005. Restocking activities were followed by a support to animal traction development, under a 50% subsidized scheme[41]. This program demonstrated that the use of ox carts and animal transport is a profitable activity in the target area[42]. The development of animal ploughing requires more intensive training[43]. The development of animal ploughing requires more intensive training[44] but will be equally important in a region where land availability does not appear to be a limiting factor. The Project will support the diffusion of animal traction on-demand, for both transport and ploughing. The existence of Kanes Engineering Company in Maputo, which produces agricultural and animal traction implements, constitutes an impulse for animal traction. To ensure sustainability at local level, the Project will support small-scale informal workshops which produce and repair carts and ploughs (as well as other equipment such as treadle pumps).

Livestock. Livestock have a significant market potential in major provincial cities. Smallholders in the target districts have experience with livestock farming, and recent restocking programs demonstrated the profitability of goat, cattle, pig and poultry raising, in particular in Mutarara. Poultry, in particular, is a key production for poorest smallholder farmers. The Project will support the development of poultry production, on-demand, concentrating its efforts on low-cost technologies well adapted to the Project area and the target farmers. Expensive models have often proved to be excessively risky and hardly profitable in remote and poor areas.[45].

Family silo. High losses in grains are reported as a major constraint in the target areas. Low-cost improved silos (i.e. silos costing US$40 each including unskilled labor) with a 3 to 4 years life period have been promoted by a number of Projects in the country with encouraging results and demonstrated profitability. The reduction in grain losses is considered as an important outcome expected from the second component of the Project.

Natural resources. Exploitation of natural resources plays an important role in the poorest households' income. In Mutarara, fishing appears to be a significant source of income for families living along the Zambezi and Shire rivers. In Morrumbala the exploitation of forest for wood

---

41 *Animal traction in Mozambique a promising technology for small-scale farmers* - Proceedings of the national seminar Chimoio, June 2000. Edited by Andrew Mattick; organized by VETAID and financed by the European Commission.

42 A repayment scheme of the animal and equipment over 24 months was considered successful, with 93% repayment after 20 months. However, other experiences in the country demonstrate that the profitability cannot be expected in a shorter time-frame.

43 The training programme mentioned decentralized its activities to the villages to ensure farmers receive more practice in land cultivation.

44 The training programme mentioned decentralized its activities to the villages to ensure farmers receive more practice in land cultivation.

45 "A clear example is poultry farming by the association of Cumbabo, which follows a model of the General Union of Co-operatives (UGC) in Maputo. In 1997, chicken coops were built with donated funds, and both the chicks as well as the feed were imported. After 2 years, logistics broke down and the chickens died." *Development of Cooperatives For Agricultural and Agro—Industrial Commercialization In The Centre Region Of Mozambique, Presentation of Business Plans and Implementation Strategy*; ORAM, NOVIB/ Verde Azul Consult Lda., February 2005.

processing and charcoal is an important source of income. Such profitable activities would be supported on-demand by the Project, which would promote sustainable methods.

Financial and economic results

Crop models. Crop models have been developed for major supply chains that are well adapted to smallholder production in the target area and are likely to benefit directly or indirectly from Project support. These models cover both traditional commercial crops that involve a large number of smallholders (such as maize, cotton, rice, pigeon peas, beans and cassava), and relatively newly introduced crops that are showing a positive trend and have potential for growth (such as sesame, paprika and vegetable). Production technologies used in the "with Project" situation are already known in the country, but not followed to date due to constraints which would be addressed by the Project (e.g. lack of farm input, weak organizational arrangements within supply chains, market uncertainty, lack of access to extension services). .

Yields & prices. Increased crop yields would result through the adoption of improved production methods and use of modern inputs as well as irrigation and animal traction equipment. The yield assumptions are in line with what is being achieved currently by some smallholders in the country. However, these are much lower than those obtained by large scale commercial farmers. Assumptions made on yields and farm gate prices are presented in the Table 1. The analysis is expressed in constant 2005 prices. All economic and financial prices are converted to local currency at the prevailing exchange rate of 26,000 MZM for 1 US$.

Physical impact. It is assumed that the overall annual incremental output due to the Project is expected to reach is 16,000 MT of maize, 600 MT of rice; 1,250 MT of cotton; 70 MT of paprika, 1,000 MT of peas and beans; 18,000 MT of cassava; 2,000 MT of vegetable; 250 MT of sesame in the year 6 of the Project. A more limited increase has been Projected from year 7 to 10 due to medium term benefits expected after Project completion. If compared with the present estimated production in Morrumbala only (major district of the 5 district to be targeted under the Project), the incremental production expected in year 6 represents respectively 35; 31; 70; 30 and 17 percent of the present production of maize, rice, cotton; beans/peas and cassava. Increases foreseen in rice and vegetable production are coherent with the Projected investments in irrigation development.

Financial Analysis. Project financial and economic performances were estimated taking into account all Project costs except costs with long-term benefits which are difficult to evaluate at this stage. Such costs correspond to the following activities: (i) district capacity building; (ii) Project management, coordination, monitoring & evaluation and (iii) 60% of component 3: Community agricultural and environmental investment fund (this, to take into account investments in rural road rehabilitation and environmental public goods). The Project financial rate of return is estimated at 13% and financial net present value at US$0.5 million. However, this is probably an underestimate as the analysis is based on several conservative assumptions and does not take into account benefits generated within the value chain (increased farm-gate prices[46], increased income of traders and agribusinesses, etc.).

In addition, the Project impact on 5 major farm models has been estimated. This analysis, of both qualitative and quantitative nature, is presented in Table 5. This demonstrates that targeted

[46] Such increase can be expected in the comparison between with and without Project situation. However, due to the high unpredictability of farm get prices, this has not been considered in the financial and economic analyses.

supports can benefit a wide range of smallholders, with increases in agricultural incomes ranging from 30 to 80[47] percent before labor costs and improvements even more significant if labor costs are fully valued at the price of hired labor.

Finally, costs and benefits were compared for the main supply chains analyzed, taking into consideration all relevant costs which were not included in the crop models (i.e. transport, marketing and processing costs).

Economic Analysis. The Project economic rate of return is estimated at 15% and net present value US$1.8 million taking into account the proportion of Project costs justified in the financial analysis. If all Project costs were to be included in the economic analysis, the economic rate of return would still be around 8%.

Sensitivity Analysis. A sensitivity analysis was conducted using switching values (Table 5). The Project is not particularly sensitive to small increases in costs or decreases in benefits (by 10%). The Project is relatively more sensitive to declines in benefits than increases in costs. A 30% increase in costs would yield an ERR of 10%, while a 30% reduction in benefits would cause to drop the ERR to 8%. The ERR is not very sensitive to delays in Project investments such as large investments of public good nature, e.g. feeder roads rehabilitation. A two year delay in accrual of Project benefits would yield an ERR of 10%.

Fiscal Impact. Most of the Project activities would be conducted outside GOM's budget as a large part of the costs would be within subProjects implemented and co-financed by private beneficiaries. The Project impact on the budget would therefore minimal. The main budget impact is related to the maintenance of the rehabilitated feeder and district roads after the Project completion, which would cost about US$175,300 per year, and the continuation of the extension services, which would cost approximately US$100,000 per year.

[47] In the case of smallholders diversifying their production (introduction of rice, paprika or sesame on the farm modeled) and adopting recommended improvements on existing crops.

Annex 9 - Attachment 1: Farm Models

Table 1: Crop models with and without Project (in '000 MZM)								
Existing	Production costs	Labor (days)	Yield	Price	Income	Margin	Margin after labor[48]	Margin / day
Maize	70	72	1,200	3.0	3,600	3,530	2,090	49
Seed cotton	550	110	550	5.0	2,750	2,200	0	20
Rice	450	165	1,000	5.0	5,000	4,550	1,250	28
Beans	60	60	400	4.5	1,800	1,740	540	29
Pigeon peas	60	60	500	4.0	2,000	1,940	740	32
Cassava	60	60	4,000	0.8	3,200	3,140	1,940	52
New / Improved								
Maize	1,650	76	2,000	3.0	6,000	4,350	2,830	57
Seed cotton	550	130	800	5.0	4,000	3,450	850	27
Paprika	1,450	250	700	14.6	10,200	8,770	3,770	35
Rice	3,000	157	3,000	5.0	15,000	12,000	8,860	76
Beans	500	64	600	4.5	2,700	2,200	920	20
Pigeon peas	100	65	700	4.0	2,800	2,700	1,400	34
Sesame	30	60	500	11.0	5,500	5,470	4,270	42
Cassava	100	65	7,000	0.8	5,600	5,500	4,200	85
Vegetable	18,000	350	8,000	5.0	40,000	22,000	15,000	63

Table 2: Area with a demonstrated Project impact (ha)						
	year 1	**year 2**	**year 3**	**year 4**	**year 5**	**year 6**
Maize		4,000	8,000	12,000	16,000	20,000
Cotton		1,000	2,000	3,000	4,000	5,000
Paprika		20	40	60	80	100
Rice		40	80	120	160	200
Beans		400	800	1,200	1,600	2,000
Pigeon peas & cowpeas		600	1,200	1,800	2,400	3,000
Sesame		100	200	300	400	500
Cassava		1,600	3,200	4,800	6,400	8,000
Vegetable		50	100	150	200	250

[48] Labor costs considered at 20,000 MZM per day for both family and hired labor.

Table 3: Incremental production expected (MT / head)						
	year 1	year 2	year 3	year 4	year 5	year 6
Maize		3,200	6,400	9,600	12,800	16,000
Cotton		250	500	750	1,000	1,250
Paprika		14	28	42	56	70
Rice		120	240	360	480	600
Beans		80	160	240	320	400
Pigeon peas & cowpeas		120	240	360	480	600
Sesame		50	100	150	200	250
Cassava		4,800	9,600	14,400	19,200	24,000
Vegetable		400	800	1,200	1,600	2,000
Goats		2,000	4,000	6,000	8,000	10,000
Cattle		200	400	600	800	1,000
Poultry		6,000	12,000	18,000	24,000	30,000

Table 4: Major farming systems, potential Project interventions by type of producer and financial results					
Major characteristics	**Farm & Wage labor**	**Smallholder - no cash-crop**	**Vegetable producer**	**Cotton Out grower**	**Larger smallholder**
Representation in the target area	25%	35%	15%	20%	5%
# in the target beneficiaries	5,000	7,000	3,000	4,000	1,000
Area cultivated annually (ha)	0.75	2	2	2	6.5
Maize (intercropping)	0.5	1	1	1	3.25
Seed cotton				0.8	2
Beans			0.15	0.2	0.75
Pigeon peas		0.25	0.25		0.5
Sesame					
Cassava	0.25	0.75	0.5		
Vegetable			0.1		
Equipt / land preparation	Hand tools	Hand tools	Hand tools	Hand tools	Hired tractors / hire labor
Equipt / transport	Walk/Bicycle	Bicycle/Walk	Bicycle/Walk	Bicycle/Walk	Bicycle
Other activities	Wage labor; fishing; charcoal production; small trade; preparation of aliments/ beverages	(Wage labor; small trade)	(Wage labor; small trade)		Investments such as maize mills…
Livestock	(Poultry)	(Goats; Poultry)	Goats; Poultry	Goats; Poultry	Goat, Pigs, Poultry (Cattle)
Support to improved and sustainable NRM activities	XX	X	X	X	X

Veterinarian support (goat deworming, etc.)		X	XX	XX	XX
New livestock production (goats, poultry…)	XX	X			
Improved family storage	XX	X	X	X	
Intensification of crop production		X	X	X	XX
Improved marketing		XX	XX		XX
Improved access to inputs		X	XX	X	XX
Diversification		XX : paprika, sesame, etc.	X : off season production	Legumes in the rotation (soy…)	Idem (soy…)
On-farm investment		Irrigation; (animal traction – group)	Irrigation	Animal traction (groups)	Animal traction (service)
Improved crop rotations		X	X	XX	X
Incremental ag. income under the Project before labor cost	35	93	159	69	206
Increase (%)	36%	40%	76%	32%	31%
Incremental agr. income under the Project after labor cost	57%	67%	112%	77%	68%
Increased employment (days/year)	3	9	43	21	59

Table 5: Sensitivity Analysis

Scenario	ERR (%)
Baseline	15
10% increase in costs	13
30% increase in costs	10
10% reduction in benefits	13
30% reduction in benefits	8
On year delay in benefits	12
Two year delay in benefits	10

Annex 9 - Attachment 2: Incremental Cost Analysis

This section discusses the incremental costs eligible for GEF funding for the Project "Zambezi Valley Market Led Smallholder Development Project", defined as the difference between the GEF alternative scenario and the IDA baseline. GEF incremental costs will be developed in two steps. The first incrementality concerns the costs under OP15 funding (Operational Program on Sustainable Land Management), and the second incrementality falls under the SPA window (Strategic Priority "Piloting an Operational Approach to Adaptation").

For each of the four components of the Project, the section will:

(a) Identify the baseline,
(b) Describe what would happen if the baseline is implemented,
(c) Indicate the costs of the baseline,
(d) Describe the alternative scenario,
(e) Describe the expected benefits under the alternative scenario,
(f) Report the cost of the alternative, and
(g) The incremental cost.

The relationship between the activities of each component and the environmental benefits generated is synthesized in the below tables. The Incremental Cost Matrix is reported at the end of the section. As most of the decisions, practices and technologies that the beneficiaries of the Project will adopt cannot yet be determined, the analysis favors a qualitative approach.

Component 1: Community group organization and local institutional strengthening

(a) Baseline:

This component encompasses the mobilization and support of groups formed of small producers and other supply chain participants in such areas as marketing, savings and credit, agribusiness development, as well as the strengthening of district level agricultural institutions. The component focuses on 'empowerment' through support for the mobilization and strengthening of common interest groups, as well as on building capacity of local government and non-government organizations to sustain and contribute to the needs of such groups. In addition, the establishment of savings and loans groups (SLGs) will be supported. The Project will also promote and facilitate the expansion of financial institutions into the Project Area, through the provision of technical assistance and start up costs.

(b) Expected results under the baseline scenario:

Baseline implementation will be considered successful if community based interest groups, including saving and credit groups, are able to define their own needs and priorities and act upon them, as well as greater capacity among local institutions to support such groups.

(c) Baseline cost: US$7,700,000 (IDA)

(d) GEF alternative scenario (OP15):

Environmental conditions and agricultural potential vary considerably at the local level within the Project zone, especially in respect to the natural capital soils, forests, wildlife, water and fisheries. These resources play an important role in local population's wealth generation. The selection of the appropriate location for productive activities such as different agricultural production systems becomes critical. Environmental damage through deforestation and habitat fragmentation can not

only locally be very high, without people benefiting in an optimal way from the resources but also degrade environmental goods and services of global importance. With the increased economic and agricultural development supported by the IDA baseline Project, it is important to have a detailed understanding of why certain activities should be carried out in a particular space in order to optimally benefit and to protect the natural resources and the global environmental goods and services. The PRSP II, the National Biodiversity Strategy and Action Plan (MICOA, 2003), and the Strategic Plan for Environment (MICOA, 2004) consider land use and territorial planning among the key processes to be undertaken to ensure sustainability of resources use, thus contributing to the development of the national economy.

GEF OP 15 funds will be used to (i) complete the quantitative baseline data set (e.g. soil productivity, vegetation cover, land use, water courses, areas prone to flooding and drought, roads and other infrastructure, settlements, crop distribution) compiled with PDF-B resources. Some data layers and maps already exist at various agencies in Mozambique but access to the data is very poor and it is difficult to judge the adequacy and quality of these data layers for the proposed activities. Weather data was lost during the civil war but data summaries exist in the library of the Provincial Directorate for Agriculture in Tete and can be digitized, (ii) establish the baselines for aboveground biodiversity using a tested rapid appraisal tool (Plant Functional Attributes) developed in the GEF-funded Project – Alternatives to Slash and Burn (ASB), (iii) document and geo-reference indigenous NRM and native biodiversity knowledge, and (iv) quantify land cover change dynamics in attempt to identify deforestation and land degradation frontiers. A participatory approach that involves community members in the baseline surveys will be used to identify the improved crop, soil and water management "best bet" interventions and to facilitate their contribution to local land use planning and uptake of Project findings

Land use planning that takes in to account existing agroecological zones (e.g. the globally significant wetland/flood plain at the junction of the Zambezi and Shire rivers, the delta of the Zambezi river), changing land cover and land use, and changing climate, has so far been missing not only in the Project area but also at a basin scale. Proactive planning and modeling of scenarios based on development and growth pole plans, water and river management of the Zambezi valley will be essential to evaluate environmental impact tradeoffs and synergies. The land use planning will include the analysis of the natural resources potential, their spatial distribution and productivity in order to respond to sustainable development needs. It will analyze specific local and global needs for resource protection in order to guarantee the preservation of important environmental services in the long run. This process will facilitate informed decision-making by the district stakeholders for optimal land use. Activity plans will be developed at the community and possibly at the household level that outline the sub-Projects the community would like to undertake, the timeline of implementation, the need for technical assistance (which can be provided under Component 2) and the sub-Projects to be submitted for funding under Component 3.

Communal land use maps will be created via community participation and ground verification of land use/land cover categories and the products made available at the community level. The geo-referenced data layers will be compiled as necessary for developing the Project baselines, for tracking global environmental indicators and outcomes, and for M&E activities. Training for provincial and district technical officers will be provided for geographic information management and analysis to ensure the capacity to further monitor resource use and land use change under the Project and other development initiatives. Land use planning will be introduced to the communities by the Regional Environmental Specialist and District Environmental Technicians at the beginning of the Project.

(e) GEF alternative scenario (OP15 + SPA):

The SPA incremental funding will be used to derive digital terrain models (DTMs) from the remote sensing products identified in the OP 15 outputs to identify and map forest, land, water degradation "hot spots" as well as high risk areas for floods and drought (flood hazard maps, drought hazard maps). In addition, local adaptation and mitigation strategies will be identified and a local flood and drought adaptation plan established guided by scientific information, and by community needs and priorities. These activities will be coordinated with and support the on-going activities of the National Institute for Disaster Management. The execution and delivery of remote sensing, digital elevation models for the districts and basins, will be done by contracted remote sensing and modeling specialists in collaboration with national agencies such as Land and Water Division of the Institute of Agronomic Research, CENACARTA, and faculty and students at the Eduardo Mondlane University.

(f) Expected local and global benefits under the GEF alternative (OP15):

The GEF funded land use plans will contribute to the establishment of the baseline for the rational and sustainable use of the natural resource base and for the protection of natural resources that are of local and global significance (e,g, the Zambezi delta, the wetlands at the junction of the Zambezi and Shire rivers). This process will provide the global environmental benefit criteria that will be used to evaluate and select funding requests under the NRM fund (Component 3) and community requests.

(g) Expected local and global benefits under the GEF alternative (OP15 + SPA):

GEF funded land use plans will also include a flood and drought adaptation plan that identifies opportunities for improved adaptation to climate variability, which are based on SLM and on improved environmental management thus contributing to an increased resilience of the ecosystem toward climate change.

This GEF alternative (OP15 + SPA) will contribute to the achievement of the local and global environmental benefits as summarized in the table below (SPA impacts and benefits are explicitly mentioned and integrated in the table)

Activities	**Direct impact**	**Local and global environmental benefits**
Community land use planning	Enhanced community awareness and planning abilities through community land use plans: • Zoning of a) community land and water resources; b) biodiversity hotspots within community land; c) degraded land and areas vulnerable to land degradation; and d) land vulnerable to droughts and floods (SPA) • Identification of SLM and NRM opportunities and potential Projects for communities (NRM fund) • Identification of SLM opportunities	Baseline and plan for improved use and management of natural resources is provided and locations for protection of biodiversity and the environment are identified. This will lead to: • Improvement in water management and use of fertile land for agricultural production and intensification • Reduction in land degradation, deforestation, desertification • Protection of biodiversity in forests, freshwater, marshes and

	to adapt to climate variability (SPA) • Establish a community activity plan that identifies sub-Projects for technical assistance and for funding (NRM fund) including specific SPA sub-Projects • Reinforce the institutional strengthening at the community level • Increase community awareness of NR vulnerabilities and potentials in relation to NR use and management	production landscapes • Identification and protection of critical ecosystem services and regulation functions (e.g. water sources, marsh lands, primary vegetation, forests) • Reduction of land use conflicts
District land use planning	Enhanced district planning process through: • Baseline maps for land use and land cover change, for each district, soil maps, drainage courses (hydrology) characterized. • Zoning of NRM potential at the district level, allowing for mainstreaming of NRM into other sectors during district planning process • Provision of geographic information planning tools to be used for integrated and holistic planning, especially in accordance with local and global environmental objectives. • Reinforcement of institutional strengthening at the district level • Identification of business ideas based on sustainable management and protection of the natural resources • Based on vulnerability assessments via DHSVM, adaptation plan (e.g. exclusion zones, zones for enhanced vegetative cover, protection of riparian areas) at the district level as part of the district land use plan (SPA)	Baseline and plan for improved use and management of natural resources is provided and locations for protection of biodiversity and the environment are identified. This will ultimately lead to: • Provision of baseline to analyze global environmental issues at district level and beyond. • Reduction in environmental degradation, deforestation, desertification at the ecosystem level • Protection of biodiversity in forests, freshwater, marshes and production landscapes at larger ecosystem level • Improved water management and appropriate use of soils for agriculture • Environmental concerns mainstreamed in district development agenda and synergies developed between NR and other sectors • Reduction of land use conflicts

(h) GEF Alternative costs: US$8,600,000 (Beneficiaries + IDA + GEF)

(i) Incremental cost: US$900,000 GEF (US$700,000 OP15 + US$200,000 SPA). The incremental cost will cover the costs for establishment of land use and adaptation plans at the community and district level, which includes: costs for an analysis of remote sensing requirements, appropriate remote sensing products, appropriate interpretation of the remote sensing products; consultant service payments for land use planning service provider; training of provincials and district staff in geographic data interpretation, mapping, and land use planning; costs associated with acquisition of information, materials and equipment that

enables district authorities to proceed with land use planning process as part of the district planning in the subsequent years.

Component 2: Agricultural Production and Marketing Development

(a) Baseline: Activities under this component are concerned with the provision of technical services to the agricultural supply chain. Growth in productivity and incomes of smallholders in the Project area would be achieved through improved practices in many areas of the supply chain. These include use of improved seeds, fertilizer and pesticides, better soil conservation and planting methods, small-scale irrigation and animal traction, support for private veterinary service provision, improved handling of post harvest products from harvest to sale, including better storage. The IDA baseline will facilitate the linkage between increased smallholder production, strengthened agribusiness activities and better market access. In addition, resources and technical support will be provided for the definition and implementation of studies and training. Approaches promoted under this component will include use of key farmers for community extension, farmer field schools, funding of additional extension manpower to be integrated into government services, widespread use of demonstrations and visits, community and market advice points, market forums and media support.

(b) Expected results under the baseline scenario: Successful implementation will result in strengthened district extension services and active groups engaged in the validation and adoption of improved technologies and entering into close links with other supply chain participants.

(c) Baseline cost: US$3,900,000 (IDA)

(d) GEF alternative scenario (OP15): GEF incremental funding will be used to address and remove barriers for sustainable land and water management and technical support to facilitate the sustainable management of land and water resources through the adaptation of available "best bet" agroforestry, soil conservation and alternate energy sources and to ensure the priority linkages with global environmental benefits (carbon sequestration, above and below ground native biodiversity conservation). Special attention will be given to improving and diversifying cropping systems by coupling indigenous knowledge, species, and varieties with current natural resource management. Communities currently practice a range of extractive activities (collection of firewood, honey, and medicinal plants, charcoal burning) in existing forests, which often involve the use of fire and the occurrence of unintended forest fires. The proposed forest management activities will target the development and implementation (see component 3 below) of more sustainable extraction practices and alternative cultivation/production practices for the currently extracted forest products.

Activities will complement IDA funded activities and support the community demand driven process with critical information and technical advise on economically viable opportunities of improved sustainable land management, of which the local population is not yet familiar with. Main topics will be:

- Building of sustainable and diversified cropping systems (food crops, cash crops and sustainable soil management, including the integration of livestock and cropping systems, and agroforestry technologies such as nutrition gardens, improved fallows, fodder banks); This

will not only enhance farm incomes, but also add resilience to the farming system against economic (price) and environmental (climate variability, flood, drought, pest) shocks.

- Promotion of selected indigenous plants (indigenous fruit trees and medicinal plants) and high value exotic plants as cash crops, which are ecologically adapted to the Zambezi valley and resist climate variability; technical support for cultivation, agro-processing and marketing of products.
- Efficiency improvement of energy production (e.g. woodlots) and use (e.g. improved stoves), in addition to the promotion of alternative energy resources (e.g. solar energy). The potential of biofuel production and application (e.g. with *Jatropha curcas*) will be explored.
- Awareness raising and development of alternative NRM strategies to combat environmental degradation. This concerns agricultural land degradation, impacts of widespread wild fires, biodiversity loss through habitat destruction (slash and burn agriculture, wild fires) and over-extraction of natural resources (such as forest products, wildlife and fish), affecting the functional integrity of the ecosystem.

Main approaches to develop improved SLM will be based on awareness building and communication (with support to rural media), strengthening of local capacity (communities, government, local NGO's and other stakeholders),

(e) GEF alternative scenario (OP15+SPA):

- The resources from the SPA component will be used to test, calibrate, and operationalize the proposed land cover dynamics-hydrology models (VIC and DHSVM) with participation (observation/measurements) by local communities and stakeholders. The main goal is to contribute to the country's emerging NAPA priority activities, which are targeting the development of early warning systems for climate variability and climate change. The proposed adaptation, testing, calibration and operationalization of the land cover – hydrology models will strengthen the capacity of national partners to adapt and use the model to (i) identify the vulnerability of specific sectors (agriculture, forestry, fisheries, water supply and quality) drought prediction, infrastructure placement and impact evaluation, re-forestation schemes by region, and (ii) to evaluate the tradeoffs between sectors as a basis for future policy interventions and financial investments.
- Other activities under SPA funding will be focusing on the development and adaptation of cropping systems based on improved SLM practices and on reinforcing the system's resilience towards climate variability. This is in line with the proposed adaptation measures (e.g. improved water management and storage capacity, the promotion of drought tolerant crops and varieties, the promotion of soil moisture conserving cropping practices, and the change in cultivation calendar, the appropriate selection of field location) in the Draft Initial National Communications for the agricultural and forestry sectors. Technical assistance will be sought from specialized national or international technical and research institutions such as ICRAF, ICRISAT, IIAM, University of Eduardo Mondlane, IUCN, and NGO's such as and local, national or international NGO's such as ORAM, Helvetas, Intermediate Technology Development Group (ITDG) among others. In relation to forestry, incremental SPA funding will focus on the conservation of natural buffers, prevention of forest destruction, improved management of natural habitats and appropriate selection of reforestation species. This will be done through the support of CBNRM initiatives (see under SLM), by building awareness, and by adapting the incentive system (eligible under Component 3). By supporting these activities, the Project will also contribute to the "National Program of Wild Fire Prevention through the Agricultural Sector", under the Ministry of Agriculture.

Funding will be provided for community, district and provincial capacity strengthening and to raise awareness of the threats arising from climate change, to interpret climate risk information, and to assess the appropriateness of proposed risk management options at the local level. Validated options will be eligible for funding under the NRM fund (Component 3) and widely advertised across the Project zone. Research will be funded that responds directly to identified needs. A study on indigenous strategies to adapt to climate variability will contribute to an in-depth understanding of local issues and provide guidance in developing and promoting SLM technologies to adapt to climate change.

According to identified needs for the implementation of the district adaptation activities, collaboration will be sought with relevant organizations, which can be among others MICOA (Ministry for the Coordination of Environmental Affairs, the focal point for UNFCCC and UNCCD), INAM (The National Meteorological Institute, focal point for IPCC: Intergovernmental Panel on Climate Change), INGC (the National Institute for Disaster Management, responsible for coordinating all disaster-related activities), FEWS NET (the Famine Early Warning Systems Network). Specific support will be provided to strengthen the scientific methodology of climate change vulnerability assessment and identification of adaptation measures with focus on the Project Area, if identified being essential for Project success. As the NAPA is still under development, the Project will make sure that Project activities will be complementary to the NAPA and do not duplicate NAPA activities. At the local and district level, partners could be the Mozambican Red Cross and the CBDP program (Community Based Disaster Preparedness funded by Netherlands Red Cross). Targeted support will be provided to existing on-the-ground programs to assure their effectiveness of service delivery in the Project zone (for instance: quality and timeliness of disaster warnings).

Support will also be provided to assure the establishment of at least one meteorological observation station in each of the five districts of the Project Area that will support INAM in reestablishing its climate data base that got destroyed during the war. There is a major knowledge and data gap linked with a lack of meteorological data for the past 20 years, exactly the period crucial for the trend analysis of climate change.

(f) Expected local and global benefits under the GEF alternative (OP15):

Activities	**Direct impact**	**Local and global environmental benefits**
Awareness raising, demonstration, farmer training, applied research of • Agricultural SLM technologies • Agroforestry and forestry SLM technologies • Energy efficient technologies	• Improved awareness and strengthened capacity of Project stakeholders, • Improved understanding of NRM issues and local strategies through research insights • Increased availability of SLM technologies ready to be implemented at local level • Agroforestry best bets evaluated and available for local implementation. • Key extractive forest products identified and characterized and alternative, environmentally friendly	• Developed technologies and available knowledge will be ready for implementation of improved cropping systems, integration of livestock with agriculture, improved economic valuation of indigenous plant and/or animals, improved management of forests and natural habitats with global environmental benefits of improved carbon stocks, biodiversity conservation and improved protection of globally significant savannah,

	techniques available for implementation.	forest and wetland ecosystems.

(g) Expected local and global benefits under the GEF alternative (OP15 + SPA):

Activities	**Direct impact**	**Local and global environmental benefits**
Awareness raising, demonstration, farmer training, adapted research of SLM technologies that enhance adaptation to climate variability	• Improved awareness and strengthened capacity of Project stakeholders, • Improved understanding of NRM issues and local strategies through research insights • Increased availability of SLM technologies for adaptation ready to be implemented at local level	• Developed technologies and available knowledge will be ready for implementation of improved SLM techniques that show an increased resilience towards climate variability. This will lead to reduced pressure on natural habitats that are often used as safety net during periods of dry periods or floods and thus contribute to biodiversity conservation.
Establishment of at least one meteorological observation station by district. Calibration, testing, and refinement of the land cover-hydrology-climate change dynamic models (VIC, DHSVM) and the crop model (EPIC)	• Increased knowledge on climate patterns and local land cover and land use change patterns allows for improved adaptation to climate variation and for improved disaster preparedness	• Local benefits will be the reduced vulnerability of local population, reduced income losses, improved food security, human health and physical security, whereas the global benefits will be the increased resilience of the ecosystem.
Collaboration with institutions working on climate monitoring, adaptation to climate change and disaster relief	• Vulnerability Hot Spots mapped at district and basin level. • Improved strategies put in place to react to natural disasters, especially droughts and floods • Improved delivery of information services to local communities in regards to climate risks and disasters • Integrated approach and collaboration efforts allow for synergies in favor of environmental protection and the creation of environmental benefits.	

(h) GEF Alternative costs: US$6,400,000 (IDA + GEF)

(i) Incremental cost: US$2,500,000 GEF (US$1,600,000 OP15 + US$900,000 SPA). Incremental costs will cover the costs of awareness campaigns and information dissemination implemented during the 6 years of Project life including equipment contribution for local radio stations; expenses in relation to the hiring of short-term and longer-term consultant services for specific technical inputs, costs for adapted research, training of extension officers, material and equipments needed to develop technical innovations for the Project.

Component 3: Community agricultural and environmental investment fund

(a) Baseline: The objective of the Fund is to provide grants to facilitate accelerated agricultural development in the Project area. IDA will create two windows for agriculturally related infrastructure and for small-scale agricultural investment. This first window includes local road spot improvements, bridges at strategic points, markets and small gravity irrigation schemes (irrigation schemes would be operated and maintained by recipient communities), whereas the second window would provide support for private enterprise development activities of groups and individuals, such as on-farm irrigation, agricultural production, post-harvest handling and small processing activities.

(b) Expected scenario under the baseline scenario: Successful Project implementation will lead to improved smallholder capacity, improved agricultural production, increase in agro-processing activities and in the marketing of a broader variety of products. In addition, physical investments will be realized such as irrigation systems, aquaculture ponds, cattle-dip tanks, roads, market infrastructure and agro-processing facilities.

(c) Baseline cost: US$6,800,000 (IDA)

(d) GEF alternative scenario (OP15): GEF will finance a third window that provides grants to support investment and technical assistance in improved natural resource management. The NRM window will provide demand-driven grant funding to stimulate sub-Projects that specifically address land degradation and more generally promote the sustainable use of natural resources. The objective of these investments would be to improve both livelihoods and economic well being of smallholder farmers, and to preserve or restore ecosystem stability, functions and services of global importance. Proposed activities would be in coherence with the community and district land use plans which will be developed under Component 1. They would also respond to specific environmental criteria that will be established and disseminated to communities via the awareness and education campaign under Component 2. Potential sub-Projects include promoted technologies and interventions funded by GEF under Component 2, and may respond to new community initiatives in sustainable agriculture, agroforestry or reduced impact extraction of forest products and cultivation of species threatened by extraction. Funding will be allocated for specialized training, for technical assistance or for equipment and material needed for the sub-Project. Examples are: support of CBNRM initiatives (obtaining land rights, assistance in developing forest management plans, etc.), training in specific agroforestry technologies, technical assistance in cultivation of new crops, and processing of products.

(e) GEF alternative scenario (OP15 + SPA): Eligibility to access the NRM fund will be extended to Projects that directly invest in adaptation mechanisms, which are identified

under Component 2. Examples are: testing and planting of drought resistant crops and varieties, provision of support for expenses and risk management for changing cropping practices or the location for agricultural production.

(f) Expected local and global benefits under the GEF alternative (OP15) and under the GEF alternative (OP15+SPA): Although demand driven, it is expected that the impacts and local and global environmental benefits will be significant and substantial under this component, as it concerns the implementation of adaptation and SLM technologies for agriculture, forestry and energy at the large scale. They are presented in the following table:

GEF alternative (OP15)

Activities	**Direct impact**	**Local and global environmental benefits**
Implementation of agricultural SLM technologies	• Increased annual and perennial crop diversity in agricultural system, with beneficial impact on nutrition and range of marketable products • Improved agricultural production based on agro-ecological and agroforestry techniques, improved nutrient cycling and organic inputs (improved fallows, cover crops, manure) • Improved soil protection and soil fertility management through sustainable farm practices; • Reduction in slash-and-burn practices thanks to available improved SLM techniques • Reduced deforestation for agricultural purposes • Improved valuation of indigenous plant and animal resources • Revegetation of landscape as a result of agricultural intensification	• Decrease in land degradation and desertification • Decline in soil erosion • Improved soil quality and soil carbon sequestration • Improved above-ground carbon sequestration through improved biological farming practices (e.g. improved fallows), agroforestry technologies and wood lots. • Reduction of carbon emission through avoided deforestation • Increase in agricultural biodiversity through crop diversification and cultivation of native species
Implementation of forestry SLM technologies	• Forest areas protected through CBNRM land rights and activities • Improved valuation of forest resources • Reduced wild fires • Reduced/avoided deforestation • Reduced habitat destruction, illegal hunting, over-extraction	• Reduced carbon emission through wild fire prevention, reduced deforestation • Improved protection of globally important forest, marsh and freshwater ecosystems • Improved biodiversity conservation
Implementation of energy efficient technologies	• Increased availability of wood products and charcoal through fast-growing wood lots • Reduced energy need due to improved technology such as	• Reduced carbon emission (through more efficient energy use and substitution of energy source) • Biodiversity loss reduced

	improved cooking stoves • Reduced biomass need for energy through introduction of alternative technology such as solar energy • Reduced pressure on natural forests areas for fuelwood and charcoal purposes • Reduced harvesting of native trees	(thanks to substitution of indigenous tree species through fast-growing wood lots).

GEF alternative (OP15 + SPA):

Activities	**Direct impact**	**Local and global environmental benefits**
Implementation of SLM technologies that enhance adaptation to climate variability	• Improved, diversified and more stable agricultural production as exposed to climate variability • Improved water availability for agriculture and livelihood needs yearlong. • Protected buffer zones mitigate impacts of droughts or floods	• Reduced land degradation and desertification • Increase in carbon sequestration (thanks to improved land and water management) • Protection of forest zones and wetlands (delta, flood plains, gallery forests) important in globally significant biodiversity conservation

(g) GEF Alternative costs: US$8,700,000 (Beneficiaries + IDA + GEF)

(h) Incremental cost: US$1,900,000 GEF (US$1,700,000 OP15 + US$200,000 SPA). 75% of the incremental costs will be allocated to the fund, whereas 25% will cover the costs of proposal design, evaluation and implementation support and supervision.

Component 4: Project Management, Coordination and Monitoring

(a) Baseline: This component will include technical supervision and coordination, financial management, work plan and reporting functions at district, provincial and national levels. The component will be congruent with the government's decentralization initiatives and will utilize existing public sector arrangements as far as possible. Additional financial and procurement staff will be recruited and integrated into relevant government structures at all levels. Project coordination will be undertaken at district level, but additionally also at provincial and national level. Project monitoring will be undertaken at internal (inputs and outcomes) and at external (process) levels.

(b) Expected scenario under the baseline scenario: Successful implementation of this component will result in efficient implementation arrangements, effective oversight, monitoring and evaluation of Project activities.

(c) Baseline cost: US$2,200,000 (IDA)

(d) GEF alternative scenario (OP15) and (OP15+SPA): GEF funding will contribute to the Project monitoring and evaluation system by financing the establishment of a GIS database, to monitor the global and environmental indicators in order to assess impact of Project activities on land degradation, carbon sequestration, biodiversity, habitat protection, and area under SLM and area under SLM that responds to adaptation criteria. In addition, a community-based monitoring system will be developed. For the implementation of GEF funded activities a specialist will be responsible and coordinate activities and sub-contracts short or long term consultants as necessary. Three field agents (master level) will be implementing activities, supported by one communications officer that works with local radio stations. A part time national coordinator will support the GEF field team.

(e) Expected local and global benefits under the GEF alternative (OP15) and (OP15 + SPA)

Activities	**Direct impact**	**Local and global environmental benefits**
Designing and implementing a M&E system to monitor local and global environment indicators Hiring and supervising the implementation team	• Improved understanding of the underlying causes, processes and dynamics associated with land degradation • Environmental information system and environmental indicators • Reinforcing the district planning process • State-of-the-Art knowledge will be available at local level	Quantification of environmental benefits • to be included in economic analysis of the Project • Inform global community, policy makers, research, and development communities on Project outcome. Realization of global environmental benefits will be unprecedented in the Project zone thanks to competent and effective Project implementation team

(f) GEF Alternative costs: US$3,100,000 (Beneficiaries +GEF + IDA)

(g) Incremental cost: US$900,000 GEF (US$680,000 OP15 + US$220,000 SPA). Incremental costs will cover the reinforcement of the M&E system with GIS and the participatory monitoring at the local level.

Incremental Cost Matrix

The incremental costs are calculated as the difference between the GEF alternative scenario and the IDA baseline scenario. The results are reported in the matrix below. As most of the decisions, practices and technologies that the beneficiaries of the Project will adopt cannot yet be determined, the analysis favors a qualitative approach.

Component 1	**Category**	**Estimated Expenditures (US$)**	**Local Benefit**	**Global Benefit**
Community Group Organization and Local Institutional Strengthening	Baseline	7,700,000	Community organization capacity improved, district level institutions strengthened	Possible, minor global environmental benefits thanks to improved capacity in informed decision-making in the agricultural sector
	With GEF alternative (OP15)	8,400,000	Significantly improved understanding of NR potential for economic development, and targeted protection of NR base. Quantitative, geo-referenced baselines for biodiversity, land cover, soils, water resources developed.	Improved knowledge on NR base is the prerequisite for SLM and environmental protection that will create global environmental benefits such as increased carbon sequestration, reduced carbon emissions, habitat protection and biodiversity conservation
	With GEF alternative (OP15+ SPA)	8,600,000	Digital terrain models available and mapping of of zones vulnerable to floods/droughts as a basis to define targeted strategy of adaptation	Improved knowledge on climate threats allows to develop SLM adaptation strategies and technologies that will create global environmental benefits such as increased carbon sequestration, reduced carbon emissions, habitat protection and biodiversity conservation
	OP15 Increment	**700,000**		
	OP15+ SPA Increment	**900,000**		
Component 2	**Category**	**Estimated Expenditures (US$)**	**Local Benefit**	**Global Benefit**
Agricultural Production and Marketing Development	Baseline	3,900,000	Improved capacity and knowledge on improved agricultural production and marketing	Global environmental benefits non significant
	With GEF Alternative (OP15)	5,500,000	Improved awareness, capacity and knowledge on SLM	Significant advance in knowledge and technology generation for SLM which

			Increased availability of SLM, and improved agroforestry and forest product extraction technologies at local level	will create significant global environmental benefits such as the protection of globally important forestry, savannah, marsh and freshwater ecosystems, biodiversity conservation, improved carbon sequestration and avoided carbon emissions.
	With GEF Alternative (OP15+ SPA)	6,400,000	Increased knowledge on climate patterns and dynamic land cover-hydrology-climate change scenarios that allow to design effective adaptation measures and disaster preparedness strategies.	Significant advance in knowledge and technology generation for SLM which will improve adaptation to climate variability and create significant global environmental impacts that will improve ecosystem's resilience towards outside shocks and climate variability
	OP15 Increment	**1,600,000**		
	OP15+SPA Increment	**2,500,000**		
Component 3	**Category**	**Estimated Expenditures (US$)**	**Local Benefit**	**Global Benefit**
Community Agricultural and Environmental Investment Fund	Baseline	6,800,000	Improved agricultural production through increased input use and improved cropping techniques Improved storage, processing and marketing of agricultural products	Global environmental benefits are minor, and may results from reduced pressure on NR (forests in particular) thanks to agricultural intensification
	With GEF Alternative (OP15)	8,500,000	Improved agricultural production based on agro-ecological and agroforestry techniques, increased agricultural diversity, improved soil fertility management, improved valuation of indigenous plants, reduced erosion, deforestation, wildfires, more efficient use of energy	Significant global environmental benefits: Decrease in land degradation, desertification, Reduced carbon emissions through wild fire prevention, reduced deforestation and more efficient energy use, and substitution of biomass based energy through solar energy Increased carbon sequestration through

				improved soil management (soil carbon), improved agricultural practices, agroforestry technologies, reforestation, avoided deforestation and wood harvesting Improved protection of forest, freshwater and marsh habitats Improved biodiversity conservation through protected habitats, reduced over-extraction
	With GEF Alternative (OP15+ SPA)	8,700,000	Improved, diversified and more stable agricultural production as exposed to climate variability Improved water management and improved buffer zone protection	Reduced land degradation and desertification Increase in carbon sequestration due to improved land and water management Protection of forest zones and biodiversity
	OP15 Increment	**1,700,000**		
	OP15+SPA Increment	**1,900,000**		
Component 4	**Category**	**Estimated Expenditures (US$)**	**Local Benefit**	**Global Benefit**
Project Management, Coordination and Monitoring	Baseline	2,200,000	M&E system to monitor baseline activities	Limited knowledge of land degradation, and ecosystem dynamics due to limited monitoring of ecosystem and land degradation processes
	With GEF Alternative (OP15)	2,880,00	Comprehensive mechanism established for monitoring of NRM SLM and land degradation processes and trends	Significant contribution in quantifying the impact of SLM on global environmental benefits
	With GEF Alternative (OP15+ SPA)	3,100,000	Comprehensive mechanism established for monitoring of NRM SLM and land degradation processes and trends as they related to climate variability	Significant contribution in quantifying the impact of SLM with specific attention to adaptation on global environmental benefits
	OP15 Increment	**680,000**		

	OP15+SPA Increment	**900,000**		
TOTAL	Baseline	21,200,000		
	With GEF Alternative (OP15)	25,880,000		
	With GEF Alternative (OP15+ SPA)	27,400,000		
	OP15 Increment	**4,680,000**		
	OP15+ SPA Increment	**6,200,000**		

Annex 10: Safeguard Policy Issues

Environmental issues outlined in Section D.5 indicate this is an EA Category "B" Project. Actual Project investments will be demand-driven and will only be determined during implementation. Thus, an Environmental and Social Management Framework (ESMF) has been prepared to address the substantive requirements of OP4.01 and OP4.09, the latter primarily for livestock hygiene facilities and weed control around Project-funded facilities. Procedures and measures to avoid or minimize adverse environmental effects from Project investments, including changes to agricultural practices has been included in the ESMF. The ESMF contains a screening procedure for determining if a resettlement plan is required for any particular investment according to the Resettlement Policy Framework has been prepared according to the requirements of OP4.12.

Component 3 (Community Agricultural and Environmental Investment Fund) will make small scale investments, including water and land-based investments, including in agribusiness. These investments may require either involuntary land acquisition, or displacement of people, or both, so OP4.12 on Involuntary Resettlement is triggered. A Resettlement Policy Framework (RPF) has been prepared as a mitigation instrument since the sites and nature of investment sub-Projects will only be determined during Project implementation.

OP7.50 (Projects on International waterways) is triggered as there may be water withdrawals for small irrigation Projects implemented in the Zambezi basin, including the Shire River – a major tributary of the Zambezi. Sources of water will include: (a) shallow groundwater from alluvial aquifers; (b) small tributary streams which rise entirely in the territory of Mozambique; (c) small tributary streams which rise in neighboring Malawi; and (d) direct extraction from the Zambezi and the Shire. Notification has been sent by the Government of Mozambique to all riparians under OP7.50. GOM has a well-established and capable International Waters Division in the Department of Water Affairs (DNA) that has undertaken the notification process.

Annex 11: Project Preparation and Supervision

	Planned	Actual
PCN review		May 26, 2005
Initial PID to PIC		June 22, 2005
Initial ISDS to PIC		June 30, 2005
Appraisal	April 2, 2006	April 7, 2006
Negotiations	April 2 , 2006	May 23 , 2007
Board/RVP approval	June 20, 2006	June 28, 2007
Planned date of effectiveness	September, 2006	September 1, 2007
Planned date of mid-term review	September, 2009	December 31, 2009
Planned closing date	December, 2012	September 30, 2013

Key institutions and persons responsible for preparation of the Project: **National Directorate for the Promotion of Rural Development (DNPDR), Ministry of Planning and Development (MPD),** Salim Vala (Director), Isabel Cossa (Agronomist), Hermes Sneia (Economist), Salome Noiane (Advisor), Romao Cossa (Agronomist), Tiago Luis (Agronomist), Rosario Guiliche (Agronomist).

Bank staff and consultants who worked on the Project included:

Name	Title	Unit
Eduardo Luis Leao de Sousa	Team Task Leader	AFTS1
Daniel da Sousa	Co-Task Team Leader	AFTS1
Brighton Musungwa	Sr. Financial Management Specialist	AFTFM
Joao Tinga	Financial Management Analyst	AFTFM
Slaheddine Ben-Halima	Sr. Procurement Specialist	AFTPC
Antonio Chamuco	Procurement Specialist	AFTPC
Suzanne Morris	Sr. Finance Officer	LOAG2
Luz Meza-Bartrina	Sr. Counsel	LEGAF
Erika Styger	Natural Resource Management Specialist (cons)	AFTS1
Ayala Peled	Natural Resource Management Specialist	AFTS4
John Boyle	Sr. Environmental Specialist	AFTS1
Cedric Boisrobert	Consultant	AFTS4
Arbi Ben-Achour	Sr. Social Scientist	AFTS1
Josef Loening	Economist	AFTS2
Erick Fernandes	Adviser	ARD
Anne Ritchie	Sr. Financial Sector Specialist	OPD
Leonard Abrams	Sr. Water Resources Management Specialist	AFTU1
Franco Russo	Sr. Program Assistant	AFTS1
Luisa Matsinhe	Program Assistant, Maputo	AFC02
Erwin de Nys	Young Professional	YPP
Caroline Guazzo	Program Assistant, Washington	AFTS1
Ashok Kumar Seth	Consultant	
Aidan Gulliver	FAO/CP Team Leader	
Elen Lemaitre	FAO/CP Financial/Economic Analyst	
Erik Plaisier	FAO/CP – JPO- Business Management	
Gaye Thompson	FAO Social and Institutional Specialist (cons)	
Antoinette Van Vugt	FAO Community Organization Specialist (cons)	

Jonathan Cook	FAO Agronomist (cons)
Tim Jackson	FAO Rural Infrastructure Spec. (cons)
Graham Perret	FAO Rural Finance Spec. (cons)

Bank funds expended to date on Project preparation:

1. Bank resources: US$220,000
2. Trust funds: FAO CP Resources: 20 staff weeks
3. Total: US$330,000

Estimated Approval and Supervision costs:

1. Remaining costs to approval: US$40,000
2. Estimated annual supervision cost: US$180,000 for the first two years and thereafter US$100,000

Annex 12: Documents in the Project File

Pre-Preparation Studies:

1. Community Organization
2. Farming Systems Development Study
3. Rural Financial Systems
4. Rural Infrastructure
5. Irrigation and Water Management Study
6. Marketing and Agribusiness Study

Preparation Mission – Working Papers:

1. Community Organizations and Local Institutions
2. Rural Financial Services
3. Agricultural production and Marketing Development
4. Rural Infrastructure
5. Community Agricultural and Environmental Investment Fund
6. Institutional Analysis of SLM and NRM: the case of land use planning, participatory NRM and ACC
7. Recommendations for the operationalization of the NRM window of the CAEIF fund
8. Natural Resource Management Study; Almeida Alberto Sitoe.
9. Sustainable Land Management and CBNRM Report
10. Institutional, legal and sector barriers and opportunities for sustainable land management and adaptation to climate change at the district level in the Zambezi Valley; Celia M. F. Meneses.
11. GEF STAP review (Prof. Martin Williams ScD)

Annex 13: Statement of Loans and Credits

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P086169	2006	MZ-Financial Sector TA Project	0.00	10.50	0.00	0.00	0.00	10.54	1.17	0.00
P071465	2006	MZ-TFCA & Tourism Dev (FY06)	0.00	20.00	0.00	0.00	0.00	20.15	0.36	0.00
P076809	2006	MZ-GEF TFCA & Tourism Dev (FY06)	0.00	0.00	0.00	10.0	0.00	10.0	0.00	0.00
P087347	2006	MZ-Tech & Voc Edu & Training (FY06)	0.00	30.00	0.00	0.00	0.00	29.99		0.00
P082618	2005	MZ-Beira Railway SIL (FY05)	0.00	110.00	0.00	0.00	0.00	91.03	-4.76	0.00
P069183	2004	MZ Energy Reform and Access SiL (FY04)	0.00	40.26	0.00	0.00	0.00	39.37	19.51	0.00
P001807	2004	MZ-Decentr Planning &Fin SIL (FY04)	0.00	42.00	0.00	0.00	0.00	30.59	8.24	0.00
P078053	2003	MZ-HIV/AIDS Response SIL (FY03)	0.00	55.00	0.00	0.00	0.00	44.13	2.68	0.00
P072080	2003	MZ-Pub Sec Reform (FY03)	0.00	25.60	0.00	0.00	0.00	24.96	22.01	0.00
P073479	2002	MZ-Com Sec Reform	0.00	14.90	0.00	0.00	0.00	8.75	4.80	0.00
P069824	2002	MZ-Higher Education SIM (FY02)	0.00	60.00	0.00	0.00	0.00	29.50	9.38	0.00
P001806	2002	MZ-Municipal Dev SIL (FY02)	0.00	33.60	0.00	0.00	0.00	16.36	18.88	8.78
P001785	2002	MZ-Roads & Bridges MMP (FY02)	0.00	162.00	0.00	0.00	0.00	75.24	49.48	-4.37
P001808	2001	MZ-Mineral NRMCP (FY01)	0.00	18.00	0.00	0.00	0.00	2.15	0.30	0.00
P070305	2000	MZ-Coastal & Marine Biodiv Mgmt (FY00)	0.00	5.60	0.00	0.00	0.00	2.30	1.88	-0.04
P049874	2000	MZ-Enterprise Dev (FY00)	0.00	26.00	0.00	0.00	0.00	3.54	2.70	0.00
P035919	2000	MZ-GEF Coastal & Marine SIL (FY00)	0.00	0.00	0.00	4.10	0.00	1.76	1.76	0.43
P042039	2000	MZ-Railway & Port Restr (FY00)	0.00	100.00	0.00	0.00	0.00	27.06	22.94	8.14
P001799	1999	MZ-Agr Sec Pep (FY99)	0.00	30.00	0.00	0.00	0.00	5.02	4.71	4.54
P001786	1999	MZ-Edu Sec Strtgy Prgm ESSP TAL (FY99)	0.00	71.00	0.00	0.00	0.00	8.41	6.28	3.55
P052240	1999	MZ-Natl Water 2 (FY99)	0.00	90.00	0.00	0.00	0.00	45.89	26.36	0.77
		Total:	0.00	944.46	0.00	14.10	0.00	526.75	198.66	21.79

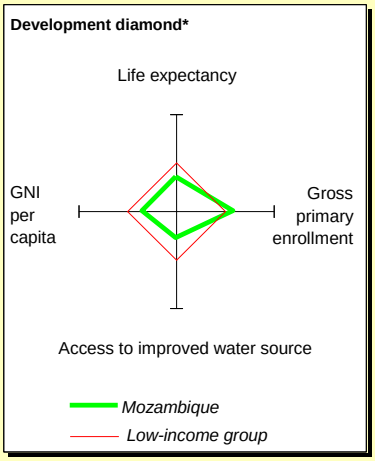
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
1998	BIM-INV	0.00	0.30	0.00	0.00	0.00	0.30	0.00	0.00
2000/03	BMF	0.00	0.20	0.00	0.00	0.00	0.20	0.00	0.00
2004	ENH	0.00	18.50	0.00	0.00	0.00	0.00	0.00	0.00
1997/01	MOZAL	13.32	0.00	0.00	0.00	13.32	0.00	0.00	0.00
1999	Maragra Sugar	10.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	SEF Ausmoz	0.72	0.00	0.00	0.00	0.72	0.00	0.00	0.00
1997	SEP CPZ	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
1997	SEF CTOX	0.73	0.00	0.00	0.00	0.73	0.00	0.00	0.00
2000	SEF Cabo Caju	0.58	0.00	0.00	0.00	0.51	0.00	0.00	0.00
2001	SEF Grand Prix	0.53	0.00	0.00	0.00	0.34	0.00	0.00	0.00
2000/04	SEF Merec	1.20	0.00	0.00	0.00	0.66	0.00	0.00	0.00
1999	SEF ROBEIRA	0.20	0.00	0.00	0.00	0.20	0.00	0.00	0.00
	Total portfolio	28.58	19.00	0.00	0.00	17.48	0.50	0.00	0.00

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
	Total pending commitment:				

Annex 14: Country at a Glance

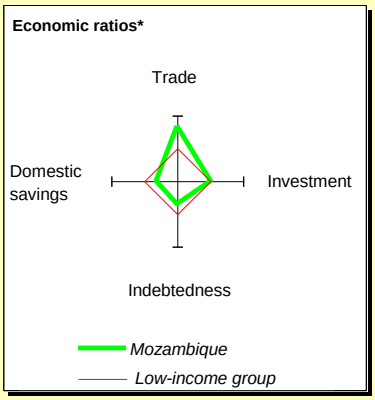
POVERTY and SOCIAL	Mozambique	Sub-Saharan Africa	Low-income
2005			
Population, mid-year *(millions)*	19.5	703	2,310
GNI per capita *(Atlas method, US$)*	310	490	450
GNI *(Atlas method, US$ billions)*	6.0	347	1,038
Average annual growth, 1999-05			
Population *(%)*	2.0	2.3	1.9
Labor force *(%)*	2.1	2.4	2.3
Most recent estimate (latest year available, 1999-05)			
Poverty *(% of population below national poverty line)*	54	..	..
Urban population *(% of total population)*	27	37	31
Life expectancy at birth *(years)*	41	46	58
Infant mortality *(per 1,000 live births)*	101	101	79
Child malnutrition *(% of children under 5)*	24	..	44
Access to an improved water source *(% of population)*	42	58	75
Illiteracy *(% of population age 15+)*	55	35	39
Gross primary enrollment *(% of school-age population)*	110	95	94
Male	121	102	101
Female	100	88	88



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

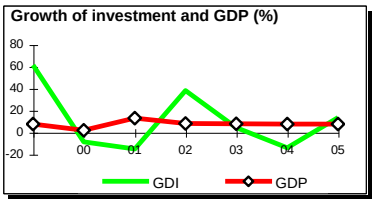
	1985	1995	2004	2005
GDP *(US$ billions)*	4.5	2.3	5.9	6.7
Gross domestic investment/GDP	3.5	30.5	20.7	22.2
Exports of goods and services/GDP	2.9	15.6	30.9	30.6
Gross domestic savings/GDP	-5.1	5.0	12.3	11.9
Gross national savings/GDP	-5.0	4.8	12.5	10.6
Current account balance/GDP	-9.9	-29.1	-14.1	-17.0
Interest payments/GDP	0.5	3.2	2.5	2.5
Total debt/GDP	64.4	320.6	78.7	73.1
Total debt service/exports	23.0	24.0	24.0	21.1
Present value of debt/GDP	..	..	24.4	24.2
Present value of debt/current year exports	..	..	84.0	

	1985-95	1995-05	2004	2005	2005-09
(average annual growth)					
GDP	4.2	8.4	7.5	7.7	7.2
GDP per capita	2.9	6.2	5.6	5.9	5.5
Exports of goods and services	9.0	19.0	23.9	5.4	5.8

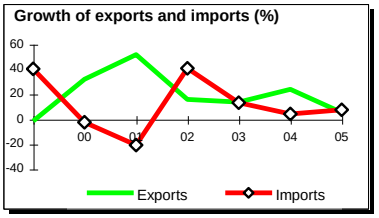


STRUCTURE of the ECONOMY

	1985	1995	2004	2005
(% of GDP)				
Agriculture	47.5	36.9	23.3	23.2
Industry	13.2	15.4	29.2	30.0
Manufacturing	..	8.1	14.8	14.2
Services	39.3	47.7	47.5	46.8
Private consumption	92.2	85.2	77.2	77.3
General government consumption	12.9	9.8	10.4	10.8
Imports of goods and services	11.5	41.0	39.2	41.0



	1985-95	1995-05	2004	2005
(average annual growth)				
Agriculture	2.3	5.5	8.3	6.7
Industry	-1.3	15.7	5.1	9.9
Manufacturing	..	17.5	10.2	10.7
Services	5.2	7.1	8.8	5.7
Private consumption	2.0	4.9	9.1	6.0
General government consumption	4.7	12.3	5.0	11.0
Gross domestic investment	7.8	10.2	-13.9	13.5
Imports of goods and services	2.5	9.6	4.2	7.5

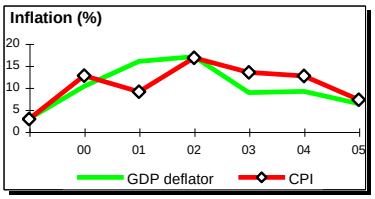


Note: 2005 data are preliminary estimates. Group data are for 2003.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

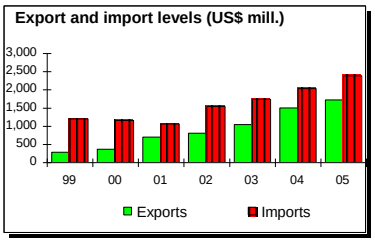
PRICES and GOVERNMENT FINANCE

	1985	1995	2004	2005
Domestic prices				
(% change)				
Consumer prices	30.8	54.4	12.6	7.2
Implicit GDP deflator	33.1	48.8	9.1	6.3
Government finance				
(% of GDP, includes current grants)				
Current revenue incl. current grants	10.3	15.5	15.5	16.8
Current budget balance	-6.8	4.9	1.0	2.3
Overall surplus/deficit after all grants	-9.0	-3.2	-4.5	-5.7



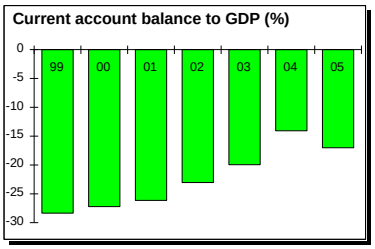
TRADE

	1985	1995	2004	2005
(US$ millions)				
Total exports (fob)	77	174	1,504	1,726
Cashew nuts and raw cashew	12	13	29	19
Prawn	33	73	92	98
Aluminum	..	..	568	880
Manufactures	..	5	19	22
Total imports (cif)	424	727	2,035	2,387
Export price index *(1995=100)*	106	100	110	127
Import price index *(1995=100)*	92	100	102	111
Terms of trade *(1995=100)*	115	100	108	114



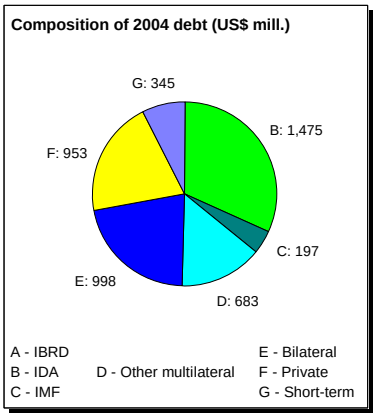
BALANCE of PAYMENTS

	1985	1995	2004	2005
(US$ millions)				
Exports of goods and services	143	407	1,828	2,060
Imports of goods and services	481	899	2,320	2,755
Resource balance	-339	-492	-492	-696
Net income	-102	-184	-340	-448
Current account balance before grants	-440	-677	-832	-1,144
Financing items (net)	432	736	1,044	1,061
Changes in net reserves	8	-60	-212	83
Memo:				
Reserves including gold *(US$ millions)*	18	225	1,159	1,076
Conversion rate *(DEC, local/US$)*	43.2	8,889.8	22,581.3	22,751.8



EXTERNAL DEBT and RESOURCE FLOWS

	1985	1995	2004	2005
(US$ millions)				
Total debt outstanding and disbursed	2,871	7,458	4,651	4,910
IBRD	0	0	0	0
IDA	5	890	1,475	1,699
Total debt service	42	112	450	445
IBRD	0	0	0	0
IDA	0	6	6	6
Composition of net resource flows				
Official grants	139	339	539	550
Official creditors	309	202	255	292
Private creditors	54	48	-92	-2
Foreign direct investment	0	45	245	135
World Bank program				
Commitments	46	99	206	231
Disbursements	5	160	201	226
Principal repayments	0	0	2	2
Net flows	5	160	199	224
Interest payments	0	6	4	4
Net transfers	5	154	195	220



Development Economics and AFTP1 estimates. 5/19/06

Annex 15: Land Degradation and Climate Change in the Central Zambezi Valley

1) Project zone description and land use

The Zambezi Valley Region of Mozambique was one of the hardest hit areas of Mozambique during the conflicts of the 1980s and early 1990s, and most infrastructures were heavily damaged or destroyed and many communities effectively abandoned. Since the ending of the war, rapid resettlement has taken place, most notable along reconstructed primary and secondary roads and in areas with higher precipitation levels. Cropped land in the Central Zambezi expanded from 5% in 1992 to 17% in 1995 and has further increased since then. Expansion of agricultural land is based on the traditional methods of slash and burn agriculture.

The climate in the Central Zambezi Valley is tropical from semi-arid with 300 to 600 mm rainfall to humid with rainfall up 1000-1400 mm concentrated between November and March. The topography is flat to undulating. Altitude ranges from below 100 m (along the Zambezi river), to between 100 and 500m for most of the Project area, to 1800m (Mount Chiperone) in the hilly area of northern Morrumbala. Geologically, the region shows much variety in parent materials. A range of soils can be found with variable agricultural production potential.

There are three distinct agro-ecological zones within the proposed Project area, which is composed of five districts: Maringue, Chemba (Sofala province), Mutarara (Tete province), Morrumbala and Mopeia (Zambezia province).

Agroecological zone (R5): This zone (covering Southern Morrumbala and Mopeia and extending towards to coastal region) is characterized by high rainfall of 1000-1400 mm with a corresponding evapotranspiration. The two major soil types are sandy, well-drained soils and heavy vertisols. Rice is commonly cultivated in the verisols, while maize, cowpea, sorghum, millet and cassava are intercropped in the well-drained soils. Cashew nuts and cotton are also grown as cash-crops in the well-drained soils. Sesame and paprika are new important cash crops. Yields are very low (maize yields 600-800 Kg/ha).

Agroecological zone (R6): This is the semi-arid zone of the Zambezi Valley, especially along the Zambezi River. The three districts Mutarara, Chemba and Maringue are part of it. Precipitation is between 300-600 mm and evapotranspiration is very high with 1200-1400 mm, which results in high water deficit and high probability of crop failure. Yields are very low (sorghum yields 600 Kg/ha). Cassava is not cultivated due to total absence of rain during the cool season and the elevated evapotranspiration rate. Cotton production is abundant in the well-drained soils and rice in alluvial soils on the margins of the Zambezi River. Sesame and paprika are new important cash crops.

Agroecological zone (R7): This zone covers the medium altitude region of the Zambezi Valley, with an altitudinal range between 200 and 1000 m with an average rainfall not exceeding 1400mm. Northern Morrumbala is part of that zone. Cropping systems are dominated by maize, which yields an average of 1000 Kg/ha, and sorghum (750 Kg/ha) intercropped with cassava, groundnuts, and cowpeas. Cotton is also grown in this area.

Traditional agriculture is predominant and based on extensive use of the natural resources base. With the exception of cotton and tobacco, the use of improved seeds, fertilizers and agrochemicals is very low. The average yields of most food crops are low (maize 500-1,000 kg. ha; sorghum 400-600/ha; groundnut (small) 300-500 kg/ha; cowpea 200-400/ha; cassava 4,000-

6,000 kg/ha; sweet potato 3,000-5,000 kg/ha). Cattle were decimated during the war and the build up in its population remains slow. Farmers express increasing interest in livestock especially for transport and soil preparation. Animal production is mainly based on goats, pigs, few sheep, guinea fowl, chicken and ducks. People cultivate also fruit trees, such as mangoes, bananas, citrus, pawpaw grown in home gardens or intercropped with grain crops, and vegetables, such as cabbage, tomatoes, and onions which are grown in market gardens on micro-irrigation areas less then one hectare. The Zambezi and Shire Rivers are the main watercourses in the area, with high spatial variability of water availability in the region. Although the Zambezi basin represents about 50% of the country's total mean annual water runoff, serious water shortages occur during rainy and dry seasons. Water storage structures such as small dams as well as small-scale irrigation schemes are almost absent in the region resulting in a minimal use of the total runoff.

Compared to other countries in the region, Mozambique has a rich natural resource base. The natural vegetation cover, which accounts for 78 percent of the country's area, varies from evergreen to deciduous, from mountainous to lowland, gallery and mangrove forests to edaphic grasslands. The most characteristic forests are the *miombo* and *mopane* woodlands. About 25% of the land has commercial forestry potential, and a further 22% comprises potential wildlife habitat. Forest production is based almost entirely on the natural forest, the area of plantation forestry being negligible. Mozambique's biodiversity is very rich with 5692 plant species, 222 mammals, 580 birds, 167 reptiles, and 39 amphibians recorded to date. 177 plants have been reported to be endemic and 300 plants are on the red data list. Some areas have been designated as globally significant with respect to their biodiversity. 34 nature conservation and protected areas cover 12.5% of the country's total area. The knowledge of the flora of Mozambique is mostly restricted to Southern Mozambique.

The flora of the Center and North has been much less well documented and needs urgently to be updated. Apart from the forest inventory of the Derre Forest Reserve, there is limited knowledge on biodiversity in the Project areas. Vegetation categories found in the Project region include the Miombo woodlands (Derre Forest Reserve), the evergreen mountain forests (highlands of the Morrumbala and Chiperone mountains), the baobab-savannas and mopane woodlands (semiarid region of Mutarara), grasslands dominated by *Hyparrhenia* spp. (flood plains of the Zambezi River), inundated grasslands on the Lower Shire dominated by *Cyperus* spp., *Phragmitis* spp. and *Imperata spp*. The mountain zones and the wetlands are expected to have a high number of endemic and protected species, but they are not well documented. While the Malawi part of the marshes along the Shire river have been modified for agriculture, the Mozambican side is still pristine and may represent close to natural habitats for a variety of plant, bird, reptile, mammals, and fish species. The district of Mutarara is estimated to have more than 500,000 ha with potential for forests and wildlife, particularly concentrated in the low populated Administration Post of Doa.

The Project region has a high forest potential. Thirteen precious and first class species are present among them *Pterocarpus angolensis, Burkea africana, Pericopsis angolensis, Combretum imberb, Guibourtia conjugate,* Afzelia *quanzensis,* and *Dalbergia melanoxylon.* Other common species are *Acacia* spp, *Colophospermum mopane,* and *Adansonia digitata,* which are intensively used by local communities for several purposes. Trees used for their edible fruits are among others, *Adansonia digitata, Zyzyphus mucronata, Vitex doniana, Strophantus petersianus.* Other local uses of forest plant species include medicinal plants, shade, honey production. According to the Forest Services report, 300 liters of honey were produced in Mutarara during 2005 using traditional bee hives places in native woodlands. Traditional bee hives are commonly made of bark of different tree species, a practice considered prejudicial for forest production. The practice involves debarking trees such as *Pterocarpus angolensis,* which is a first class timber species.

Natural resources or their primary derivatives are generally sold unprocessed in local markets. These include wild fruits (e.g. baobab fruit), dry or smoked fish, medicinal plants, logs, among others. Some of these products are exported illegally to Malawi with very little benefit to local communities.

Firewood is the only source of energy for heating and cooking for almost 90% of the residents of the Project Area. Even those with access to electricity still use firewood or charcoal for cooking. Although the access to firewood is open for local communities, there are areas in Mutarara that have been reported to be short in fuel wood and their residents having to travel between 6 and 12 Km to collect firewood. Some socio-economic data on the districts is provided in the following table.

Table 1: Socio-economic data of the Project districts

Districts	Total population - estimate 1/1/2005	Economically active population	Population density (inhab/km2)	Active/ inative population	# pers. / HH	Poverty	Literacy rate
Morrumbala	304,073	129,000	23.8	1:1.1	4.1	52%	11%
Mutarara	173,867	70,000	27.3	1:1	4.3	66%	17%
Mopeia	89,403	41,000	11.7	1:1.2	4.2	52%	15%
Maringue	71,086	29,000	11.6	1:1	4.3	45%	7%
Chemba	62,278	27,000	15.7	1:0.9		45%	12%
Total	**700,707**	**296,000**	**21.2**		**4.2**	**54%**	**13%**
Phase I districts	477,940	199,000					
Phase II districts	222,767	97,000					

Districts	Monoparental female headed HH	# agricultural households	Average area cropped annually (ha)	% HH with less than 1 ha	Forest management area (ha)	Widelife management area (ha)
Morrumbala	13%	63,000	1	72%	170,000	
Mutarara	17%	29,000	1	42%		
Mopeia	11%	17,000	0.5	72%		
Maringue	27%	12,000	2.8	45%	240,000	172,000
Chemba	28%	10,000	2.6	45%		
Total	**16%**	**131,000**		**61%**	**410,000**	**172,000**
Phase I districts		92,000				
Phase II districts		39,000				

Source: District profiles

2) Land degradation dynamics in the Central Zambezi Valley

Although the natural resource base is still abundant, land degradation has become locally an important problem in the Project zone. It can be expected that with the extension of economic and agricultural development, the pressure on the natural resources is likely to increase. Unlike in many other countries, where land degradation is much advanced, Mozambique has currently the opportunity to steer its economic development in accordance with principles of environmental sustainability. Protecting its natural resource through improved management, while at the same time economically benefiting from the rich resource base is the challenge. In support of this endeavor is the favorable legal and policy framework that has been put in place since the ending of the war.

The main causes of land degradation are identified for the Project zone in the table and text. The four major consequences that derive from the land degradation dynamics are low production agriculture, the loss of forest coverage, the loss of biodiversity and the loss of carbon stocks.

2.1. Consequences of land degradation

Low production agriculture

The agricultural system is based on extensive and traditional practices of slash and burn agriculture. Without any additional inputs and with the shortening of cycles of field rotations due to increasing population pressure, yields are decreasing and are stagnating at a very low level. Institutional capacity at national, regional, provincial, district and local level is limited and supporting services are understaffed at all levels, which is still a consequence of the civil war.

There is a lack of improved farming techniques at the farmer's level, due to absence of an efficient extension service and lack of research support. Obvious concerns are nutrient management, adapted varieties and crops, pest management, and post-harvest losses, among others. Crops like tobacco and cotton are highly demanding in soil nutrients and may aggravate the degradation of soil productivity. Climate variability contributes to unpredictable production outcome. There is also a lack of land use planning, which would allow people to make informed decisions on how to best use soils and land resources. In the hilly areas of Morrumbala, soil erosion is a significant problem contributing to loss of soil fertility and low agricultural productivity. In addition, seasonal water fluctuations are very high. Droughts and floods are discussed in more detail below.

The Central Zambezi valley is also vulnerable to extreme weather events, alternating between drought and floods with some years of normal weather in between. Severe drought is experienced periodically and is of major concern for agriculture in large parts of central Mozambique. Maize yield fell on average by 40% to 85% in the Zambezi valley during the drought years 1982/1983, 1986/87, and 1991/1992. These events caused large-scale food deficits, hunger and disease. It also increased food imports and worsened the national debt burden. It is estimated that the loss in agricultural production due to drought in 1992 was 4 percent of the GDP or about US$86 million in 2004 prices. Droughts occurred in the Zambezi valley in the three years from 2002 to 2004 and yield reductions up to 50% were reported, translating in maize yields of 300kg/ha. At the national level 29 districts were identified being at risk of drought and/or desertification. Two of the five Project districts are among them: Maringue and Chemba (MICOA, 2002). As evapotranspiration rates are much higher then precipitation, a water deficit is created for most of the year, which often leads to crop failure. Even in normal rainfall years, food shortages are not uncommon in these districts (including Mutarara). People's strategies to cope with drought and food shortage in the Project region are seasonal migration, sale of alcoholic beverages, sale of domestic animals, and the extraction of natural resources through hunting, fishing and harvest of non-timber forest products. Successive droughts reinforce people's strategies to move towards the floodplains to grow food where soil humidity is higher. But these river margins are also the habitats for hippopotamus and crocodiles increasing the human-wildlife conflicts in the Project area. Hippopotamus often destroy crops on the floodplains, and crocodiles attack and kill people growing crops along the river, fisherman, or people who go to the river to collect water, collect edible water plants, bath or wash clothes.

The Zambezi river valley is also prone to flooding. Despite the high risks of floods, the inhabitants cultivate the fertile land on the floodplains. The 2000 floods were the worst in living memory. Half a million people were made homeless and 700 lost their lives. The floods destroyed

crops and overwhelmed water and sanitation infrastructure in many areas among which Zambezi, Limpopo and Soave valley were the most affected. Many communities lost everything they owned including cattle. Floods also returned in 2001 and 2007

It is predicted under the regional climate models, such as HAD3RM, that the intensity and frequency of droughts will increase as global temperatures rise. This will also amplify land degradation, affecting mostly the poor who depend on natural resources for their livelihoods. The impacts of droughts and floods are crosscutting and diverse, with severe consequences for agriculture and natural vegetation besides the indirect effects on health and economy. Any changes in land use and agricultural practices should therefore take climate trends into account in order to reduce the vulnerability towards increased weather variability.

Loss of forest coverage

Major causes for forest cover loss are deforestation for agricultural land, wild fires, fuel wood collection, charcoal production, and illegal logging. The national deforestation rates are estimated at 147,100 ha per year. Deforestation figures for the Project Area are not available. Satellite images show clearly, that large areas have been cleared in recent years for agriculture, mainly around towns and along roads, where most of the population is located. Areas with difficult accessibility maintain larger areas of natural vegetation with little perturbations, except of wild fires that spread over large surfaces.

Fire has become a major threat to natural resources. Its use is widespread for agricultural purposes, clearing around the homesteads and for hunting. According to satellite imagery interpretation, 74% of northwestern and central parts of the country are burnt annually (compared to the national average of 40%). 90% of fires were due to human causes, 5% due to natural causes and 5% to unknown causes (Taquidir 1996). The Project area has a hot and wet season from November to April and another cool and dry from May to October. Forest fires are linked to this seasonality and sporadic fires burning small surfaces are common in the beginning of the dry season in April. They increase in size and intensity by late August to October when the vegetation is completely dry. Natural forests are usually not submitted to any management regime. Firebreaks don't exist and the road network is very poor. This results in large blocks of forests being burnt until a river or a road stops the fires. Therefore, the extent of a fire depends on the month of burning, the extent of a single block of vegetation, the wind speed and direction and on other weather conditions such as rain and temperature. Depending on these conditions, a single fire can either burn a few hectares or extend over many thousands of hectares. The ultimate effects of frequent and intense fire events are the reduced regeneration of fire sensitive species, the proliferation of fire-tolerant species, with the consequence of the loss of plant diversity and associated fauna. Furthermore, high volumes of carbon are lost. But fires have also some direct social costs, when homesteads are accidentally burned and properties destroyed. In addition, charcoal production, logging, and firewood collection also contribute to forest cover loss. The loss of forest cover is also increasing the fragmentation of ecosystems which impacts negatively ecological and watershed services, and decreases landscape values.

Loss of biodiversity

The loss of biodiversity is of significance in the Project area due to slash and burn agriculture, deforestation, wildfire, logging, charcoal making and firewood collection, hunting, drainage of wetlands and altering of water courses (dam constructions, irrigations schemes etc) and fishing. In addition to described root causes above, illegal logging and hunting activities contribute to species loss. Large mammal populations are severely depleted. Due to over-hunting, several large

mammals in the Zambezi valley are at the verge of extinction (black and white rhino, giraffe, roan antelope, tsessebe, eland, the mountain reedbuck and the African wild dog). In the Project area, people hunt wild pig (*Phacochoerus aethiopicus*), monkeys, porcupine, duikers, guinea-fowls, and rats. Hunting and protection from wildlife attacks are among the main causes of wild fires. Woodland burning to confine the animals in pre-established traps is the most common hunting technique in Morrumbala. Illegal logging is reported to be a common practice in the Project area, even within the protected Derre Forest, the first class species Umbila (*Pterocarpus angolensis*) is harvested. There is illegal wood trade going on across the Malawi border. Communities are often not able to defend their forest resources from incoming illegal loggers. This is due to lack of community organization or due to lack of knowledge of the legal framework that would actually be in favor of community rights to natural resources.

Fishing is also an important activity for food and cash. Local practices that use poisonous plants to kill fish are indicated as a cause for reduction of fish stock in Morrumbala. More than 130 fish species have been identified in the Zambezi River of which 17% are endemic. However, the Lower Zambezi that includes Mutarara, are said to be poor, with only 60 species. It is unclear if the low number of species can be explained either due to limited taxonomic studies carried out or due to high pressure on fish resources that results in low populations.

Carbon loss

Carbon loss is significant due to slash and burning agricultural practices, depletion of soil carbon through sustainable agricultural practices, deforestation, wild fires, export of biomass via logging, charcoal, wildlife.

3) Outlook

Land degradation is becoming locally an important problem in the Project area. It is induced by extensive and common land management practices such as slash-and-burn agriculture, deforestation, wild fires, logging, charcoal production, fuel wood collection, hunting and fishing. Nowadays, these techniques are known to be harmful to the ecosystem health. Soil degradation and loss of soil fertility, forest cover loss, reduction in animal and plant diversity, and carbon loss are the immediate consequences. In the medium-long-term, these techniques are highly destructive and non-sustainable. Shifting from these techniques to sustainable land use methods is not trivial as it may need education of the community (which may take a generation), large capital investments, and technical supervision, among others. However, a gradual shift is needed to change attitude of local people towards the natural resources. People learn from experiences and need lessons to learn from. Providing lessons through demonstrations of sustainable, high productivity, and cheap technologies for local people may be of great importance to induce the shift towards sustainable land use techniques. In the following table, land degradation root causes and their consequences are summarized in addition to description of measures currently undertaken and an analysis of what additional measures are required to shift towards sustainable land management. Project interventions are described in more detail in Annex 4 (Detailed Project description) and in Annex 9 – Attachment 2 (Incremental Cost Analysis).

Table 2: Root causes of land degradation (LD), Consequences of LD and Mitigation Measures Analysis

Consequences of LD	Root causes of LD	Measures currently taken	Additional measures required
Low production agriculture	<u>Unsustainable farming practices</u> • Slash-and-burn agriculture • Insufficient soil nutrient replenishment (inefficient fallows, insufficient inputs) • Cultivation of poor soils • Erosion • Lack of improved techniques at farmer level	• New cash crops in the area such as paprika, sesame • Introduction of higher input agricultural techniques through private sector extension (cotton) • Root crops introduced with increased nutritional contents (high beta-carotene sweet potato)	• Improve nutrient management through crop rotation, improved fallow, improved organic matter management and targeted inputs • Develop alternative techniques to fire use • Introduction of conservation agriculture techniques • Establishment of irrigation schemes (small and medium) and water storage tanks • Diversify agriculture to address food shortage problems, e.g ICRAF's concept of nutrition gardens • Land use planning for appropriate use of soils
	<u>Drought</u> • Irregular distribution of rainfall • Crops/Varieties not well adapted to drought • Insufficient soil moisture conservation • Lack of water storage for irrigation • Climate change	• AGRIMO introduced short cycle crop variety • IIAM is developing drought resistant varieties of maize, and identifies new crops with CGIAR centers • USAID is implementing Farming Early Warning Systems Network (FEWS-NET) • Muriri irrigation scheme (400ha in Morrumbala) is rehabilitated	• Promote water harvesting and improved water management techniques • Establish water reservoirs and small scale irrigation systems • Irrigation and drainage schemes • Develop drought resistant crop varieties • Promote drought resistant crops • Identify new crops adapted to climate variability (woody species) • Promote soil moisture conservation farming practices (mulching, cover crops) • Improve on-farm and local food storage capacity • Create local capacity for effective implementation of early warning system measures
	<u>Floods</u> • Cultivation of flood prone soils / area • Lack of flood control infrastructure • Inefficient early warning systems and disaster preparedness	• INGC establishes disaster response program to assist affected people	• Promote coordination with upstream dam management (Kabora Bassa) and Shire River for improved flood control • Promote productive agriculture in safer places • Establish flood control infrastructure where appropriate, • Create local capacity for early warning systems

	• Inappropriate management of upstream dams (Kabora Bassa) • Cyclones and strong rainfall • Climate change		and disaster responses • Establish an atlas to locate areas of high vulnerability and safe areas (as done for Limpopo basin) – flood hazard maps to be integrated in land use planning
	<u>Lack of institutional support, market linkages, infrastructure</u> • Lack of credit institutions • Lack of extension and research service • Poor road, market development, • Poor communication • Lack of land use planning	• Extension service supported by NGO's, World Vision, Dunavant cotton company, also undertake limited research • Decentralization of National Agricultural Research Institute (IIAM) with establishment of Regional Centers • Decentralization Program • Road, bridges and railway rehabilitation	• Improve agriculture extension and build local capacity to develop improved farming practices (including farmer to farmer extension) • Establishment of mechanisms of market information access • Processing of natural resources (agricultural products, forest products, fish)
Forest cover loss	Deforestation • Slash and burn agriculture • Logging • Charcoal production • Fire wood collection	• Limited impact on intensification through active NGOs and private sector (cash crop production) to reduce pressure on natural resources • Implementation of new forest and wildlife regulation: e.g. Increased patrolling to control illegal forest exploitation (insufficient) • SIDA/SAREC and Eduardo Mondlane University is engaged in Projects to evaluate alternative sources of energy • The Ministry of Energy is promoting alternative sources of energy (e.g. gas, biofuel) • Participatory land use planning is taking place in Derre Forest • Establishment of community based natural resource management groups	• Promote land use and alternative techniques without fire • Establishment of COGEP to facilitate the access to community benefits from natural resource extraction; • Promote extraction of timber resources based on forest concessions • Local processing of forest products • Plantation with fast growing species for fuel wood and charcoal production • Training local communities on improved management of natural resources; • Inform population on their rights and assist them in obtaining rights to resources, assist in developing management plans of the resources • Strengthen the forest patrolling, starting in the logging areas until the processing and/or export; • Promotion of concession forest harvesting

		COGEP (insufficient)	
	Fire • Slash and burn agriculture • Homestead clearing • Hunting	• National Strategy for Wildfire • Awareness campaigns of Forest Service	• Train local capacity to prevent and control wild fire • Community based fire control • Promote economic forest activities that need a fire protected environment (e.g. honey production, NTFP harvesting,) • Fire breaks
Biodiversity loss	Forest • Slash and burn agriculture • Wood extraction (logging, charcoal, firewood) • Hunting • Wild fires Wetland and fresh water • Fishing • Drainage of marshes • Irrigation infrastructure	• Ecological and economic land zoning in Zambezia and Derre Forest Reserve • Implementation of forest concessions • Establishment of community based natural resource management groups COGEP (insufficient) • Forest inventories of concession forests and Derre reserve	• Contribute to biodiversity inventory, and identification of biodiversity hotspots and integrate in district land use plan • Design management plans of sustainable harvesting for forest products • Forest enrichment planting with economically interesting species • Cultivation and domestication of indigenous plants and trees • Promote improved fishing methods • Promote aquaculture (reducing pressure on fishing and hunting) • Establish protection and management plans for marshes Design and implement participatory wildlife management plans • Establish game farms • Develop tourism opportunities
Carbon loss	Forest • Wild fires • Deforestation • Charcoal production and use • Fire wood use • Logging • Agriculture • Depletion of soil organic matter through agricultural practices	• Concession forestry (management plans) • Increased forest patrolling • Alternative energy development (Ministry of Energy)	• Improve carbon sequestration through reforestation of fast-growing woodlots, agroforestry technologies, improved soil management, improved farming techniques • Avoid carbon loss through efficient wild fire control, reduced deforestation rates, alternative energy use (solar energy), more efficient energy use (improved stoves), reduced illegal logging and forest product extraction.

Annex 16: STAP Roster Review

STAP Reviewer: Professor Martin Williams ScD, University of Adelaide, Australia
Date: March 15, 2006

1. Scientific and technical soundness of the Project, including the degree of stakeholder involvement

[Removed: description of Project objectives, focus and statement of issues the Project would address]

In evaluating this proposal I will consider the following questions:

- Will the approach taken in the Project proposal achieve the objectives of addressing land degradation?
- What are the risks and constraints associated with the approach?
- Is there any gap in the Project? Are there any controversial aspects about the Project?
- What aspects of the interventions proposed require further research?
- How will the model of sustainable use outlined in the Project be developed?
- How effective will the proposed model be?
- Is there sufficient evidence in the document that the Project offers the best long-term solutions?

The Project draft identifies some of the major causes of land degradation *but does not consider in sufficient detail why this particular region is so vulnerable to severe flooding as well as what might be done to reduce such floods or at least to alleviate their impact. More attention needs to be given to discussing this issue, including the use of early warning systems*. Since floods and droughts in this region are primarily due to changes in sea surface temperatures in the equatorial Pacific modulated by changes in the latitudinal temperature gradients between the Southern Atlantic Ocean and the Indian Ocean, it is possible to predict their likely occurrence at least twelve months in advance with a reasonable degree of skill. However, unless this information is made available to farmers well ahead of time, and unless suitable strategies are in place to cope with the impacts of these extreme events, the current situation is unlikely to improve. Some more detailed mention of the role of extension services in providing advice to farmers on how to cope with such extreme events seems warranted. Mention is made of construction of large numbers of small dams to retain water for use in dry years as well as for local small-scale irrigation Projects, and there is a brief reference to the need for inexpensive silos for grain storage, all of which are useful means of mitigating the impacts of minor droughts, but in the long term some more effective form of large scale water storage will be needed.

The map showing areas flooded in the Zambezi valley in four of the proposed Project districts during 2001 suggests that some portions of the flood plain are less prone to flooding than others, as might be expected from an understanding of the depositional processes responsible for flood plain accretion. This being so, the Project needs to consider the utility of preparing and using flood hazard maps to assist in developing a more strategic approach to land use planning. Some form of land use zoning seems essential to avoid inappropriate use of those sections of the flood plain most liable to inundation. Again, effective longer term flood control measures will require some major investment in controlling and releasing flood waters and in preventing further loss of forest in the headwaters of the Zambezi and its major tributaries.

The proposal mentions that The National Action Plan for drought and desertification (NAP), prepared by the central government establishes strategic measures for drought mitigation but no further details are forthcoming. How effective are these measures likely to be at the district and local level? Equally, the proposal notes that the central government *has in place a strategy for disaster preparedness in the major flood plains, in which early warning systems of floods and seasonal migration between the floodplain and the upland is among the strategies indicated for the affected communities.* The question then arises as to how the seasonal migrations are to be implemented and whether the local populations have been consulted about these measures. If not, they are unlikely to be very effective.

The causes of land degradation are identified as deforestation, slash and burn agriculture, unsustainable agricultural and forest extraction practices and wild bush fires. Once again, more detail is needed. For example, what are the unsustainable forest extraction practices? If preparation of charcoal is one (and it obviously is, here as elsewhere in rural Africa), then what alternative sources of inexpensive fuel are available, if any? How might fuel be used more economically? What incentives could be provided to encourage families to plant and maintain trees for fuel and construction?

What is meant by unsustainable agricultural practices? Is this simply synonymous with shifting agriculture and too short a fallow? If more than this is intended, it would be useful to specify in some detail.

What are the major causes of fire? Is the primary aim to clear more land for agriculture, or to destroy weeds and dead grass, or to provide fertilizer in the form of ash? Are the local farmers familiar with the repercussions of fire, such as increased runoff, reduced infiltration, reduced soil moisture and increased loss of topsoil and soil nutrients? Some form of rural extension service could assist in altering these long ingrained practices. Perhaps more details of rural education programs could be provided.

The impact of hunting on the wildlife is mentioned in passing, as are the adverse impacts of habitat fragmentation and destruction. A carefully integrated agro-forestry program to complement existing plant cultivation and animal rearing would help to reduce pressure upon existing forests and woodlands. A long-term and systematic forestry program in the headwaters of all major rivers is essential in order to avert accelerated soil loss and the risk of flash floods.

On another matter, what is the justification for selecting the five districts and the three provinces? Are they representative of a much broader region? How were they selected? What are their geographical characteristics? In the absence of such basic information it is hard to assess the likely scope for replication of this Project other than in very general terms (see section 5). The proposal notes that the Zambezi valley has considerable agricultural potential, supports a quarter of the total national population and comprises 15% of the total arable area. However, we are not provided with any coherent reasons for why the remaining 85% of the area was not considered.

[Removed: Project long term goal and means to achieve it]

[Removed: Project description by component]

Stakeholder involvement

The proposal emphasizes the need for strengthening existing institutions and stresses that at *the end of the implementation period, all major Project stakeholders – smallholder farmers, local NGOs and extension services, rural financial service providers, district and provincial technical agencies, district administrations and the DNPDR* [National Directorate for the Promotion of Rural Development] *itself - have all increased their capacity to support agricultural development*. The proposal underlines this by stressing that what it terms the *process aspect* of the Project is almost as important as *the immediate Project development objective of poverty reduction*.

This part of the draft proposal could be strengthened. The draft indicates that *Project activities would be demand driven* without indicating how this will be achieved in practice. The draft also indicates that activities will be *closely linked to the government's decentralization strategy, agricultural policies and other development programs in the Project area, as appropriate*. However, we are not told in any detail how this might be achieved, so we have to take it on trust that this will indeed result in *empowering communities, building community organizations, increasing on- and off-farm production and productivity and facilitating farm access to markets.*

2. Identification of the global environmental benefits and/or drawbacks of the Project

[Removed: country socio economic and environmental information, Project areas demographic features]

The global benefits that should accrue from reducing the degradation of existing areas of natural vegetation and reducing the encroachment onto forested uplands areas include the ensuring of *ecosystem and landscape integrity, stability, functions and services, soil conservation, maintenance of vegetation cover, and conservation of internationally important wildlife and habitats.*

The outcomes will include improved soil structure and water holding capacity, increased crop and livestock yields, better livelihood prospects, and an overall reduction in pressure on local resources and potential conflict between different groups competing for scarce natural resources in this seasonally-wet tropical environment.

The anticipated national benefits will include alleviation of poverty, enhanced food security, improved health, and greater ability to cope with natural climatic variations, especially floods and droughts.

3. Project consistent with GEF goals, operational strategies, program priorities and relevant international conventions

The Project has a number of aims that fall within the remit of GEF Operational Programs #15 (Sustainable Land management) and #12 (Integrated Ecosystem Management). These global environmental objectives include the reversal of land degradation, reduction in biomass burning and an overall reduction in biodiversity loss.

The Project is consistent with the aims of the International Convention to Combat Desertification in the dry sub-humid regions as well as with several other international conventions, notably those relating to biodiversity conservation and to climate change. Any increase in plant biomass through increased agricultural productivity in this impoverished environment will enhance carbon

storage in growing plants and soils and will help to minimise soil loss through erosion by water and mass movement. An additional benefit would be to enhance the ability of ecosystems to adapt to future variations in climate.

4. Regional conservation context

Poverty levels within Mozambique are high, and life expectancy is low, literacy levels are low and infant mortality levels are high. All of these attributes are causally linked. Without improved food security, poverty alleviation, better health facilities, and access to better education, the scope for social and economic improvement remains restricted. These national problems are mirrored in the Project area.

A number of fundamental issues will need to be addressed. First, there will need to be mechanisms in place for ensuring full and effective community participation at all levels. Second, improved methods of water harvesting and water storage need to be devised and implemented to counteract the impact of recurrent droughts. Third, there is urgent need for improved forms of river basin management to reduce the risk of future flooding. Fourth, removal of live and dead wood for firewood and building is leaving the soil surface bare and more vulnerable to accelerated erosion by rainfall, runoff and mass movement.

5. Scope for replication of the Project

The Project brief considers a number of issues that are also characteristic of other seasonally wet tropical regions in and beyond Africa. These include deforestation and habitat fragmentation, loss of biodiversity, land degradation and accelerated soil loss, shifting cultivation, biomass burning, low crop yields and vulnerability to recurrent floods and droughts.

The Project aims to enhance the capacity of the local communities to improve crop production and productivity and marketing of their produce and hence to develop income-generating activities that are in harmony with the opportunities (and limitations) offered by this seasonally wet tropical environment. If the goals of land use planning, sustainable agriculture, water management and prevention of forest destruction outlined in this draft proposal are achieved, then the Project could serve as a model for other impoverished areas in the seasonally wet tropics of Africa. However, the authors of the proposal wisely confine their attention to more local issues of sustainability.

The proposal notes that the emphasis on institutional and process strengthening is a strong guarantee of the sustainability of the Project. As noted earlier, the proposal is designed to ensure that at the end of the implementation period, all major Project stakeholders – smallholder farmers, local NGOs and extension services, rural financial service providers, district and provincial technical agencies, district administrations and the DNPDR itself - have all increased their capacity to support agricultural development.

The approach taken in this proposal is entirely consistent with national decentralization policies and the moves to establish and develop the capacity of districts to manage local agriculture and land use planning. In addition, the Project will use existing government structures to manage the Project, including the flow of funds. The activities of the Project will be integrated within the structure of the National Directorate for the Promotion of Rural Development (DNPDR) and the Ministry of Planning and Development (MPD).

Two final criteria for achieving a sustainable outcome concern the use of GEF funds to ensure environmentally sustainable use of land and the proposed development and expansion of rural financial services.

If the Project proves successful, the proposal authors consider that there would be scope for replication in other districts within the Zambezi Valley and ultimately at a national level. I concur with this modest assessment.

6. Project effectiveness and sustainability

As a general comment, one can note that ecologically sustainable development requires that social and economic needs be met through maintenance of the life-support functions of ecosystems, both natural and humanly modified. Any action that systematically removes materials from a natural system at a rate faster than the ability of that system to produce a surplus will cause the system to become degraded. Likewise, any action that systematically adds substances to a natural system at a rate faster than the capacity of the system to absorb and recycle such materials will also lead to system impoverishment. Since the only source of an increase in net global primary productivity is via photosynthesis, maintenance of a resilient plant cover is the prerequisite for achieving sustainable land use and effective ecosystem management.

The only lasting guarantee that this Project can fulfil these fundamental requirements lies in its ability to enhance the capacity of smallholders in the Zambezi valley to develop and implement appropriate programs of sustainable land use, together with an effective monitoring program. Decentralised planning arrangements and suitable arrangements for conflict resolution are necessary conditions to achieving these aims. Other factors will be the successful rehabilitation of presently degraded land and the associated increase in local income as a result of more efficient use of water during dry years and better methods of flood prevention during wet years.

[Removed: Project M&E arrangements]

If this occurs, the outcomes have a good chance to be both socially and environmentally beneficial. Funds need to be designated specifically to train the monitoring staff from the very outset of the Project.

7. Consistency with operational strategies of other focal areas

The National Directorate for the Promotion of Rural Development of the Ministry of Planning and Development would be responsible for the overall implementation of the Project since it already deals with issues relevant to this Project, including agriculture, environment, group mobilization and decentralization. The Project would also complement the existing activities of a Decentralized Planning and Finance Project (Loan No. H0670) financed by the World Bank and implemented by the Ministry of Planning and Development, which cover all the districts of interest to the proposed Project.

8. Linkages to other programs and action plans

The draft outline sounds promising in theory, but there are formidable practical problems that will need to be overcome if this Project is to succeed. These include the perennial problem of conflicts of interest between different institutions, weak institutional and administrative capacity, lack of access to education and training by the very many poor and underprivileged members of the community, conflicts over competing demands for access to scarce natural resources, and the

background vicissitudes of periodic floods and droughts, leached infertile soils and difficult access to markets. Having said that, it seems that the authors of the proposal have taken considerable pains to ensure that this Project dovetails well with existing programs and action plans.

9. Other beneficial or damaging environmental effects

The proposal contains a lucid, dispassionate and detailed tabulation of the potential risks involved in this Project. Against each of the identified risks is a list of possible risk mitigation strategies. Risk is then assessed on the assumption that the mitigation measures are in place. The overall assessment of risk is regarded as substantial owing to the number of risks faced by the Project under different category headings.

However, the authors consider that the Project will have few adverse environmental impacts. Their reasons for this assertion are given below and seem justified.

[Removed: Project description of environmental impact under section D in the PAD]

10. Mechanisms for participation and influencing Project management

[Removed: Project implementation arrangements at district, province and national levels]

The advantage of the administrative structure proposed is that it uses, augments and strengthens existing structures. The success of the Project will depend to a large extent on the capacities of the Field Management Advisor and of the District Facilitators.

11. Capacity building

Unless the capacity of the local communities to plan and co-manage sustainable land use in conjunction with national and regional agencies is enhanced, the Project is unlikely to succeed. The Project authors are very aware of this and note that *Government services are often top-down and technocratic, and occur in isolation from other rural development stakeholders, including smallholder farmers and the emerging private sector*. They point out that rural extension services are few, with *on average only 1.3 extension workers per 10,000 rural inhabitants.* Some 87% of rural households do not have effective access to extension services.

The Project is structured to ensure that any provision of finance through community investment funds is accompanied by assistance with production and/or marketing issues. Although the emphasis is on working with and through groups to resolve these latter issues, the authors of the proposal note that a group will only work if it *serves a clear and tangible economic purpose for each of its individual members.* They stress that groups *should be based on a clear demand and only engage in such demand-driven activities that cannot be carried out by its members individually*.

Bearing in mind these concerns, the proposal advocates the creation of Village Savings and Loans groups as *an effective way to reach economies of scale that will facilitate investment in productive activities* by individual members of the group, eventually leading to the formation of micro-credit institutions.

12. Innovativeness of the Project

The authors of the proposal note that in the Project areas: *poverty is insidious, commercial networks are almost non-existent, agriculture is primarily rain-fed and smallholder production mostly used for subsistence in the districts along [the] Zambezi Valley. The districts targeted by this Project are all physically isolated with almost no formal commercial or financial services*.

They argue that a demand responsive approach is necessary to help rebuild the social networks and structures destroyed during the earlier period of civil war. At present most communities and individuals react more or less passively to external events and few are aware of their civil rights.

The Project will establish a set of processes for reviewing community participation through household surveys conducted before the middle and end of the Project. The innovative aspect of this Project is to empower presently marginalized individuals to work together to improve their overall quality of life. As the authors of this proposal indicate: *the main social benefits of the Project are likely to be added knowledge, skills and experience of smallholders, including women and youth, that strengthen the organizational cohesion, leadership and member motivation of their groups and associations. Their increased institutional and leverage capacity is expected to assist them to manage and control their access to rural finance, agribusiness services and government managed resources, significantly improving their development opportunities.*

13. Potential for greatest impact and lessons learned from other similar Projects

In many parts of the seasonally wet tropics, indiscriminate destruction of the natural vegetation has resulted in severe and widespread land degradation. Such degradation has impacts well beyond the immediate area suffering from loss of plant cover. In every case, for prevention and mitigation strategies to succeed, the local communities need to be aware of the benefits and to have a full role in the design and implementation of the measures to control land degradation. Appropriate forms of environmental education must go hand in glove with measures to reduce poverty and ensure food security among the poorest communities in these regions, who are also the most vulnerable to environmental change.

The level of poverty in the proposed Project is very high and agricultural yields are exceedingly low. About 96% of rural farm households do not use any form of fertilizer, 90% do not use animal traction for cultivation, and 82% have problems of seed supply. Lack of access to credit reinforces this vicious spiral of low yields, poor land management practices and persistent poverty. The temptation to engage in illicit removal and burning of forest is strong and the outcome is deforestation, accelerated loss of topsoil and desertification, leading to still lower levels of productivity.

[Removed: lessons learned as in section B of the PAD]

[The full STAP review text is available on file]

World Bank Team response to STAP review comments

All comments have been addressed in the Project Document. Below is a summary of main comments and the Team's response:

Comment	Response
Threats and risks/causes for land degradation	
No sufficient detail why this particular region is so vulnerable to severe flooding as well as what might be done to reduce such floods or at least to alleviate their impact, including the use of early warning systems.	There are at least two major drivers of flooding vulnerability: (a) Uncoordinated water control in large upstream dams (Cabora Bassa, Lake Kariba) have a large influence on floods downstream; and (b) A measured increase in the frequency and severity of cyclonic activity and associated heavy rainfall impacting the Zambezi basin. Our quantitative measurement approaches using state of the art remote sensing and basin to district scale hydrological modelling will provide (a) measures to reduce floods and to improve establishment of effective early warning systems and disaster plans at local level and (b) the development of adaptive agricultural practices in less vulnerable areas (see Attachment 2 - Baseline Data on Landuse, Biodiversity, and Hydrology for a detailed description)
Clarification needed on what the unsustainable forest extraction practices are; what alternative sources of inexpensive fuel are available, if any; how fuel might be used more economically; what incentives could be provided to encourage families to plant and maintain trees for fuel and construction.	The main unsustainable forest extraction practices are illegal logging, fuelwood extraction and charcoal making. Firewood is main source of fuel; there is an open access regime for charcoal making and fuelwood collection, depleting the forest resources. In addition, local land users regularly use fire to facilitate hunting and honey gathering and this results in the burning of large areas of local grasslands and woodlands. This GEF Project will provide education and awareness programs, favor fast growing fuelwood plantations, and promote energy saving techniques (stoves) and alternative energy sources (see PAD - Component 2). Through NRM fund (Component 3 in the PAD) incentives are available to invest in fuel-efficient and fireless, forest product extraction techniques
Clarification needed on the term 'unsustainable agricultural practices'.	Slash and burn agricultural practices, in addition to shortening of fallow periods also causes insufficient nutrient replenishment and

	the exposed soils are more susceptible to soil erosion and degradation. Other cropping practices that are unsustainable include the use of nutrient demanding and extractive cash crops, and non-optimal crop rotations as described in Annex 13 of the PAD.
Detail is needed on the major causes of fire.	Slashing and burning of woodlands for agricultural purpose, clearing around homesteads for safety reasons (protection against snakes), honey gathering using smoke to drive away bees, and hunting are the main causes of forest fires. As firebreaks and natural barriers seldom exist, a single fire can extend over thousands of hectares destroying forest understorey and contribute to biodiversity loss (see Annex13).
Project intervention	
Consider the utility of preparing and using flood hazard maps to assist in developing a more strategic approach to land use planning. Some form of land use zoning seems essential to avoid inappropriate use of those sections of the flood plain most liable to inundation.	We have incorporated the use of state of the art remote sensing and mapping techniques including digital elevation models derived from the Shuttle radar Topographic Mission (SRTM) data to map the terrain in 3 dimensions (including elevation and streamflow networks) and existing natural resource endowment changes over time. These data sets are now coupled with a landscape level hydrological model that integrates vegetation cover, soil, evapotranspiration to derive impact scenarios. Integrated into land use planning efforts under SPA activities will be undertaken; Flood hazard maps and drought prone areas will be mapped and strategies for adaptation established to guide project activities and to facilitate M&E systems.
How effective are NAP's strategic measures for drought mitigation likely to be at the district and local level?	A number of policies, laws and regulations were established by the government to reduce impacts of drought and promote sustainable development providing communities rights and opportunities to play an active role in the planning, programming and implementation of the activities. Currently, the implementation of strategic measures is the main issue. This project will facilitate the decentralized local government agencies to pilot with local communities to proactively predict and map likely areas of flood and drought risk and to begin mitigation activities at the local level.

A carefully integrated agroforestry program to complement existing plant cultivation and animal rearing would help to reduce pressure upon existing forests and woodlands. A long-term and systematic forestry program in the headwaters of all major rivers is essential in order to avert accelerated soil loss and the risk of flash floods.	Agroforestry (AF) will be one of the main pillars for SLM interventions. Many (AF) technologies are available, tested and widely disseminated in the eco-zones of Mozambique, Southern Malawi, Eastern Zambia. Technical assistance will be provided to local communities to integrate new technologies and adapt them directly in their fields to local conditions. These include: improved fallows, fast-growing woodlots, exotic and indigenous fruit trees, multipurpose home gardens, fodder banks, relay cropping, mixed cropping (see ICA, component 2). The integrated land cover, biodiversity, hydrology model that we have developed using project preparationj resources will now provide advanced land use planning capacity at the district, provincial, and even basin levels. The integrated geo-spatial modelling approach not only allows the identification of vulnerable springs and headwaters but also makes it possible for local stakeholders to incorporate and simulate the likely impacts of transboundary rivers/tributaries and the Cabora Bassa hydropower dam when assessing medium to long term land cover changes such as reforestation. (see ICA, component 1).
Selection of Project focus	
Provide justification for selecting the five districts and the three provinces and consequent potential for replication. What are the geographical characteristics? Provide the reason for the selection of the Zambezi Valley as the Project focus.	The Zambezi Valley of Mozambique has high agricultural, fisheries, ecotourism and trade potential but was one of the most heavily damaged during the 20 year long civil war. The area has also largely been neglected by donors. The GoM is now using WB investments to rehabilitate infrastructure e.g. the Roads and Bridges project, and the Beira railway project (see section A.2) so the proposed GEF project has high potential to provide environmental synergy to these infrastructure investments. The Project area covers three distinct agro-ecological zones and three provinces, providing a high potential for scaling up within these zones and provinces. See page 26 of Attachment 2 - Baseline Data on Landuse, Biodiversity, and Hydrology for a detailed description of the DOMAIN mapping that we have conducted in the PDF-B phase to facilitate extrapolation to other eco-zones and locations of the Zambezi).

Project participatory approach	
Indicate how demand driven approach will be implemented in practice. Indicate how activities will be closely linked to the government's decentralization strategy, agricultural policies and other development programs in the Project area.	As indicated in our response to the Council Member from Switzerland (point iv above), The Bank and other donors are currently supporting the Government of Mozambique (GoM) programs on decentralization and are currently providing the resources and capacity building to to support district development and local institutional strengthening. (2) A key objective of this GEF project is the strengthening of the environment related knowledge and capacity of the governmental and community institutions. To support this objective, technical assistance teams will be based in and operate from the project districts. They will actively facilitate knowledge dissemination on the environmental synergies and tradeoffs to district managers and the local government staff. These local institutions and their activities will be in place and operational as the project comes to an end – a logical phasing out. (3) The project, in conjunction with existing agencies/structures and the on-going GoM initiatives, will invest in improving the public management processes at district level (planning, M& E, financial management, accounting, and procurement) related to global environmental benefits and local ecosystem services by investing in knowledge and capacity building of the district's mangers and regular staff. In the PAD, Component 1 is dedicated to the demand driven approach through mobilization of communities and capacity strengthening of community group organizations.
Awareness and education	
Detail is needed on whether local farmers are familiar with the repercussions of fire, such as increased runoff, reduced infiltration, reduced soil moisture and increased loss of topsoil and soil nutrient. Appropriate forms of environmental education must go hand in glove with measures to reduce poverty and ensure food security among the poorest communities in these regions.	Although some awareness exits in regard to environmental problems, the issue for the local communities lies within how to address the problem, in addition to lack of opportunities and alternatives available. Also, awareness, seriousness of issues and alternatives may vary significantly at the local level and thus will be addressed with a site specific approach in the project. Awareness campaigns, education programs on environmental issues are one of the main activities under Component 2 in the PAD. They will be complemented by the development of alternative SLM practices and technologies on-

	farm. For example, the collection of honey by traditional methods involves the use of fire/smoke to control bees and is a significant cause of wild fires in native woodlands. Improved apiculture methods will be introduced that not only eliminate the use of fire but also do not damage hive integrity and bee populations. Environmentally sound practices will be linked and integrated in agricultural production systems according to priority needs of communities (see ICA component 2). A potential incentive for communities to eliminate fire and significantly reduce deforestation is for the project to involve communities in schemes that provide payements for carbon sequestration (a) through planting of native species on land that was deforested prior to 1989 and (b) to explore the possibility of community forest land being included in 'compensated reduction' programs whereby they are paid for the standing carbon in their forests. The project will explore both options with direct participation by the communities.