Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD1497

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT
IN THE AMOUNT OF SDR 18.5 MILLION
(US$26.0 MILLION EQUIVALENT)
AND
PROPOSED CREDIT
IN THE AMOUNT OF SDR 9.9 MILLION
(US$14.0 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MOZAMBIQUE

FOR AN

AGRICULTURE AND NATURAL RESOURCES LANDSCAPE MANAGEMENT PROJECT – PROJECT 1

June 9, 2016

Agriculture Global Practice and Environment and Natural Resources Global Practice
Africa Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective March 31, 2016)

Currency Unit = Mozambique New Meticais (MZN)
US$1 = MZN53.53
US$1 = SDR 0.70981389

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AFR100	African Forest Landscape Restoration Initiative
AgDPO	Agriculture Development Policy Operation
ANAC	National Administration of Protected Areas (*Administração Nacional das Áreas de Conservação*)
ANE	National Roads Administration (*Administracao Nacional de Estradas*)
ANRLMP	Agriculture and Natural Resources Landscape Management Project
APPSA	Agricultural Productivity Program for Southern Africa
ARA	Regional Water Administration (*Administração Regional de Águas*)
ASC	Agriculture Service Center
AT	Administrative Tribunal
AWP	Annual Work Plan
CBO	Community-based Organization
CDC	Community Delimitation Certificate (*Certificado de Delimitação Comunitário*)
CEPAGRI	Center for the Promotion of Agriculture (*Centro de Promoção da Agricultura*)
CERC	Contingency Emergency Response Component
CGRN	Natural Resources Management Committee (*Comité de Gestão de Recursos Naturais*)
CGS	Credit Guarantee Scheme
CLUSA	Cooperative League of the USA
CPF	Country Partnership Framework
CQS	Selection Based on Consultants' Qualifications
CSA	Climate-Smart Agriculture
CUT	Single Treasury Account (*Conta Única do Tesouro*)
DA	Designated Account
DFID	U.K. Department for International Development
DIF	Dynamic Information Framework
DINAT	National Directorate for Land (*Direcção Nacional de Terras*)
DNAS	National Directorate of Agriculture and Planted Forests (*Direcção Nacional de Agricultura e Silvicultura*)
DNDR	National Directorate of Rural Development (*Direcção Nacional de Desenvolvimento Rural*)
DNEA	National Directorate for Agricultural Extension (*Direcção Nacional de Extensão Agrária*)

DNGRH	National Water Resources Management Directorate (*Direcção Nacional de Gestão de Recursos Hídricos*)
DPTADER	Provincial Directorate of Land, Environment and Rural Development (*Direcção Provincial de Terra, Ambiente e Desenvolvimento Rural*)
DUAT	Land Use and Benefit Right (*Direito de Uso e Aproveitamento da Terra*)
EF	Emerging Farmer
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ETG	Export Trading Group
EX-ACT	Ex Ante Carbon-balance Tool
FAO	Food and Agriculture Organization
FBA	Farm Business Advisor
FBS	Selection under a Fixed Budget
FIP	Forest Investment Program
FIRR	Financial Internal Rate of Return
FM	Financial Management
FNDS	National Sustainable Development Fund (*Fundo Nacional de Desenvolvimento Sustentável*)
FNPV	Financial Net Present Value
FSP	Financial Service Provider
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIIF	Global Index Insurance Facility
GIS	Geographic Information System
GNR	Gilé National Reserve
GoM	Government of Mozambique
GRS	Grievance Redress Service
IC	Selection of Individual Consultants
ICB	International Competitive Bidding
ICR	Implementation Completion and Results Report
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT	Information Communication and Technology
IDA	International Development Association
iDE	International Development Enterprise
IFC	International Finance Corporation
IFMIS	Integrated Financial Management Information System
IIAM	*Instituto de Investigação Agrária de Moçambique* (Agricultural Research Institute of Mozambique)
INDC	Intended Nationally Determined Contribution
INIR	National Irrigation Institute (*Instituto Nacional de Irrigação*)
IPF	Investment Project Financing
IPMP	Integrated Pest Management Plan

IRM	Immediate Response Mechanism
iTC	Community Land Initiative (*Iniciativa de Terras Comunitárias*)
LCS	Least-Cost Selection
LTR	Land Tenure Regularization
M&E	Monitoring and Evaluation
MASA	Ministry of Agriculture and Food Security (*Ministério da Agricultura e Segurança Alimenar*)
MFI	Microfinance Institution
MFR	Mecuburi Forest Reserve
MG	Matching Grant
MGU	Matching Grant Unit
MIC	Ministry of Industry and Commerce (*Ministério da Indústria e Comércio*)
MIS	Management Information System
MITADER	Ministry of Land, Environment, and Rural Development (*Ministério da Terra, Ambiente e Desenvolvimento Rural*)
MOPHRH	Ministry of Public Works, Housing, and Water Resources (*Ministério das Obras Púbilas, Habitação e Recursos Hídricos*)
MOZBIO	Conservation Areas for Biodiversity and Development Project
MSLF	Multi-stakeholder Landscape Forum
MSME	Micro, Small, and Medium Enterprise
MTR	Midterm Review
NAPA	National Action Program for Climate Change Adaptation in Agriculture
NCB	National Competitive Bidding
NGO	Nongovernmental Organization
NLTA	Non-lending Technical Assistance
NPV	Net Present Value
NRM	Natural Resources Management
ORAM	*Associação Rural de Apoio Mútuo* (Association for Rural Mutual Support)
PAD	Project Appraisal Document
PCG	Partial Credit Guarantee
PDO	Project Development Objective
PDUT	*Plano Distrital de Uso da Terra* (District-Level Land Use Plan)
PEDSA	Strategic Plan for Agricultural Development (*Plano Estratégico de Desenvolvimento do Sector Agrário*)
PFI	Participating Financial Institution
PIM	Project Implementation Manual
PIU	Provincial Implementation Unit
PODA	Attributions, Priorities, and Challenges – MASA (*Atribuições, Prioridades e Desafios*)
PQG	Five-Year Government Plan (*Plano Quinquenal do Governo*)
PROIRRI	Sustainable Irrigation Development Project
QBS	Quality-Based Selection
QCBS	Quality- and Cost-Based Selection
RAI	Rural Access Index
RAP	Resettlement Action Plan

REDD+	Reducing Emissions from Deforestation and Forest Degradation
RPF	Resettlement Policy Framework
SADC	South African Development Community
SAI	Supreme Audit Institution
SAP	Strategic Action Plan
SCD	Systematic Country Diagnostic
SCF	Small Commercial Farmer
SDAE	District Service of Economic Activity (*Serviço Distrital de Actividade Económica*)
SDG	Sustainable Development Goal
SDPI	District Service for Infrastructure and Planning (*Serviço Distrital de Planeamento e Infra-Estrutura*)
SDR	Standard Drawing Right
SECF	Small Emerging Commercial Farmer
SIDA	Swedish International Development Cooperation Agency
SIGIT	Land Information Management System (*Sistema de Gestão de Informação sobre a Terra*)
e-SISTAFE	Financial Administration System of the State (*Sistema de Administração Financeira do Estado*)
SNV	Netherlands Development Organization
SoE	Statement of Expenditure
SoP	Series of Projects
SP	Service Provider
SPGC	Provincial Services of Geography and Cadastre (*Serviços Provinciais de Geografia e Cadastro*)
SSS	Single-Source Selection
TA	Technical Assistance
ToR	Terms of Reference
UEM	Universidade Eduardo Mondlane
UGC	*União Geral das Cooperativas Agro-pecuárias de Moçambique* (General Union of Agricultural and Livestock Cooperatives)
UGFI	International Funds Management Unit (*Unidade de Gestão de Fundos Internacionais*)
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VC	Value Chain
VCD	Value Chain Development
VCSP	Value Chain Service Provider
ZERP	Zambézia Emissions Reduction Program

Regional Vice President:	Makhtar Diop
Country Director:	Mark Lundell
Senior Global Practice Directors:	Juergen Voegele/Paula Caballero
Practice Managers:	Dina Umali-Deininger/Magda Lovei
Task Team Leaders:	Mark Austin, Andre Aquino, Pedro Arlindo

MOZAMBIQUE
Agriculture and Natural Resources Landscape Management Project – Project 1

TABLE OF CONTENTS

Page

PAD DATA SHEET
Mozambique
Agriculture and Natural Resources Landscape Management Project – Project 1 (P149620)
PROJECT APPRAISAL DOCUMENT
AFRICA
Report No.: PAD1497

Basic Information		
Project ID	EA Category	Team Leader(s)
P149620	B - Partial Assessment	Mark A. Austin, Andre Rodrigues de Aquino, Pedro Arlindo
Lending Instrument	Fragile and/or Capacity Constraints [ ]	
Investment Project Financing	Financial Intermediaries [ ]	
	Series of Projects [X]	
Project Implementation Start Date	Project Implementation End Date	
30-June-2016	30-June-2021	
Expected Effectiveness Date	Expected Closing Date	
30-September-2016	31-October-2021	

Joint IFC			
No			
Practice Managers	Senior Global Practice Directors	Country Director	Regional Vice President
Dina Umali-Deininger Magda Lovei	Juergen Voegele Paula Caballero	Mark R. Lundell	Makhtar Diop

Borrower: Ministry of Economy and Finance			
Responsible Agency: Ministry of Land, Environment, and Rural Development			
Contact:	Momade Nemane	Title:	Manager of the International Funds Management Unit
Telephone No.:	258843124210	Email:	momadenemane@gmail.com

Project Financing Data(in US$, millions)					
[ ]	Loan	[X]	IDA Grant	[ ]	Guarantee
[X]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	40.00	Total Bank Financing:	40.00

Financing Source	Amount
BORROWER/RECIPIENT	0.00
IDA Credit IDA Grant	14.00 26.00
Total	40.00

Expected Disbursements (in US$, millions)

Fiscal Year	2017	2018	2019	2020	2021	2022				
Annual	2.00	10.00	11.00	11.00	5.00	1.00				
Cumulative	2.00	12.00	23.00	34.00	39.00	40.00				

Institutional Data

Practice Area (Lead)

Agriculture

Contributing Practice Areas

Climate Change; Environment & Natural Resources; Social, Urban, Rural and Resilience Global Practice; Transport and Communication and Information Technologies; Water

Cross Cutting Topics

[X]	Climate Change
[ ]	Fragile, Conflict & Violence
[X]	Gender
[X]	Jobs
[ ]	Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Industry and trade	Agro-industry, marketing, and trade	40	30	30
Agriculture, fishing, and forestry	General agriculture, fishing and forestry sector	40	80	80
Transportation	Rural and Inter-Urban Roads and Highways	20	30	0
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

.

Themes		
Theme (Maximum 5 and total % must equal 100)		
Major theme	Theme	%
Rural development	Rural markets	40
Rural development	Rural services and infrastructure	25
Environment and natural resources management	Land administration and management	15
Environment and natural resources management	Other environment and natural resources management	20
Total		100

Proposed Development Objective(s)
The project development objective (PDO) is to integrate rural households into sustainable agriculture and forest-based value chains in the Project Area and, in the event of an Eligible Crisis or Emergency, to provide immediate and effective response to said Eligible Crisis or Emergency.

Components	
Component Name	**Cost (US$, millions)**
Agriculture and Forest-Based Value Chain Development	21.0
Securing Land Tenure Rights and Increasing Natural Resources Resilience	14.0
Project Coordination and Management	5.0
Contingent Emergency Response	0.0

Systematic Operations Risk-Rating Tool (SORT)	
Risk Category	**Rating**
1. Political and Governance	Substantial
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Substantial
9. Other (Land tenure regularization [LTR])	Substantial
OVERALL	Substantial

Compliance				
Policy				
Does the project depart from the CAS in content or in other significant respects?	Yes	[ ]	No	[X]
.				
Does the project require any waivers of Bank policies?	Yes	[ ]	No	[X]
Have these been approved by Bank management?	Yes	[ ]	No	[ ]
Is approval for any policy waiver sought from the Board?	Yes	[ ]	No	[X]
Does the project meet the Regional criteria for readiness for implementation?	Yes	[X]	No	[ ]
.				

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	
Forests OP/BP 4.36	**X**	
Pest Management OP 4.09	**X**	
Physical Cultural Resources OP/BP 4.11		**X**
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37	**X**	
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Recruitment of Procurement Specialist, Section V.A of the Financing Agreement		30-June-2017	

Description of Covenant - The recipient shall ensure that the procurement specialist for the UGFI is recruited within nine (9) months from Effective Date under terms of reference satisfactory to the Association.

Name	**Recurrent**	**Due Date**	**Frequency**
Recruitment of external audit firm, Section V.B of the Financing Agreement		31-Mar-2017	

Description of Covenant - The recipient shall ensure that an external auditor for the Project be recruited within six (6) months from Effective Date under terms of reference satisfactory to the Association.

Name	**Recurrent**	**Due Date**	**Frequency**

Establishment of a Matching Grant and PCG Fund Unit, Schedule 2,Section I.A.5(a)		31-Mar-2017	
Description of Covenant - The Recipient shall establish no later than six months after Effective Date and thereafter maintain within the UGFI a Matching Grant and PCG Fund Unit (MGU) with structure, equipment, functions and responsibilities acceptable to the Association, including, inter alia, the responsibility of the MGU to be responsible for the implementation of the Matching Grant scheme and the PCG Fund in accordance, inter alia, with the Principles for Public Credit Guarantee Schemes for MSMEs.			
Name	**Recurrent**	**Due Date**	**Frequency**
Establishment of an Investment Committee, Schedule 2, Section I. A. 5.(d) of the Financing Agreement.		31-Mar-2017	
Description of Covenant - The Recipient shall establish no later than six (6) months after the Effective Date and thereafter maintain an Investment Committee with structure, functions and responsibilities acceptable to the Association, including, inter alia, the responsibility of approving the Matching Grants and PCG Fund proposals in accordance, inter alia, with this Agreement, the MG Operational Manual and the PCG Fund Manual respectively. The Investment Committee shall be chaired by the MGU manager and shall include as members the UGFI, PCG Fund FSP, an independent agricultural finance expert and a business community representative. The VCSP shall participate as an observer.			

.

Conditions

Source Of Fund	**Name**	**Type**
IDA	Project Implementation Manual, Article IV.4.01	Effectiveness
Description of Condition - The Project Implementation Manual has been approved by the Recipient in a manner satisfactory to the Association.		

Source Of Fund	**Name**	**Type**
IDA	Retroactive Financing Schedule 2, Section IV.B.1.(a)	Disbursement
Description of Condition - No withdrawal shall be made for payments made prior to the date of this Agreement, except that withdrawals up to an aggregate amount not to exceed SDR 1,500,000 may be made for payments made prior to this date but on or after April 7, 2016, for Eligible Expenditures under Category (1).		

Source Of Fund	**Name**	**Type**
IDA	Matching Grant Operational Manual, Schedule 2, Section IV.B.1.(b)	Disbursement
Description of Condition - No withdrawal can be made under Category (2) for payments made in respect of a Matching Grant until the Recipient has adopted the Matching Grant Operational Manual referred to under Section I.(E) of this Schedule, in a manner satisfactory to the Association.		

Source Of Fund	**Name**	**Type**
IDA	Partial Credit Guarantee Fund Manual, Schedule 2, Section IV.B.1.(c)	Disbursement

Description of Condition – No withdrawal can be made under Category (3) for payments made in respect of the Partial Credit Guarantee Fund (PCG) until the Recipient: (i) has adopted the PCG Fund Manual referred to under Section I.(F) of this Schedule, in a manner satisfactory to the Association, and (ii) has submitted evidence satisfactory to the Association that UGFI is empowered under the laws of the Recipient to issue guarantee certificates under Part A(ii)(b) of the Project.		
Source Of Fund	**Name**	**Type**
IDA	Index Insurance Scheme, Schedule 2, Section IV. B.1(d)	Disbursement
Description of Condition – No withdrawal can be made under Category (4) for Premia made in respect of the Index Insurance Scheme until the Recipient has received evidence of Premia billing issued by the Insurance Index Insurer in a manner satisfactory to the Association.		
Source Of Fund	**Name**	**Type**
IDA	Disbursement for Emergency Expenditures, Schedule 2, Section IV.B.1(e)	Disbursement
Description of Condition - No withdrawal shall be made under Category (5), for Emergency Expenditures under Part D of the Project, unless and until the Association is satisfied, and notified the Recipient of its satisfaction, that all of the conditions under the activities specified in Section IV.B.1(e) of the Financing Agreement have been met.		

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Mark A. Austin	Team Leader (ADM Responsible)	Program Leader	Program Leader	AFCS2
Andre Rodrigues de Aquino	Team Leader	Sr. Natural Resources Management Specialist	Sr. Natural Resources Management Specialist	GEN01
Pedro Arlindo	Team Leader	Agriculture Economist	Agriuclture Economist	GFA07
Amos Martinho Malate	Procurement Specialist (ADM Responsible)	Procurement Specialist	Procurement Specialist	GGO07
Elvis Teodoro Bernado Langa	Financial Management Specialist	Financial Management Specialist	Financial Management SPecialist	GGO13
Alfredo Ricardo Zunguze	Safeguards Specialist	Consultant	Environment Specialist	GPSQP
Amanda Teresia Jerneck	Team Member	Consultant	Communications Specialist	GENDR
Andres F. Garcia	Team Member	Senior Economist	Agriculture Finance /	GTC02

			Catalytic Fund	
Aniceto Timoteo Bila	Team Member	Sr Agricultural Spec.	Senior Irrigation Specialist	GFA07
Arlete Quiteria Comissario Nkamate	Team Member	Program Assistant	Program Assistant	AFCS2
Atsushi Iimi	Team Member	Senior Economist	Senior Economist	GTI01
Bruno Alcantara Cardoso	Safeguards Specialist	Consultant	Social Specialist	GSU07
Christine Heumesser	Team Member	Economist	Agriculture Economist	GFA13
Christopher Rowland Tanner	Team Member	Consultant	Senior Land Specialist	GFA07
Clarisse Livia Isaias Nhabangue	Team Member	Team Assistant	Team Assistant	AFCS2
Daniel Roberge	Team Member	Senior Land Specialist	Senior Land Specialist	GSULN
Dietrich Fischer	Team Member	Senior Operations Officer	Senior Agribusiness Specialist	CMGSB
Eden Gabriel Vieira Dava	Safeguards Specialist	Consultant	Social Specialist	GSU01
Fion De Vletter	Team Member	Consultant	Agriculture Finance / Let's Work Program	GPSJB
Guo Li	Team Member	Senior Agriculture Economist	Senior Land Specialist	GFA13
Jan Joost Nijhoff	Team Member	Senior Agriculture Economist	Senior Agriculture Economist	GFA07
Joao Moura Estevao Marques	Team Member	Consultant	Rural Development Specialist	GENDR
Kristine Schwebach	Safeguards Advisor	Senior Social Development Specialist	Senior Social Specialist	GSU07
Kulwinder Singh Rao	Team Member	Sr Highway Engineer	Senior Transportation Specialist	GTI01
Luis M. Schwarz	Team Member	Senior Finance Officer	Senior Finance Officer	WFALA
Luz Meza-Bartrina	Counsel	Senior Counsel	Senior Counsel	LEGAM
Madyo Dawany Nunes Couto	Team Member	Consultant	Senior Environment	GCCKN

			Specialist	
Maria Isabel Nhassengo-Massingue	Team Member	Procurement Assistant	Procurement Assistant	AFCS2
Marie-Claudine Fundi	Team Member	Language Program Assistant	Team Assistant	GFA07
Mariya Stolyar	Team Member	Senior Investment Officer	Senior Private Sector Specialist	CMGA6
Mazen Bouri	Team Member	Senior Financial Sector Specialist	Senior Finance Specialist	GFM01
Nigel Ross Hughes	Team Member	Sr Natural Resources Management Specialist	Senior Climate Change Specialist	GEN01
Nora Kaoues	Team Member	Senior Agriculture Economist	Senior Agriculture Economist	GFA07
Odete Duarte Muximpua	Team Member	Operations Analyst	Water Specialist	GWASA
Panayotis N. Varangis	Team Member	Head	Lead Agriculture Finance Specialist	GFM3A
Pauline McPherson	Team Member	Senior Operations Officer	Senior Operations Officer	GFA07
Paulo Jorge Temba Sithoe	Safeguards Specialist	Environmental Specialist	Environment Specialist	GEN01
Shelley Mcmillan	Team Member	Sr Water Resources Spec.	Senior Water Specialist	GWA01
Timothy H. Brown	Team Member	Sr. Natural Resources Management Specialist	Senior Natural Resources Management Specialist	GEN01

Extended Team

Name	Title	Office Phone	Location
Christopher Tanner	Lead Land Specialist		
David Rudge	Highway engineer		
Diogo Machado	Agribusiness Specialist		Rome
Hild Rygnestad	Lead Economist		
Jean Risopoulos	Economist		Rome
Michael Carroll	Lead Rural Development Specialist		Uruguay
Richard Anson	Lead Agriculture Economist, Consultant		

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Mozambique	Zambézia	Mocuba	**X**	**X**	
Mozambique	Zambézia	Ile	**X**	**X**	
Mozambique	Zambézia	Gilé	**X**	**X**	
Mozambique	Zambézia	Alto Molocue	**X**	**X**	
Mozambique	Zambézia	Gurué	**X**	**X**	
Mozambique	Nampula	Ribaué	**X**	**X**	
Mozambique	Nampula	Nampula	**X**	**X**	
Mozambique	Nampula	Mecuburi	**X**	**X**	
Mozambique	Nampula	Malema	**X**	**X**	
Mozambique	Nampula	Lalaua	**X**	**X**	

Consultants (Will be disclosed in the Monthly Operational Summary)	
Consultants Required?	Consulting services will be required

I. STRATEGIC CONTEXT

A. Country Context

1. **Mozambique's economic performance has been strong since the end of the civil war in 1992, but growth has not been inclusive recently.** The country's gross domestic product (GDP) grew at an average of 7.4 percent from 1993 to 2013, higher than the average 4.4 percent of Sub-Saharan African non-oil economies. GDP growth improved the living standards in the early years after the war when the poverty rate fell from 69 percent in 1996 to 56 percent in 2003. However, poverty has fallen only slightly from 56 to 52 percent between 2003 and 2009. Per capita income in 2014 was US$586, about one-third of the Sub-Saharan African average. The weakening correlation between economic growth and the poverty rate suggests that growth in the last 12 years has been less inclusive. Mozambique's recent growth has been driven by capital- and import-intensive megaprojects with limited linkages to the local economy. The bottom 40 percent of the population, located mostly in rural areas, has benefited less from growth than the overall population.

2. **Despite its positive economic prospects, the Mozambican economy faces significant short-term economic difficulties**. Growth slowed from 7.2 to 6.3 percent in 2015, its slowest pace since 2009 and may slow further in 2016. The slowdown in 2016 is accompanied by a weak external position and heightened levels of inflation. Hence, the short-term challenge will be to maintain macroeconomic stability, while also pursuing diversification for inclusive growth through sectors such as agriculture. Public debt (in nominal terms) has grown rapidly, from 40 percent of GDP in 2012 to an estimated 73.6 percent in 2015. Recently disclosed debt brings the estimated debt levels to 85 percent of GDP. Hence, Mozambique's exposure to fiscal risks is heightened. These developments point to the need for maintaining a prudent fiscal stance, a stronger debt and fiscal risk management framework that emphasizes transparency, and economic stability.

3. **The country has a large endowment of renewable natural resources.** Mozambique's substantial natural capital includes 36 million ha of arable land and 40 million ha of natural forests. This translates into significant potential for agriculture and forestry development for food security and commercial purposes. However, Mozambique's natural resources are being rapidly depleted: 220,000 ha of natural forests are lost every year, and erosion is pervasive. Ensuring the sustainability and resilience of the natural resource base on which agriculture and forestry depend, particularly soil and water, is critical for sustainable development.

4. **Agriculture is essential to Mozambique's development, but its potential will remain underutilized if productivity is not significantly increased**. Though 45 percent of the country is suitable for agriculture, less than 10 percent is currently cultivated. Inefficient and limited provision of agricultural services is among the key limiting factors in increasing production and productivity. Moreover, the climate of Mozambique is such that the risk of harvest loss in rainfed agriculture exceeds 50 percent in all regions south of the Save River, and can reach up to 75 percent in the interior of the Gaza Province. North of the Manica Province and south of the Tete provincial regions are also at a more than 50 percent risk of harvest loss in rainfed crops. The Government of Mozambique (GoM) has thus made the development of irrigation a priority for agriculture and rural development.

5. **Extreme poverty is concentrated in a few geographical areas in Mozambique.** While poverty rates dropped in most of Mozambique's provinces between 2003 and 2009, they increased in the provinces of Gaza, Manica, Sofala, and Zambézia. The number of poor in these four provinces increased by 1.6 million between 2003 and 2009, representing approximately 70 percent of the country's poor in 2009, up from 59 percent in 2003. In Nampula, a province with more than 22 percent of the country's poor, poverty remained practically unchanged during this period. Zambézia and Nampula alone account for almost half of the country's poor.[1]

6. **A new government took office in February 2015, after general elections**. The new administration adopted a Five-Year Government Plan (*Plano Quinquenal do Governo*, PQG) 2015–2019 with a strong emphasis on rural development through the promotion of productive activities in rural areas with focus on the central and northern provinces, particularly in agriculture and forestry.

B. Sectoral and Institutional Context

7. **To support the implementation of the PQG, the Government, through the Ministry of Land, Environment, and Rural Development (*Ministério da Terra, Ambiente e Desenvolvimento Rural*, MITADER), has articulated a vision to promote integrated sustainable rural development in its comprehensive *Programa Estrela, Desenvolvimento Rural Integrado e Sustentável* (Integrated Sustainable Rural Development Program), 2015–2019, focused on five strategic priorities**.[2] This vision also includes MITADER's: *Terra Segura* (Secure Land) aimed at registering 5 million parcels and completing 4,000 community land delimitations; and *Floresta em Pé* (Standing Forests) aimed at promoting sustainable forest management (including forest management certification) and curtailing illegal logging. In addition, MITADER is leading the climate change and reducing emissions from deforestation and forest degradation (REDD+) agendas, with significant levels of financing from international sources. Of noteworthy mention is the Zambézia Emissions Reduction Program (ZERP)[3], which aims to reduce net deforestation and increase rural income in over seven districts in the Zambézia Province, thus generating results-based payments for emission reductions to be distributed among stakeholders in the area.

8. **The Ministry of Agriculture and Food Security (*Ministério da Agricultura e Segurança Alimentar*, MASA) has also outlined its strategy and investment priorities in the agriculture sector geared toward raising rural incomes and improving food security in the Strategic Plan for Agricultural Development (*Plano Estratégico de Desenvolvimento do Sector Agrário*, PEDSA), 2011–2020, the National Agriculture Investment Plan (*Plano Nacional de Investimentos para o Sector Agrário em Moçambique*), 2014–2018, the**

[1] Draft Mozambique Country Partnership Framework [CPF] Fiscal Year 2016-2020.

[2] (a) Knowledge and technology transfer (*Mais Saber)*; (b) market-related infrastructure (*Via Rural)*; (c) access to finance and financial services (*Um Distrito, Um Banco)*; (d) improved water supply (*Agua Viva*); and (e) expanded energy supply (*Quinta da Energia*) in rural areas.

[3] The ZERP was included in the pipeline of the Forest Carbon Partnership Facility's Carbon Fund (FCPF Carbon Fund) in October 2015. Before any emissions reductions payments can be made, the Bank will sign an 'Emissions Reductions Purchase Agreement' with the GoM; and Program results (measured with regard to emissions reductions) will need to be verified by a third party. Districts comprising ZERP include: Alto Molocué, Gilé, Íle, Maganja da Costa, Mocubela, Mulevala and Pebane.

Attributions, Priorities, and Challenges (*Atribuições, Prioridades e Desafios***, PODA), 2015–2019, and the PQG 2015–2019.** Recognizing the increasing importance of building resilience to climate variability and change, MASA has also developed the National Action Program for Climate Change Adaptation in Agriculture (NAPA), 2015–2020, with actions aimed at mitigating both longer-term climate and shorter-term weather risks.

9. **The National Water Resources Management Strategy, approved by the Government in 2007, outlines a number of priority interventions to ensure integrated water resources management.** Among the strategic actions is the development of river basin management plans and infrastructure investments aimed at increasing water storage capacity for irrigation and agriculture development thereby targeting smallholder farmers. With highly variable interannual river flows, the amount of usable and available water resources depends heavily on the development of storage and diversion infrastructure, without which only a small fraction of the total runoff can be used. The Ministry of Public Works, Housing, and Water Resources (*Ministério das Obras Públicas, Habitacão e Recursos Hídricos*, MOPHRH), through the National Water Resources Management Directorate (*Direcção Nacional de Gestão de Recursos Hídricos*, DNGRH) and the Regional Water Administrations (*Administração Regional de Águas*, ARAs) are currently promoting integrated river basin planning and improved catchment management practices for sustainable development.

10. **The Government's strategic vision of integrating the promotion of rural development with increased resilience and sustainability of natural resources lays the foundation for the implementation of an integrated landscape[4] management approach**. The landscape approach recognizes the interdependence between value chains (VCs) in agriculture and forestry,[5] and natural resources (particularly soil and water), and seeks to increase rural households' incomes while strengthening the resilience and sustainability of these natural resources. A sustainable landscape will simultaneously meet local needs (for example, water availability for households and business needs), while also contributing to national commitments and international targets, such as protecting biodiversity and reducing greenhouse gas (GHG) emissions. This approach offers tools to deal with the trade-offs related to land-use choices[6] (that is, land-use planning through spatial and participatory tools, multistakeholder platforms to promote collaboration, and monitoring frameworks beyond the project level).

[4] A landscape is made up of several land uses, such as agricultural land, pastoral land, forests, and protected areas, among others. A landscape approach is broadly defined as a framework to integrate policy and practice for multiple land uses, within a given area, to ensure equitable and sustainable use of land while strengthening measures to adapt to climate change, and mitigate it when possible. In short and for this project, the landscape approach pursued seeks to address the increasingly complex and widespread environmental, social, and political challenges that transcend traditional management boundaries and lead to protecting and enhancing the natural resource base upon which productive agriculture depends. The proposed landscape approach is about connecting croplands, irrigated agricultural lands, forest, woodlands, and protected areas, for increased productivity and provision of ecosystem services. Landscapes use existing best practices from various sectors/approaches to help achieve multiple wins, including increased productivity, adaptation, GHG mitigation, water production, resilience, and stability.

[5] Here, forestry refers mainly to the promotion of planted forests for commercial purposes.

[6] While some models of land-use management tools exist in Mozambique, such as District-level Land-Use Plans (*Planos Distrital de Uso da Terra*) and Watershed Plans, they are either limited in number and/or ineffective. The plans have been developed in most districts in Mozambique. However, they are often outdated, and districts have limited capacity to use them as effective management tools. In contrast, currently only a handful of Watershed Plans exist, though DNGRH under MOPHRH has plans to develop them in all water basins in the country.

11. **Mozambique has favorable natural conditions for agricultural and forestry production and for agribusiness investment in the majority of the country.** Agriculture is the largest economic sector in the country accounting for over 25 percent of Mozambique's GDP and employing 72 percent of the workforce. Approximately 3.9 million households cultivate an area of about 5.1 million ha (out of 36 million ha) of arable land, mostly practicing subsistence agriculture on holdings not larger, on average, than 1.3 ha (DE/DNSA 2014).[7] The number of medium and large farms has doubled from 2000 to 2010,[8] but it still represents a very small proportion of the overall number of farms given that 99 percent are farmed by smallholders. This condition provides an investment base and markets to expand smallholder farmers' participation in key agriculture and forest-based VCs. The soils are generally fertile in northern and central Mozambique, and the average rainfall is close to 1,000 mm per year. Countrywide, there are abundant water sources for irrigation, good rainfall, and diverse environments that allow for a range of agriculture and forest-based products. The recent growth in commercial agriculture points to the country's untapped agribusiness investment potential. The Center for Investment Promotion (*Centro de Promoção de Investimentos*), shows that from 1990–2011 there have been 63 foreign direct investment projects in the agriculture sector in Zambézia, and 50 in Nampula, amounting to US$2.7 billion and US$2.5 billion respectively (Massingue and Muianga 2013). Emerging VCs include poultry, soy, sesame, and cashew, and there is significant scope to expand sustainable cultivation of agricultural land and domestic food processing. Multipurpose forest plantations also have elevated potential in Mozambique, and there have been some recent large-scale investments in the sector. Government estimates suggest that up to 7.0 million ha could be allocated to forest plantation development,[9] as plantations have shown to produce moderately good yields.[10] Thriving VCs in agriculture and forestry can form the backbone of the rural economy by creating jobs, increasing rural income, strengthening food security, and facilitating better nutrition.

12. **However, low productivity, marginal use of improved inputs and labor-saving technologies, poor agronomic knowledge, and limited rural infrastructure characterize the agriculture and forestry sectors**. In 2014, only 2.9 percent of smallholder farmers used improved seeds and 4.6 percent used fertilizers. Smallholder farmers' integration in VCs is modest. Agriculture and forestry development is marred by a number of barriers, including inadequate government support services (for example, ineffective and poor coverage of agricultural extension and technical assistance (TA),[11] lack of access to mechanization services), limited access to inputs (for example, insufficient availability and affordability of improved

[7] IAI 2012 and Agriculture and Livestock Census (CAP) 2010. Agriculture census has been conducted every 10 years; annual agriculture surveys, except in years with census.

[8] 3,846,531, 52,851, and 618 households are registered as small, medium, and large farms respectively.

[9] The National Reforestation Strategy (*Estratégia Nacional de Reflorestamento*, 2009) and the PEDSA 2010–2019 (2010, draft).

[10] The maximum mean annual increment in eucalyptus plantations in Mozambique has been estimated at 35m^3 per ha per year. For comparison, Uganda has a mean annual increment of 35 m^3 per ha per year, South Africa 45 m^3 per ha per year, and Brazil 55 m^3 per ha per year. Adopting the latest technological advancement in the sector could significantly increase yields in Mozambique. Additionally, investments in the Mozambican plantation sector have been limited and sporadic. It is estimated that 574,000 ha have been allocated to plantation companies, although many companies have received larger land allocations than they have actually planted. *Source:* Improving the Business Environment for Planted Forests in Mozambique, Non-lending Technical Assistance (NLTA). World Bank, 2016. *Draft.*

[11] Average of one extension officer per 3,900 farmers.

seeds), limited access to credit, unrecognized/unregistered land rights and complex land access procedures, as well as lack of key rural infrastructure (particularly storage, rural feeder roads, and water storage and irrigation). Unsustainable land-use practices, such as widespread slash and burn agriculture, also pose significant threats to the sustainability of natural resources, particularly soil and water.

13. **Lack of access to finance is a serious constraint for the private sector, particularly in rural areas where the bulk of agriculture activities take place.** The latest data from FinScope[12] (2014) indicates that the percentage of adults who used banking services has increased to 20 percent from 12 percent in 2009 although this increase is still below that of other countries in the region. Additionally, there remains an urban/rural gap in banking with 40 percent of urban adults who banked compared to 10 percent of adults in rural areas. Similarly, a gender gap also persists with 25 percent of male adults who banked compared with only 16 percent of female adults. The main challenge appears to be cost. Firms are almost always required to provide collateral for a loan, interest rates are close to 20 percent, and loan tenors tend to be less than 12 months. The outreach of formal financial institutions into rural areas is a major challenge for the development of the sector. Barriers to accessing financial products include lack of affordability, long distances to reach financial institutions, a lack of awareness and trust, and legal and regulatory constraints, particularly around land tenure. For banks and other financial institutions, inaccessible roads, the high cost of running a branch in rural areas, and infrastructure constraints are the main reasons for limited penetration in rural areas. Mobile financial services are still at a nascent stage, limiting the role that these platforms can play to facilitate access to key services without large and costly expansion of branches. Lack of capital for promising sectors that require it the most to sustain investment ultimately hinders competitiveness and economic diversification.

14. **Agriculture finance remains particularly limited notwithstanding recent initiatives to increase access and overall growth in credit to the private sector.** The share of commercial bank lending to agriculture was 3.7 percent in 2015 down from 9.4 percent in 2008. Commercial banks serve the larger farmers and larger agribusinesses. Smallholder farmers most often rely on state/district development funds, credit cooperatives, input providers, self-help groups, family, and relatives for sources of financing. There are also very few microfinance institutions (MFIs) that lend to farmers. Outgrower financing (or VC financing) is an important source of finance for more commercially driven smallholders who sell to large buyers. A key obstacle to scaling up outgrower financing is 'side selling' or the farmers' lack of loyalty to the buyer who provided financing to them (mostly in-kind or inputs). As a result, outgrower financing schemes rely on well-organized VCs with dominant buyers that control purchasing in a given region. Thus in Mozambique, outgrower financing is more prevalent in cotton, sugar, and tobacco but not much in other VCs, although there is also some outgrower financing through seed companies. Despite the existence of various government and donor programs, the uptake of credit by smallholder and small emerging commercial farmers (SECFs), along with small- to medium-size agribusinesses

[12] FinScope is a survey that "measures the demand for, and access and barriers to the full range of financial services offered in a particular country. It is a consumer-based, nationally representative survey which is conducted in several countries throughout the African continent and in Asia. FinScope provides insights into financial aspects of consumer living and helps us understand consumer demand across the four Landscape of Access categories: transactions, savings, credit, and insurance" (FinScope Tanzania 2013).

still remains low. Recent initiatives by donors[13] (United States Agency for International Development [USAID], Netherlands, and DANIDA) that combine intensive technical training, coupled with financing mechanisms such as Partial Credit Guarantees (PCGs) and Matching Grants (MGs), as well as training and orientation with the banks, are showing promising, but still tentative results. Banks have also recently demonstrated a greater appetite to lend to the sector although expertise in appraising and reviewing agriculture-focused loans remains limited.

15. **Households in the agriculture and forestry VCs in Mozambique are highly dependent on natural resources. Renewable natural resources, including forests and woodlands, contribute significantly to the welfare of rural Mozambicans, through the provision of subsistence needs (food, shelter, and energy), and cash income**. Woodlands in Mozambique contribute to over 80 percent of total domestic energy supply in the form of firewood and charcoal. Forests also provide livelihoods for many rural communities through harvesting of medicinal plants, honey, mushrooms, fruits, and other non-timber forest products. These can generate significant income for rural communities when linked to markets. Sustainable natural resources management (NRM) is closely linked to agricultural performance, because agriculture production benefits from a range of environmental services generated at the landscape level, including water availability and quality, soil fertility conditions, pollination, and rainfall patterns. Agriculture can have positive or negative impacts on natural resources depending on the adopted practices and their effects on land cover and ecosystems. Sustainable agriculture practices, such as conservation agriculture and agroforestry, consider this interdependence and seek to increase productivity while strengthening the resilience of natural resources and the productive systems. There are experiences in Mozambique based on the adoption of such practices, but they are still limited in number and scale.

16. **Underdeveloped transport and irrigation infrastructure poses constraints to the agriculture and forestry sectors.** Mozambique's road network comprises nearly 30,000 km of classified functional roads, 77 percent of which are unpaved. Lack of transport connectivity impinges on the rural population's access to markets and key services. The Rural Access Index (RAI) for Mozambique is 17 percent[14], that is, only 17 percent of the rural population is estimated to live within 2 km of a road in good condition, leaving about 16 million people unconnected.[15] In northern and inland provinces, the RAI is estimated at less than 5 percent. Despite a potential 3 million ha for irrigation, only 180,000 ha are equipped with infrastructure and only 90,000 ha are operational. The National Irrigation Institute (*Instituto Nacional de Irrigação*, INIR) is developing the National Irrigation Program, based on an assessment of the potential and a roadmap for irrigation development, including infrastructure and services, public and private sector capacity development, and rehabilitating and developing 8,000 ha of irrigation before the end of 2018. Most irrigation infrastructure is in the southern region, in Maputo and Gaza Provinces, that have the lowest productivity potential, whereas high-potential areas in the northern and central regions have very limited coverage.

[13] These include the USAID FINAGRO Program which provides matching grant (MG) financing for equipment purchases in the center and north of the country; the Netherlands SEED Program which provides MGs and links farmers with banks for commercial finance; and the Danish International Development Agency (DANIDA) Agro-Invest project which includes a Partial Credit Guarantee (PCG) Fund and a line of credit for agricultural micro, small, and medium enterprises (MSMEs).

[14] RAI estimated using new Geographic Information System (GIS) based methodology.

[15] This compares unfavorably with peer countries such as Kenya, which has a RAI of 58 percent.

17. **There is significant potential for growth, with regard to both expansion and increasing productivity and efficiency of agriculture and forest-based VCs**, according to analytical studies and feedback from producers, processors, and traders/exporters. With the exception of beans and cashew nuts, which will likely find attractive world-level markets, all other prioritized crops (see Annex 6) are forecast to be at import parity price in Mozambique by 2025, thereby offering the most attractive farm gate prices to Mozambican producers and implying significant scope for expanded production without problems of absorption capacity or downward pressure on prices. In planted forests, the GoM has a target of establishing 1 million ha of forested land by 2030. While the target may be somewhat overambitious, if the challenges of improving the investment climate are efficiently addressed, reaching between 300,000 ha to 500,000 ha of planted forests in the next 15 years will be a major accomplishment, and could create between 6,000 and 25,000 jobs in the plantation sector.

18. **New private investment opportunities exist, but they require complementary public investments to address barriers.** Some of these investments are VC and area specific, while others apply across all areas (such as improving land tenure security and NRM). All investments require careful identification and targeting. In most VCs, the development of production, product quality and quantity, and aggregation capacity depends on the existence of private sector led SECFs[16] and/or well-organized producer groups, and efficient linkages between producers and processors/buyers.

19. **The lack of registration and formal recording of land-use rights in cadastral and legal registries renders smallholder farmers and communities vulnerable to losing their land to other land users, including incoming private investors**. This can lead to a lack of confidence in tenure security, an unwillingness to invest in longer-term projects, as well as in conservation of the land and natural resources. When legal registration of land-use rights occurs, communities and individual land rights are protected and promote greater investment in on-farm production by farmers. Land-use rights also provide the basis for negotiations between farmers/communities and investors who are interested in acquiring local land for new projects. As a result, local populations gain a tangible benefit from ownership of their land and natural resources and are able to participate as active stakeholders in new investments and VC/agribusiness development. In addition, investors achieve greater security for their investments as the potential for conflicts dealing with local rights holders is reduced.

20. **Increased land tenure security and proper land-use planning can directly contribute to increased agriculture productivity and sustainable management of natural resources** by increasing the incentives that landholders have for adopting land-use practices that account for their long-term effects. To date, total land titles (Land Use and Benefit Rights [*Direito de Uso e Aproveitamento da Terra*, DUATs]) issued to individuals and associations in Mozambique is slightly over 300,000 out of 14.1 million individual properties (2.1 percent) while over 450 Community Delimitation Certificates (*Certificado de Delimitação Comunitária*, CDCs) out of 5,000 communities (9 percent)[17] have been issued (DINAT 2016). Although the land policy in

[16] Private sector led emerging commercial farmers are also known by many names, that is, Small Commercial Farmers (SCF), Farm Business Advisors (FBA) and Emerging Farmers (EF). For this operation, the term SECF is used. Annex 10 provides detailed information on this private sector led smallholder farmer support model.

[17] The majority of the community land delimitation has been conducted by nongovernmental organizations (NGOs) with donor funding. These projects have resulted in a good community delimitation capacity among national NGOs,

Mozambique is sound, its implementation at the national, provincial, and local levels is cumbersome. Institutional arrangements are not clear and lead to duplication in land registration, and land administration services are weak. Added pressure over land resulting from increased investments in the country increases the risk of social instability, if land tenure security is not improved. Moreover, land-use planning needs to be enhanced so that returns on the land are increased while simultaneously reducing risk. Adequate assessment and management of trade-offs are dependent on effective land-use planning. Promoting tenure security, particularly in line with the objectives of the Voluntary Guidelines for the Tenure of Land, Fisheries, and Forests, will contribute to Mozambique's progress toward achieving the Sustainable Development Goals (SDGs) (including SDG-1: Poverty, and SDG-5: Gender).

21. **Climate change threatens agriculture and forest-based VCs.** Mozambique is ranked the third most vulnerable country to climate change in Africa, with climate change impacting 58 percent of the population and more than 37 percent of GDP by exposure to two or more natural hazards per year. This has generated on average a 1.1 percent annual loss of GDP between 1980 and 2003. Economic gains from growth and infrastructure development are significantly undermined as a result of recurrent water and weather-related hazards. Furthermore, stress on natural resources is expected to increase due to climate change, which will lead to more frequent and intense droughts, flooding, and extreme weather events. Temperatures are expected to increase by 1.4–3.7°C by 2060, while rainfall will decrease during the dry season (January–June) and increase in the wet season (July–September). An increasing number of floods will particularly affect the northern region of the country.

22. **The GoM has requested World Bank assistance to implement the *Programa Estrela* (2015–2019).** The success of *Programa Estrela* will depend, to a large extent, on its ability to raise rural incomes and orient multi-stakeholder coordination and integrated interventions at the landscape, provincial, and district levels to deliver countrywide impact. The Mozambique Landscape Management Program, a proposed Bank program in support of the larger *Programa Estrela,* will contribute to the implementation of key elements of *Programa Estrela* by financing the development of agriculture and forestry VCs, with a strong emphasis on strengthening land security and the sustainability of the natural resources base, as well as local level land-use planning and management. This integrated approach should allow for trade-offs between higher agriculture productivity and increased cultivated areas and sustainable NRM to be properly assessed and managed. This is expected to result in decisions that take into account social, economic, and environmental risks when developing VCs.

C. Higher Level Objectives to which the Project Contributes

23. **The Project will contribute to the Bank Group's twin goals of ending extreme poverty and boosting shared prosperity, and is a flagship project for the new CPF for Mozambique (2016–2021).** The CPF emphasizes agricultural productivity, rural development, and spatial planning to achieve sustainable poverty reduction, prioritizing actions aimed at enhancing employment, economic diversification, and creating a solid foundation for investing in human, physical, and institutional capital through strengthened public investment

as well as on an evolving methodology that incorporates community-level land-use plans as one of the key outputs of the delimitation process.

management. The Project will contribute to improving the livelihoods of some of the most vulnerable rural households in the country and, by so doing, directly contribute to the Bank Group's twin goals.

24. **The Project's integrated landscape management approach embodies many of the new SDGs and is aligned to the Africa Climate Business Plan.** The Project will enhance multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources in the targeted landscape while encouraging and promoting effective public, public-private, and civil society partnerships (SDG-17). The Project will promote the sustainable management of forests and reversion of land degradation and climate change mitigation measures and increase the resilience of the rural population to climate change (SDG-15 and SDG-13). Overall, the Project's interventions will contribute to poverty reduction and inclusive and sustainable economic growth (SDG-1 and SDG-8).

25. **The Project is strongly aligned with the Government's high-level priorities and targets expressed in the PQG (2015–2019)**. The Project will support the PQG by focusing on harnessing increased employment, productivity, and competitiveness to enhance the livelihoods of Mozambicans, with specific emphasis on the promotion of agriculture VCs based on integrated, multi-sectoral approaches (Priority III, Strategic Objective (i) (d)). Land tenure security appears in the PQG as key to promoting the rights of local communities and their livelihoods, as well as a more business-enabling environment in Mozambique, which will be supported by the Project. The Project will also support the sustainable and transparent management of natural resources and the environment (Priority V), which includes improving spatial planning and strengthening the accountability, monitoring, oversight, and implementation of elaborated plans, as well as ensuring green growth, conservation of ecosystems and biodiversity, and the sustainable use of natural resources. These priorities are embodied in the provincial development plans of Nampula and Zambézia—Nampula's Strategic Development Plan 2010–2020 (PEP 2020) and Zambézia's Strategic Development Plan 2011–2020, to which the Project contributes.

26. **These priorities and strategic objectives are also reflected in the *Programa Estrela*, which provides the key linkages between country priorities, and the proposed Project.** Strengthened by the mandate, mission, and vision of the newly established MITADER, *Programa Estrela* aims to achieve the broad goals and strategies reflected in the PQG by outlining key actions and projects to be implemented in rural Mozambique.

27. **The Project is also in line with existing GoM agricultural development strategies and plans.** These include the overall sector plan—PEDSA 2010–2019—and those aligned with it, such as the National Agriculture Investment Plan (*Plano Nacional de Investimento para o Sector Agrário em Moçambique*), 2014–2018; the Agribusiness Development Master Plan 2013–2020; PODA 2015–2019; and NAPA 2015–2020. As reflected in PEDSA's general objective, the plans aim to "contribute to food security and income of agrarian producers in a competitive and sustainable manner ensuring social and gender equity." In addition, the strategy promotes investments in agricultural food and cash crops, planted forests VCs, and promotes sustainable transformation of agriculture from subsistence farming to market-oriented agriculture for improved well-being of the rural households and agribusiness.

28. **The Project is strongly linked to other ongoing or planned Bank Group operations.** The Project is an example of cross-sectoral collaboration by bringing together the Agriculture Global Practice and Environment and Natural Resources Management Global Practice, and building on interventions in agriculture, NRM, and infrastructure sectors. The Project is closely linked to: Agricultural Productivity Program for Southern Africa (APPSA); First, Second, and Third[18]Agriculture Development Policy Operations (AgDPOs 1, 2, and 3); Mozambique's Spatial Development Planning Technical Assistance Project; Mozambique's Integrated Growth Poles Project; Let's Work – Mozambique; Sustainable Irrigation Development Project (PROIRRI); the Conservation Areas for Biodiversity and Development Project (MOZBIO); Forest Investment Project (MOZFIP); Mozambique's REDD+ Readiness Project; ZERP; and the proposed Integrated Feeder Road Development Project. The Project will also contribute to investment of the International Finance Corporation (IFC) in Portucel, by promoting value chain development (VCD), NRM, and land tenure regularization (LTR) in districts where Portucel is active.

29. **The Project also contributes to NAPA, the Intended Nationally Determined Contribution (INDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in November 2015, the national REDD+ strategy; and to the Bonn Challenge and African Forest Landscape Restoration Initiative (AFR100).** The NAPA envisions a range of strategic actions that are reflected in the Project, including improving country capacity for integrated water resources management, increasing the effectiveness of land use and spatial planning, and reducing soil degradation. The INDC emphasizes building resilience to climate change, particularly in rural areas, and contributing to mitigation, particularly by reducing deforestation and promoting sustainable land management practices in agriculture. By contributing to sustainable NRM, the Project also contributes to the National REDD+ Strategy, whereby Mozambique expects to reduce deforestation rates by 40 percent in the coming years. The Bonn Challenge was launched in 2011 with a goal of mobilizing actions of various stakeholders to restore 150 million ha of degraded land. Within the scope of the AFR100 launched in 2015 in support to the Bonn Challenge, the GoM has committed to restoring 1 million ha of degraded land by 2030.

D. Program Description

30. **The development objective of the overall Mozambique Landscape Management Program (the Program) is to contribute to improving the livelihoods of targeted rural households and the sustainability of natural resources in the Program area.** This objective will be achieved by promoting inclusive and sustainable agricultural and forest-based VCs through expanding the network of SECFs in high-priority areas of the country and supporting key investments of agribusinesses along the VCs, improving land tenure security and strengthening natural resources resilience, improving rural infrastructure, and enhancing institutional performance in integrated landscape management in the targeted areas.

31. **Some of the key Program results to achieve the program development objective are**:

[18] The third operation is under preparation.

- increased number of rural households participating in agriculture and forest-based VCs;
- increased access to finance for agriculture and forest-based VCs participants;
- increased number of rural households with access to rural infrastructure;
- increased number of attributed DUATs and CDCs; and
- increased number of ha of natural resources protected and/or restored.

32. **The Bank will finance the Mozambique Landscape Management Program through a 'Series of Projects' (SoP).** The Program, consisting of two or more projects, is designed to be scalable by expanding coverage geographically. The Program will focus on the provinces with high levels of poverty and agriculture and forestry potential in the central and northern region of the country. The integrated nature of the Program represents an innovation in the country and will require significant learning in the first years of implementation. The Program design reflects the need for institutional capacity building at subnational levels and is aimed at promoting deconcentration and improved absorption capacity at subnational levels (that is, provinces and districts). The step-wise approach facilitates overcoming resistance to change and allows for lessons learned to be effectively incorporated in subsequent Projects. This document describes in detail the first project and second projects in the SoP (Project 1 and Project 2), both of which focus on Zambézia and Nampula Provinces in a jurisdictional[19] landscape comprising 10 districts (see Annex 9 for demographic information). Both Project 1 and Project 2 of the SoP have been appraised. This will allow Project 2 to be implemented immediately upon funding being secured. All references to the Project refer to Project 1 unless indicated by specific reference to Project 1 and Project 2.

33. **To initiate the envisaged transformation, Project 1 activities will be implemented at provincial, district, and local levels and focus on expanding the SECF network by 100 (average of 10 per district).** This will ensure the buy-in of key actors, as well as facilitate in-country expansion of the SECF approach in a large geographic area (> 63,000 km^2). Subsequent rollout of the SECF approach through SoP Projects will allow for geographical expansion within the intial 10 districts and, in the future, also into other provinces and districts. This expansion will also broaden the number of VCs supported, increase the number of DUATs and CDCs issued, extend and bring new approaches to promoting sustainable NRM, improve rural infrastructure, and integrate thousands more rural households into agriculture and forestry VCs.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

34. The project development objective (PDO) is **to integrate rural households into sustainable agriculture and forest-based value chains in the Project Area and, in the event of an Eligible Crisis or Emergency, to provide immediate and effective response to said**

[19] A jurisdictional landscape is one whose boundaries are defined by administrative limits (in this case, districts).

Eligible Crisis or Emergency. The PDO will contribute to the overall program development objective. For the purposes of the Project, agriculture and forest-based VCs are considered sustainable when they are profitable and do not result in the depletion/degradation of the natural resource base on which they depend (for example, soil and water).

35. **The PDO will be achieved by promoting production and value-addition activities of selected agriculture and forest-based VCs,** improving tenure security of rural households and communities, strengthening spatial planning, integrated landscape management, and the institutional capacities of key public and private institutions at the provincial and district levels, and restoring degraded lands critical for the VCs.

B. Project Beneficiaries

36. **The direct beneficiaries of the Project are 20,100 rural households representing 100,500 individuals, in the targeted districts who utilize agricultural and forestry resources for their livelihoods**. These beneficiaries include:

- **20,000 rural households, including women and youth**, who will benefit from increased market access, improved land tenure security, and more resilient natural resources through access to TA, new skills, improved productive inputs, new technologies and mechanization, financing, land titles (individual and community), productive infrastructure, and market opportunities linked to VCD.

- **100 SECFs (to be identified and supported by the Project);** who will receive assistance to access grant and commercial finance for business development; technical and business support and training (for example, business plan development, agronomic and climate-smart techniques, financial management (FM) and accounting, operations management, marketing, group facilitation dynamics), facilitated linkages to upstream (that is, input suppliers/agro-dealers) and downstream (that is, traders, processors) actors in their respective VCs; and support for obtaining DUATs.

- **25 MSMEs agribusinesses**, who will receive support in preparing business plans to access grant and commercial finance for expanding their business and increasing the number of smallholders who benefit from their services. Linkages and partnerships with SECF networks will be strengthened.

- **Key government institutions at subnational level**, especially MITADER, MASA, and provincial and district-level governments, which will receive capacity-building support (for example, spatial planning, VCD, results-based management); TA to design and implement policies, regulations, and systems; support for office modernization (facilities and equipment); and support for outreach and communication programs.

- **All stakeholders within the Project area will benefit from improved infrastructure**, particularly better rural roads, but also community irrigation facilities.

37. **The Project also reaches a significant number of indirect beneficiaries through (a) economic opportunities enabled by the Project and (b) healthier and more productive landscapes**. **A large additional population in Mozambique will indirectly benefit from natural asset protection downstream**, including reduced soil erosion, flood risk, and sedimentation in water bodies for hydropower, fishing, irrigation, and water supply. At the global level, communities will benefit from reduced GHG emissions and restored habitats for biodiversity.

Table 1. Project Components and Key Beneficiaries

Project Components	Key Beneficiaries
Component 1: Agriculture and Forest-Based Value Chain Development	
Provision of training and TA to SECFs and other key rural MSMEs agribusinesses	SECFs, MSME agribusinesses, smallholder farmers
Agribusiness finance to VC actors	SECFs, MSME agribusinesses, smallholder farmers
Improving rural infrastructure	All rural households within the targeted landscape
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience	
Securing Land Tenure Rights	Communities, individuals, associations
Strengthening land administration services	Provincial and district governments
Strengthening capacity on integrated landscape management	Provincial and district governments
Restoration of critical natural habitats	All households within the targeted landscape, downstream water users and global community
Component 3: Project Coordination and Management	n.a.
Component 4: Contingency Emergency Response	Dependent on eligible crisis

C. PDO Level Results Indicators

38. **The Results Framework includes the proposed PDO level indicators:**

- Direct project beneficiaries (Number) (Core) of which Female beneficiaries (Percentage) (Core)

- Rural households integrated into sustainable agriculture and forest-based value chains in the targeted landscape (Number), of which: Smallholder farm households (Number), Small Emerging Commercial Farmers (Number), MSME Agribusinesses (Number), Female Smallholder farm households (Number)

- Completion of activities agreed in the annual strategic action plans (SAPs) of the participatory Multi-stakeholders Landscape Forums (MSLF) (Percentage)

- Community Delimitation Certificates Issued (Number)

- Area restored or re/afforested (Hectare - Ha) (Core)

39. While the PDO recognizes that a portion of project resources could be used to respond in the event of an eligible crisis or emergency as part of IDA's Immediate Response Mechanism

(IRM),[20] tracking of this conditional element of the PDO occurs at the intermediate results indicator level.

III. PROJECT DESCRIPTION

A. Project Strategy

40. **The Project recognizes that contributing to an integrated, sustainable rural development in Mozambique requires simultaneous interventions on several fronts—**from addressing barriers to income generation and integration of rural households into agriculture and forest-based VCs (that is, access to finance and TA on limited rural infrastructure), to securing land tenure and ensuring the sustainability of natural resources on which rural livelihoods depend. Rural development activities based on agriculture and forestry depend and affect natural resources, and have to be managed as part of the larger landscape within which local communities, smallholders, and investors live and derive their livelihoods from. This requires participatory forms of local land-use planning and the promotion of inclusive business models that link communities, SECFs, and investors into sustainable VCs. Practical tools include spatial planning tools (such as GIS-based tools), multi-stakeholder forums to facilitate the construction of common visions on land use and participatory planning and monitoring tools.

41. **The Project's VC approach promotes rural income generation by integrating rural households into agriculture and forest-based VCs with significant market-driven potential.** The VC-based approach recognizes that the inclusion of rural households in VCs depends both on downstream and upstream linkages and thus requires analyzing all stages between primary production and end-markets to address key bottlenecks. However, the VC approach does not traditionally take into account the necessary linkages between value creation, the underlying natural resource base, and resource users who are not directly engaged in the targeted VCs. This may result in generating short-term economic benefits in detriment of sustainable use of natural resources in the long-term.

42. **The recognition of land rights is a key element of the VC-focused integrated landscape management approach adopted by the Project**. Land rights must be identified, recorded, and secured and rural households must have the capacity to leverage these rights to capture emerging economic opportunities. In Mozambique, issuance of DUATs for individuals/associations and CDCs for communities, as well as preparation of local land-use plans (micro land-use planning) contribute to attracting private investment while promoting the rights of rural households/communities and linking them to investment opportunities. This ensures that communities benefit from these investments and increase their own investment on land and strengthens incentives toward the sustainable management of commonly held natural resources, such as forests and water, and more sustainable land-use practices. Securing those rights requires well-functioning land administration and management processes and services at the provincial and district levels, with a reliable, accessible registration system and clear leadership, guidance, and support at the national level.

[20] See http://www.worldbank.org/ida/immediate-response-mechanism.html.

43. **Gender mainstreaming. While gender issues are largely context-specific, Mozambique presents historically negative patterns related to women's access to resources and the effects of degradation**. For example, in agriculture, men are frequently responsible for providing inputs while women are mainly involved in production processes. Although women play a key role in activities such as food cultivation and fuelwood and water gathering, they are often not involved in decision making regarding land use and resource allocation. Furthermore, women historically have had no legal rights to land resources. As a result, women and children suffer a disproportionate burden from resulting resource degradation. The Government's support is often 'gender-blind' which further exacerbates existing inequities (that is, agriculture extension, information provision, and other types of TA) that often do not target women. The Project adopts a gender-sensitive and responsive lens to activities ranging from: (a) providing support to key decision-making bodies (that is, NRM Committees); (b) promoting women's involvement in decision making along the entire chain of productive activities; (c) ensuring that DUATs and CDCs will be issued under the names of both the woman and man of the household; and (d) allocating resources to monitoring Project impact that take into account gender (by using disaggregated indicators, where feasible). The Project will contribute to Mozambique achieving SDG-5: Gender.

44. **Nutrition-sensitive agriculture. The Project will focus on market-oriented production systems for improving food security and health.** The promotion of nutrition-sensitive agriculture by the Project will focus on building the capacity of SECFs to deliver training to rural households, on food and nutrition security, with special attention to women and children. The Project will promote food diversification and nutritious crops, especially legumes.

45. **Climate-smart agriculture. The Project will support the rollout of NAPA, particularly the promotion of climate-smart agriculture (CSA).** This will be done in close coordination with service providers (SPs), SECFs, agribusiness and forest-based companies, and other VC actors that are involved in the selection of agricultural and forestry technology, promotion of farming practices, and other aspects of production, aggregation, and processing. The CSA principles of mitigation, enhanced productivity, and adaptation/resilience will be mainstreamed through TA and extension services provided by SPs, including public extension services. Other activities to be supported by the Project include the promotion of regionally developed climate-smart technologies in the form of drought-tolerant and short-maturing varieties and more efficient and effective fertilizer products that are now becoming available in Mozambique through private sector led cross-border technology transfer (as supported under the ongoing series of AgDPOs). Applicable conservation techniques include agroforestry, contour farming, mulching, reduced tillage, crop rotation, integrated pest management, and water management. Evidence suggests that conservation agriculture practices promoted under CSA frequently lead to additional and disproportionate burden on women. The Project will devote efforts toward monitoring and tackling any gender-biased negative impacts.[21]

46. **The Project will implement a VC-focused integrated landscape management approach by**

[21] For example, particularly in the first few seasons, men's workloads may fall due to limited or no manual ploughing, while women's may increase substantially, as more weeding is normally required. The negative and disproportionate impacts on women's workload may be resolved by promoting the adoption of new roles by men (contributing to weeding, for example) within the scope of extension and TA provided.

(a) promoting households' integration into agriculture and forests-based VCs with significant market-driven potential as a strategy to promote rural development and raise incomes through the expansion of the SECF network and key agribusiness investments;

(b) addressing key financial and infrastructure access constraints related to feeder roads, irrigation, and warehousing for all relevant stakeholders in the landscape;

(c) securing land tenure for communities and rural households in the Project areas; and

(d) promoting the adoption of sustainable land-use practices (including climate-smart and conservation agriculture), restoring degraded lands in critical areas for the VCs, and improving spatial planning and multi-stakeholder coordination for better management of land-use trade-offs.

47. **The targeted landscape in the Project spans 10 contiguous districts in the provinces of Nampula and Zambézia** (see Annex 9 for a description of the targeted landscape and Annex 14 for maps). The identification of the Project area was based on the combination of poverty incidence, current agriculture and forestry production patterns, potential to generate higher returns to investments in preselected VCs, and access to water, and was part of the high-potential growth poles/growth corridor (Nacala Development Corridor)[22] and the strategic principle of implementing Project activities using administrative units (districts) with similar agro-ecological features comprising a landscape.

48. **The landscape covers an area of 63,397 km^2 and a total population of 2.48 million inhabitants of which 70 percent are rural and 57 percent below the poverty line.**[23] This landscape has fertile soils as well as medium to high altitude leading to good rainy seasons and high agriculture and forestry potential. In contrast, it also represents one of the most vulnerable areas to erosion in the country (MICOA 2007). This landscape is the source of major rivers for the central and northern regions of the country, including the Licungo, Lurio, and Molocue Rivers, which regularly flood and cause major damage,[24] and is home to key biodiversity hotspots, including the Gilé National Reserve (GNR), managed by the National Administration of Protected Areas (*Administração Nacional das Áreas de Conservação*, ANAC), the Mecuburi Forest Reserve (MFR), which is under the responsibility of the National Directorate of Forests housed in MITADER, and Mounts Namuli and Inago, which have currently no protection status.

[22] The Nacala Development Corridor was launched in 2000 as part of a joint Mozambique-Malawi-Zambia initiative to promote regional trade integration and increase the competitiveness of southern African exports by linking landlocked Zambia and Malawi to the Mozambican coast. The Nacala Development Corridor has been officially defined as covering 12 districts in Nampula, Zambézia, and Niassa Provinces. The corridor follows the rail from Nacala port to Malawi and involves road and rail upgrades. The corridor has high suitability for agriculture production where farmers can grow crops on highly suitable lands resulting in significant potential benefits to smallholder farmers. These high suitability areas are mostly limited to those parts of the corridor in Nampula and parts of the Zambézia section of the corridor.

[23] Within the Project landscape, the poverty incidence in the five Zambézia districts is 63 percent, and in the five Nampula districts is 49 percent.

[24] For example, in January 2015, floods in the Licungo River Basin led to at least 85 deaths, displacement of about 28,000 people, and affected more than 100,000 people, with long-term negative impacts on the region's economy and infrastructure.

The landscape encompasses 450,000 rural households, which mostly use traditional, low-productivity agriculture practices. However, it is also home to substantial ongoing private investments in the targeted agriculture and forest-based VCs and constitutes one of the most rapidly expanding commercial agriculture areas in Mozambique.

49. **Threats to the landscape.** This landscape is currently undergoing high forest cover loss. From 2000 to 2014, the area lost 2.9 million ha of forests, representing an annual deforestation rate of 0.64 percent. This is well above the national average of 0.58 percent. The causes of deforestation are primarily small-scale slash and burn agriculture, followed by charcoal production and sale in the nearby (and sometime further) urban centers and illegal timber extraction (Mercier et al. 2015).[25] While commercial agriculture is not considered a significant driver of deforestation today, it could become one, if growth corridors envisaged by the Government are developed without adequate spatial and land-use planning. In addition, although data is limited, erosion is assumed to be a significant issue, given that the landscape encompasses some of the most vulnerable areas to erosion in the country. Uncontrolled wild fires are also a constant threat to the landscape, contributing to both deforestation and erosion. Associated with that is the degradation of waterways, especially as riparian forests are systematically removed to make way for agriculture lands.

50. **VCs promoted by the Project.** Recent analytical work[26] analyzed agribusiness investment potential in Mozambique and identified a number of existing and future market supply potential VCs that could be further developed. There are 16 priority VCs identified in the PEDSA and PODA to be supported over the next five years. These 16 VCs, along with forest-based VCs, were analyzed using the following criteria: (a) growth potential; (b) success in existing market opportunities and competitiveness in domestic and export markets; (c) potential for scaling up and impact on poverty reduction among target groups; (d) change potential, including the existence of lead firms (anchor enterprises) with linkages with smallholders; and (e) comparative potential for higher returns to investment. The following VCs were identified for initial targeted interventions by the Project: poultry, maize, soya, sesame, cashew nuts, beans, oilseeds, horticulture, and non-timber forest products (such as honey) (the non-timber value chains will be supported on a pilot basis piloted) (see Annex 6 for more information).

51. **Private sector agent/SECF model.** The Project will establish and maintain a network of 200 SECFs to support the expansion of the agriculture and forest-based VCs. The SECF model is a private sector-driven approach successfully piloted since 2005 in Cambodia, Zambia, Ghana, and Ethiopia (supported by USAID, Netherlands, the Ford Foundation, U.K. Department for International Development [DFID], and the Swedish International Development Cooperation Agency [SIDA]) and is currently being expanded to Burkina Faso, Nepal, and Bangladesh. A network of over 2,000 SECFs has been established worldwide which provides demonstration plots, TA, extension, inputs, mechanization services, and linkages to markets for 265,000 smallholder producers. An evaluation of the SECF model in Tanzania and Ghana showed that adoption of improved production technology by smallholders with SECF support was between

[25] Mercier et. al. (2015) focus on seven districts in Zambézia, three of which coincide with districts comprising the Project's landscape—Alto Molocue, Gilé, and Ile. Key drivers described are based on modeling conducted by Winrock 2015 coupled with ground troughing and additional research undertaken by the authors. For this reason, it is not an issue to assume the same key drivers for the landscape.

[26] Mozambique Agriculture and Rural Development NLTA Phase 1 and 2 (2016).

60 and 84 percent, crops yields rose between 50 and 300 percent, and incomes increased between 80 and 91 percent. Since 2009, the SECF model has been piloted in Mozambique with funding from the Bill and Melinda Gates Foundation, Netherlands Embassy, Ford Foundation, SIDA, and DFID**.** A network of 315 SECFs is currently functioning in the provinces of Zambézia, Nampula, Manica, Sofala, Niassa, Inhambane, and Maputo.

52. **The private sector agent model involves supporting the SECF network to provide specific training, extension, demonstration/models, and transfers of technology to rural households (smallholder farmers).** The model is based on the identification of lead farmers with entrepreneurial drive, who are supported to develop business linkages with up to 300 rural households. Training and extension services to smallholders will be delivered through SECFs as part of their business model, as well as by public extension workers in the 10 targeted districts. The SECF-based model allows for broader coverage in the number of smallholders supported and promotes sustainability after the Project closes given its private sector driven nature. The SECFs will be supported by a Service Provider (SP) who will provide TA in the preparation of viable and bankable business plans for identified VCs. See Annex 10 for more details on the SECF model.

53. **SPs will play an important role in Project implementation.** SPs include NGOs and rural development and financial sector entities with expertise in the promotion of agriculture and forest-based VCs, FM, NRM, land delimitation, and titling. For VCD, SPs will provide support to the SECFs and MSMEs agribusinesses to reach a wide network of rural households. In NRM, SPs will work with large-, medium-, and small-sized holders in land restoration. In land, SPs will support community land delimitation, gathering information for the cadaster of individual titles (DUATs) and training. SPs will be selected on a competitive basis and will be trained on methodologies and tools for identification, preparation, analysis, and results monitoring of business plans. Consolidated methodologies and analytical tools such as FAO RuralInvest of the Food and Agriculture Organization (FAO) will be considered for such training efforts.

B. Project Components

54. **A detailed description of each component is provided in Annex 3**. Additional information on (a) the SECF engagement model is detailed in Annex 10 and (b) the VC financing scheme is detailed in Annex 12.

55. **The first two projects of the SoPs (Project 1 and Project 2) were fully appraised.** The first Project of US$40.0 million equivelant will be financed by this proposed IDA Credit and Grant while a second Project of further US$40.0 million equivelant would be financed separately, through either additional IDA financing or other non-IDA resources. While activities for both Projects are presented in this Project Appraisal Document (PAD), including an indicative results framework for Projects 1 and 2 (see Annex 2), only the activities for Project 1 are being financed by this IDA Grant of US$26 million equivalent and IDA Credit of US$14 million equivalent for a total of US$40.0 million.

56. The Government will endeavor to secure additional funds for Project 2. It is anticipated that the second Project (Project 2) would begin implementation within 24 months of the starting date of the first Project (Project 1). Project 2 of the SoP would deepen the coverage of Project 1 in the same 10 districts to cover an additional 100 SECFs, an additional 20,000 rural households and expand the infrastructure investments in the same districts. If for some reason Project 2 does not materialize, Project 1 can stand on its own and deliver on the key outcomes as defined in the Project's Results Framework.

Component 1: Agriculture and Forest-Based Value Chain Development (Project 1 US$21.0 million equivelant from IDA; Project 2 US$36.0 million)

57. Increasing smallholder and SECFs' participation in key agriculture and forest-based VCs in the Project area including through:

- *Provision of training and TA to SECFs and other key rural MSMEs Agribusinesses (Project 1 US$6.0 million equivalent from IDA; Project 2 US$3.0 million; Total US$9.0 million)*

  (a) Support to SECFs and MSME agribusinesses to increase rural households' participation in VC development and capacity building of other VC actors, benefiting smallholders, including through carrying out training for SECF, MSMEs, farmers' organizations, and the hiring of an SP to support SECFs.

  (b) Project 1 will finance the provision of technical support to 100 SECFs and 25 MSME agribusinesses. The inclusion of an additional 100 SECFs and 25 MSME agribusinesses within the same 10 districts will be financed by additional funding under Project 2.

- *Agribusiness finance to VC actors (SECFs, agribusiness, weather-based insurance) (Project 1 US$10.0 million equivalent from IDA; Project 2 US$10.0 million).*

  (a) Support to SEFCs and other key MSME agribusinesses to access credit, including through:

    (i) implementing an MG scheme aimed at SECFs and MSME agribusinesses;

    (ii) implementing a PCG Fund aimed at lowering the risk exposure of participating financial institutions (PFIs) to cover SECFs and MSME agribusinesses financing needs, including through the hiring of a financial service provider (FSP) to act as the administrator of the PCG fund; and

    (iii) implementing a weather-based agricultural index insurance scheme ('Index Insurance') for the purpose of providing weather-based insurance coverage in respect of weather-based risks impacting farmers' production.

(b) **Project 1 will finance MG and PCG support of US$10.0 million from IDA for 100 SECFs and 25 MSMEs and weather-based agriculture insurance premiums**. MG and PCG finance for the remaining 100 SECFs and 25 MSMEs will be provided by additional funding under Project 2.

- *Improving rural infrastructure (Project 1 US$5.0 million equivalent from IDA; Project 2 US$23.0 million)*

(a) Improvement of rural infrastructure in the Project area including through:

(i) identification of key infrastructure bottlenecks in the Project area;

(ii) carrying out of preparatory studies to identify the most critical links in the feeder road network;

(iii) rehabilitation and maintenance of critical rural roads needed to transport production to markets;

(iv) carrying out of feasibility and design studies for ground and surface water to assess and prioritize the more relevant irrigation infrastructure needed to support the development of selected VCs; and

(v) rehabilitation and carrying out of priority irrigation schemes in the Project area.

(b) **Project 1 will finance feasibility and design studies for irrigation and feeder roads as well as 250 ha of rehabilitation of irrigation schemes and 260 km of rehabilitation and maintenance of rural roads.** Additional infrastructure (that is, civil works, and so on) of 1,450 ha of rehabilitation and new irrigation schemes and 1,102 km of rehabilitation and maintenance of rural roads will be financed by additional funding under Project 2.

Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience (Project 1 US$14.0 million equivalent IDA; Project 2 US$2.0 million)

58. Promotion of integrated landscape management, securing LTR at the community and individual levels, and restoration of critical natural habitats in the Project area including through:

- *Land Tenure Regularization (US$7.0 million equivalent from IDA)*

(a) Supporting LTR, through:

(i) issuance of 'DUATs' and

(ii) community land delimitation, including strengthening of community-based organizations (CBOs); Natural Resources Management Committees (*Comité de Gestão de Recursos Naturais*, CGRNs) and other community-based informal associations.

(b) Project 1 will finance 150,000 DUATs and 270 CDCs.

- *Strengthening land administration services (Project 1 US$2.0 million equivalent from IDA; Project 2 US$1.0 million)*

  (a) Carrying out training of relevant staff at the recipient's district and provincial level and provision of equipment within the Project area.

  (b) **Project 1 will finance training of relevant staff at the recipient's district and provincial level, and the upgrading of the land administration system.** Infrastructure rehabilitation for critical district and provincial land administration offices will be financed by additional funding under Project 2.

- *Strengthening capacity on integrated landscape management (Project 1 US$1.0 million equivaqlent from IDA)*

  (a) Strengthening capacity on integrated landscape management, including through:

    (i) consolidating MSLFs at the recipient's provincial level;

    (ii) promoting the use of spatial tools that can inform land-use planning and addressing equipment needs for provinces and districts within the Project area for integrated landscape management; and

    (iii) carrying out training for recipient's relevant staff at provincial and district levels.

  (b) The Project will finance training of MSLFs, promoting the use of spatial tools and equipment needs for provinces and districts for integrated landscape management and training for recipient's relevant staff at the provincial and district levels.

- *Restoration of natural habitats that are critical for the VCs in the landscape (Project 1 US$4.0 million equivalent from IDA; Project 2 US$1.0 million)*

  (a) Restore degraded lands critical for the VCs in the Project area through assisted natural regeneration and active planting with native and exotic species.

  (b) **Project 1 will finance the restoration of 1,600 ha degraded lands. Additional funding under Project 2 will finance the restoration of additional 400 ha of degraded lands**.

Component 3: Project Coordination and Management (Project 1 US$5.0 million equivalent from IDA; Project 2 US$2.0 million)

59. Support to the International Funds Management Unit (*Unidade de Gestão de Fundos Internacionais*, UGFI) and provincial implementation units (PIUs), to oversee the

implementation of the Project in each of the provinces in the Project area comprising support for project coordination and management, including fiduciary and safeguards management, monitoring and evaluation (M&E), and communications.

60. **Project 1 will finance the establishment and operation of the UGFI and PIUs in the targeted provinces for the duration of the Project.** The preparation of the second Project of the SoP (Landscape Program) will be financed by additional funding under Project 2.

Component 4: Contingency Emergency Response (US$0.0 million)

61. Support the recipient in case of a potential disaster-recovery need by providing immediate response to an eligible crisis or emergency.

C. Project Financing

62. **The proposed lending instrument will be Investment Project Financing structured as a SoP.** This first Project in the series will implement the new institutional framework for landscape management in Mozambique (*Programa Estrela*), and is expected to generate a model of integrated landscape management to be scaled up in the future (Mozambique Integrated Landscape Management Program). Project 1 will have an implementation period of five years. Both Project 1 and Project 2 of the SoP have been prepared and appraised. However, only Project 1 for US$40 million equivalent is being financed from IDA17 resources. The second Project of US$40 million of the SoP will be financed either through additional IDA financing, partner resources, or the GoM's own resources. In addition to additional funding for Project 2, other Projects in the SoP could begin once additional funds become available and demonstrated satisfactory performance in the implementation of the previous Project in the SoP. Future projects beyond Project 1 and Project 2 under the SoP will extend the landscape approach to other priority provinces and districts (new landscapes), and support additional VCs. The proposed budget for the Project 1 and Project 2 is presented in Table 2.

D. Project Costs and Financing

Table 2. Component Costs (US$, millions)

Project Components	IDA Grant/Credit Financing - Project 1	Project 2	Total Project 1 and 2 Cost
Component 1: Agriculture and Forest-Based Value Chain Development	**21.0**	**36.0**	**57.0**
Provision of training and TA to SECFs & key rural MSME Agribusinesses	6.0	3.0	9.0
Agribusiness finance to VC actors	10.0	10.0	20.0
Improving rural infrastructure	5.0	23.0	28.0
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience	**14.0**	**2.0**	**16.0**
Securing Land Tenure Rights	7.0	0.0	7.0
Strengthening land administration services	2.0	1.0	3.0
Strengthening capacity on integrated landscape management	1.0	0.0	1.0
Restoration of natural habitats critical for the VCs in the landscape	4.0	1.0	5.0

Project Components	IDA Grant/Credit Financing - Project 1	Project 2	Total Project 1 and 2 Cost
Component 3: Project Coordination and Management	**5.0**	**2.0**	**7.0**
Component 4: Contingency Emergency Response	**0.0**	**0.0**	**0.0**
Total Cost	**40.0**	**40.0**	**80.0**
Total Financing Required	**40.0**	**40.0**	**80.0**

E. Lessons Learned and Reflected in the Project Design

63. **Relevant lessons from experiences across Sub-Saharan Africa (including Burkina Faso, Ethiopia Ghana, Kenya, Madagascar, Namibia, Rwanda, Tanzania, and Zambia) and developing countries in other regions (Bangladesh, Brazil, Cambodia, Colombia, Dominican Republic, India, Indonesia, Mexico, Nepal, and Peru)** show positive results with using private sector SECF models, which promote agriculture transformation and increasing productivity of competitive and sustainable VCs by addressing, in a coordinated manner, key structural constraints in access to finance, rural infrastructure, land tenure security, NRM, integrated landscape management, and land-use planning,. These lessons have informed the design of this Landscape Project. Project preparation also builds on relevant lessons learned from the preparation of the Mozambique Systematic Country Diagnostic (SCD) and CPF and associated country dialogue. Lessons learned covering key dimensions and how they are incorporated in the Project are presented in Table 3.

Table 3. Synthesis of Relevant Lessons Learned

Strategic Lesson	Country Examples/Practices Reflected in the Design of the Mozambique Landscape Project
(a) Establishment and support to a strong network of SECFs can contribute to overcoming obstacles related to the provision of inputs, TA, and access to finance and markets. This requires identification of realistic market opportunities and business-oriented farmers, as well as the provision of substantial training in the early stages of the program, with adequate incentives on the part of the SECFs and participating	• **Addressing obstacles by supporting business-oriented farmers.** Most rural populations and smallholder farmers in Mozambique operate at the subsistence level and remain disconnected from input and output markets. They have limited access to key information, technologies, and basic services that are required to harness market opportunities. This presents both a gap and a market opportunity for growing SECFs (that is, agents) to increase the availability and affordability of critical goods and services needed to increase productivity and revenues in rural areas, as well as to serve as linkages to large companies seeking to source local products at the right quality and quantity, and who are often unable to engage with many unorganized smallholder farmers who individually produce and sell low volumes. In Cambodia, the creation of a network of 130 agents with the goal of bridging similar obstacles has allowed them to reach 15,000 farm households, supporting them to generate an average additional income of US$260 after the first year (equivalent to a 30–40 percent increase), through the provision of inputs, TA, and markets for farmers' increased output. In Zambia, 200 agents are expected to reach around 16,000 farmers. Similar models are being supported in Burkina Faso and Nepal. Locally adapted models are also being successfully implemented in Mozambique by organizations such as International Development Enterprise (iDE), Cooperative League of the USA (CLUSA), and TechnoServe, although not yet at scale. • **The Project will support an SECF network model designed to be rapidly scalable**. An SP will be contracted to implement the designed model, with substantial focus on initial training of the SECFs identified, and continued monitoring against key performance indicators. Lessons from other countries and in Mozambique have guided the preparation of this operation by carrying out sound VC and market analysis, consultations with the private sector, and identification of synergies between private

Strategic Lesson	Country Examples/Practices Reflected in the Design of the Mozambique Landscape Project
smallholders.	and public investments as the basis for the Project's SECF engagement model and complementary VCD activities. However, in light of possible market shifts during the lifetime of the Project, close monitoring will be carried out to mitigate risks and appropriate and timely adjustments will be made to the model, to achieve the Project's objectives.
(b) Addressing constraints of access to finance and rural infrastructure are key to enhancing the impact of agriculture productivity. In light of resource scarcity, targeting and prioritization, as well as building synergies with other actors operating within the Project landscape are crucial.	• **Targeted financing and supporting services.** It is widely accepted that approaches to financing VCs and supporting services (that is, agriculture and forestry extension and capacity building) must be simultaneously cost-effective and well targeted to the needs of project beneficiaries to generate significant results and achieve project objectives. This was confirmed by an assessment undertaken by the IFC (2014) on smallholder agriculture finance drawing on case studies from the Dominican Republic, Colombia, and Peru. Assessment of different models has resulted in the design of a two-pronged intervention approach. On the one hand, market-driven SECFs will be provided supporting services promoted under the Project with a focus on identified VCs, generating conditions for sustainable business growth (for example, access to MGs and commercial finance, adequate technical knowledge, and management capacity). The model has been designed to ensure that benefits are also accrued by smallholders linked formally and informally to direct beneficiaries. MG and PCG financing schemes will be established to provide funding to SECFs and MSME agribusinesses' key commercial initiatives in the targeted area through a competitive selection process based on demonstrated evidence of benefits to smallholders and MSMEs agribusinesses through business linkages and overall sustainability of proposed ventures. • **Targeting rural infrastructure and maximizing synergies.** Expanded small-scale irrigation and feeder roads are among the key types of infrastructure needed to enhance the impact of agriculture productivity. They enable intensified and diversified crop production and enhanced connection between production areas and agricultural market centers. As recognized in the Bank-financed operations in Rwanda and Brazil, the sustainability of rehabilitated feeder roads is predicated on the existence and effective implementation of strategies and long-term plans. The Project will finance rural infrastructure with major unlocking potential and coordinate with VCs' work to ensure they are sequenced and integrated.
(c) LTR at scale can have significant positive impacts on NRM and other investments in land. Scale-up requires undertaking systematic titling using a spatial framework based on low-cost simple technology and focusing on individual and communal rights	• **Impact of land tenure security on agricultural investments and productivity.** Lessons learned from key projects such as the Community Land Initiative (*Iniciativa de Terras Comunitárias*, iTC) and many NGO-supported delimitation-based development programs in Mozambique, as well as similar experiences in other African countries (Ethiopia, Ghana, Rwanda, and Tanzania) have been drawn upon. These programs have shown how delimitation, combined with basic community land-use planning, helps protect local rights and prepares communities (and their internal management structures) to engage more effectively with outside interests such as potential investors and other business (VC) opportunities. While land-use rights acquired by customary and good faith occupation enjoy legal security in Mozambique, in areas where land is in high demand, the lack of registration and formal recording in legal registries (cadasters) renders rural farmers vulnerable to being lost to other land users, including incoming private investors. This can lead to a lack of confidence in tenure security and unwillingness to invest in on-farm intensification, longer-term projects, and conservation of the land and natural resources. This complex dynamic underscores the need for broad LTR, particularly in the context of the Project, which expects to boost investment in commercial agriculture in the targeted area. • **Land regularization in Mozambique has been undertaken in the past in sporadic, demand-driven fashion, resulting in elevated costs and limited impact.** For example, while costs for communal land registration in Mozambique have been

Strategic Lesson	Country Examples/Practices Reflected in the Design of the Mozambique Landscape Project
	estimated at US$8,000, similar systematic registration in Tanzania has had average costs of about US$500 per community. Registration of communal land needs to be followed up with resources to plan for communal and individual land use and to delineate common-property resources. The same is true for individual land parcels. Experience in countries such as Rwanda, Namibia, Madagascar, Tanzania, and Ethiopia have lowered the average cost of US$50 per parcel of land to about US$10–US$20 through the use of aerial orthophoto maps and rectified satellite imagery. A nationwide program of land registration can be completed within 5–10 years, using orthophotos and satellite imagery, while traditional approaches can take decades. For instance, in Rwanda, on a territory with very high density of population (not comparable to Mozambique), 10.3 million parcels of land have been registered within 5 years using aerial orthophoto maps and rectified satellite imagery. The Project will work with provinces and districts to apply similar technologies and low-cost options based on a fit-for-purpose methodology to deliver results at landscape scale. The modernization of land administration systems through computerization also brings additional benefits, and will be supported in the targeted districts in connection with LTR. For instance, in the Indian state of Karnataka, computerization has saved users an estimated US$16 million in bribes (Deininger 2008).
(d) Effective multi-stakeholder platforms can enhance cross-sectorial coordination, resolve trade-offs, and enable the achievement of healthy landscapes. This requires facilitation, agreement on goals, and continued monitoring.	• **Resolving trade-off and working toward shared SDGs within the landscape.** The success of Kenya's Imarisha multi-stakeholder platform targeted at the Lake Naivasha Basin was built on regular convening and an effective monitoring mechanism, enabling the showcasing of results and leveraging of additional resources to be invested in the region. In line with international best practices, the Project will support the development and operation of multi-stakeholder forums in Nampula and Zambézia to facilitate the emergence of a common vision and assessment and resolution of trade-offs. To avoid additional transaction costs, the Project will build on and strengthen existing platforms in both areas (for example, Zambézia REDD+ Forum). • In Brazil's São Félix do Xingú, municipality, multi-stakeholder agreements, and multi-sector green growth programs were embedded in the established dialogue platform, leading to the signing of the Pact for the End of Illegal Deforestation by more than 40 organizations in 2011. Between 2008 and 2014, regular meetings and monitoring of the pact are said to have driven the 85 percent reduction in deforestation in São Félix do Xingú. The Project will support similar mechanisms embedded in the provincial platforms, as a way to define shared goals, converge efforts, and track performance.
(e) Deriving clear benefits (for example, erosion control, improved water services, and soil fertility) from restoration activities to local stakeholders is critical to ensuring their sustainability. This requires geographic prioritization, alignment with local development plans, and definition of cost-	• **Ensuring the sustainability of restoration initiatives and its benefits**. Since 2002, Ethiopia has implemented a spatially coordinated program focused on erosion control, rehabilitation of degraded soils, tree planting, and water capture and control in Tigray, the northern part of the country. Due to the clear benefits of restoration of water services, including improved groundwater resources, water available for farm activities, and healthy streams, continued community and civil society engagement were ensured throughout the years. This enabled achieving substantial results— 400,000 ha of degraded land have been rehabilitated in 451 subwatersheds, with about 125,000 people directly benefitting from the program. In another case, the Atlantic Forest Restoration Pact, formally established in 2009 as a multi-stakeholder network with the goal of restoring 15 million ha of Atlantic Forest land by 2050, restored approximately 60,000 ha in its first years of implementation. The Atlantic Forest Restoration Pact has been increasingly deemed as a success case for its ability to converge multiple and diverse actors around the restoration agenda. The first and crucial step the Atlantic Forest Restoration Pact took was developing a map of priority areas for forest restoration and assessing which types of investments will maximize restoration outcomes and benefits, leading to the prioritization of natural regeneration, incentivizing actors to adopt restoration activities in the most strategic areas, and bringing landowners into

Strategic Lesson	Country Examples/Practices Reflected in the Design of the Mozambique Landscape Project
effective methods adapted to the respective areas.	compliance with existing legal codes. • While the GoM has recently committed to restoring 1 million ha by 2030 through the AFR100, the national restoration agenda is new and requires buy-in from provincial and district stakeholders. The Project will support the restoration of critical value areas within the landscape based on a careful mapping, prioritization, and planning of activities, aiming to generate clear benefits to rural households within the coverage area. The definition of areas will take into full consideration the impacts on VCs supported by the Project, including, for example, through potential restoration effects on water availability and soil fertility. Restoration models that are implemented will aim to secure the continued engagement and appropriate partnership modalities involving both communities and the private sector and generate lessons for subsequent scale-up in other Projects or programs.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

64. **MITADER will be responsible for overall strategic guidance and will coordinate Project implementation.** The creation of the new ministry offers an excellent opportunity to bring land management and administration, rural and community development, and agricultural investment together within a single, integrated project. The lead agency for Project coordination in MITADER will be the UGFI. The following national directorates within MITADER will be involved in project coordination: National Directorate of Land, National Directorate of Rural Development (*Direcção Nacional de Desenvolvimento Rural*), and National Directorate of Forests. The UGFI will also coordinate with the following national directorates in other line ministries: MASA, through the National Directorate of Agriculture and Planted Forests (*Direcção Nacional de Agricultura e Silvicultura*, DNAS), the National Directorate of Agricultural Extension (*Direcção Nacional de Extensão Agrária*, DNEA), INIR, and the Center for Promotion of Agriculture (*Centro de Promoção da Agricultura*, CEPAGRI); MOPHRH, through the National Roads Administration (*Administração Nacional de Estradas*, ANE) and DNGRH. Each national directorate will appoint a project focal point who will participate in project activities including in the preparation of the annual work plans (AWPs) and budgets, annual progress reports, provide terms of references (ToRs) in their respective areas of expertise and contribute to the supervision of the actions under their areas of responsibility.

65. **Project oversight**. A Steering Committee will be responsible for overall strategic oversight and guidance of the Project. Specific tasks of the Steering Committee will include approving annual activity plans and budgets, midterm review (MTR) report, and end-of-project report. The Steering Committee will meet twice a year, and will hold extraordinary meetings when necessary. It will be chaired by the minister of MITADER, and will have the following composition: (a) one of the national directors from National Directorates of Land, Rural Development, or Forests, to be appointed by the MITADER minister; (b) one from DNAS, DNEA, INIR or CEPAGRI, to be appointed by the MASA minister; (c) one from ANE or DNGRH, to be appointed by the MOPHRH; and (d) one from Commerce from the Ministry of Industry and Commerce (*Ministério da Indústria e Comércio*, MIC). The provincial directors of the Provincial Directorate of Land, Environment, and Rural Development (*Direcção Provincial*

de Terra, Ambiente e Desenvolvimento Rural, DPTADER) in the two project provinces and the director of ARA Centro-Norte shall participate as observers, together with the UGFI Project Coordinator who shall serve as the Steering Committee's Secretary.

66. **Project coordination will be carried out by the UGFI at the central level.** The UGFI will be tasked with the coordination of all project activities, including technical supervision and coordination, overall project planning, quality oversight, communication, safeguards management, reporting, procurement, FM, issuance of guarantee certificates under the PCG fund, monitoring of project activities, and monitoring and reporting on its progress on a regular basis. At the central level, the UGFI will be responsible for the management of fiduciary issues, in conformity with the standards and requirements contained in the legal agreement and agreed upon with the Bank Group. The UGFI coordinator will serve as the overall project coordinator, and the UGFI project management team will comprise a financial manager, a procurement specialist, and an accountant, as well as an M&E officer, communication specialist, safeguards specialist, and technical specialists for coordination in the following areas of expertise: land, forest NRM, VCs, rural development and irrigation, and administrative staff. Additional staff for the Matching Grant Unit (MGU) will include an MG manager, two grant advisors, and a financial and administrative officer. Technical design and supervision of the irrigation infrastructure and services development will be led by INIR. DNGRH and Ara Centro-Norte will provide technical input and oversight to INIR for the water availability assessments. The UGFI will coordinate the work of the focal points from the ministries to ensure their regular participation in project implementation. In addition to participating in the preparation of project activity plans, the focal points will participate in site visits and in discussions with SPs and local authorities.

67. **Day-to-day project implementation will take place at provincial and district levels. Implementation of project activities in each province will be coordinated by the MITADER Provincial Directorate (DPTADER) in close coordination with the MASA Provincial Directorate (*Direcção Provincial de Agricultura*) and ARA Centro-Norte**. A provincial project field coordinator and technical specialists will be hired for each of the two targeted provinces. The provincial field coordinators will coordinate and monitor project implementation progress at the provincial level and interface with the District Service of Economic Activity (*Serviços Distritais de Actividade Económica*, SDAE) and District Service for Infrastructure and Planning (*Serviços Distritais de Planeamento e Infra-Estrutura*, SDPI) units of each district. They will propose decisions in line with the project objectives and institutional arrangements, will report to the UGFI coordinator, and will keep the MITADER provincial directors informed on project implementation. In addition to serving as the PIUs, DPTADERs will serve as a 'Landscape Coordination Unit', responsible for (a) coordination of different initiatives across the provincial landscapes (including both state and nonstate projects and programs with significant impact on the landscape) and (b) ensuring that environmental and social considerations are taken into account when interventions are implemented in the area (for example, commercial agriculture's impact on forest cover and critical natural habitats).

68. **The provincial MSLFs that are supported will play an important role in project coordination and integrated landscape management.** The two provincial MSLFs will bring together stakeholders in discussing relevant issues in the landscape, including NRM challenges and land-use trade-offs. Provincial project field coordinators, in partnership with DPTADER,

will provide support to the respective forum secretariats and assist members in the development of annual SAPs, that will enable monitoring activities and tracking performance against clear goals established in a participatory manner. SAPs will include annual project activities and their linkages with activities planned by other stakeholders and will assess the work of SPs and provide recommendations for better performance. MSLFs and their SAPs will thus contribute to fostering project ownership and awareness among landscape stakeholders, as well as orient strategic efforts and create synergies within the project area.

69. **Activity implementation on the ground will primarily be handled by SPs** (VCs, financial, land, irrigation and natural resources resilience) with the involvement of local technical staff at the provincial directorates of MITADER, MASA, MOPHRH, and MIC, and with the district administrator and SDAE and SDPI units. Feeder roads and irrigation systems' works will be supervised by MOPHRH and INIR, respectively, and any works (that is, warehouses and so on) financed from the MGs and PCG schemes to support VCD will be overseen by an MGU in the UGFI and an FSP.

70. **Project Implementation Manual (PIM). A draft PIM is under preparation and is a condition of effectiveness.** The PIM covers the following areas: general purpose PIM, project history, objectives and components, implementation timeline, institutional arrangements, landscape's overview, beneficiaries and location, budget, accounting policies, system of accounting and financial reporting, administrative procedures (operating procedures, administrative/financial, procurement, M&E, management fixed assets).

71. **Operational Manuals for the MG scheme and PCG are under preparation and are a condition for disbursement**.

B. Results Monitoring and Evaluation

72. **The M&E function focuses on data collection and reporting on key performance input, output, and outcome indicators, including targeted data collection, surveys, participatory assessments, and midterm and end-of-project evaluations**. The Results Framework for Project 1 is presented in Annex 1, and the indicative Results Framework for Projects 1 and 2 is presented in Annex 2. Relevant data on beneficiaries and project investments will be gender-disaggregated. Collection of baseline data has been initiated and will be completed during the first year of project implementation. In addition, two evaluations of project output and outcome indicators have been planned at the midterm and project completion. The Project will finance M&E costs, including costs associated with the MTR and project completion review. See Annex 4 for more detail.

C. Sustainability

73. **The Project will promote sustainability in diverse ways**. **First, the Project will promote financially viable agriculture and forest-based VC engagement, led by the SECFs network and MSMEs**. The Project will promote a strong base for inclusive and participatory engagement with rural households in VC participation, strengthened local land tenure, which will generate incentives to ensure their activities and enterprises are viable and sustainable and also sustainably manage the natural resources under their control. The Project will provide careful

screening of the proposed VC investments and relevant technical and managerial capacity development support to the emerging commercial farmers. Methodologies and tools for identification, preparation, feasibility-sustainability analysis, and results monitoring of business plans will be promoted.[27]

74. **Second, the Project will promote an integrated landscape management approach that emphasizes the careful consideration of trade-offs from different land uses**. A key objective of the Project is to ensure that the land-use practices being promoted in the landscape lead to long-term environmental sustainability such as the promotion of CSA among large-, medium-, and small-sized holders, the restoration of critical degraded lands and cross-sectoral multi-stakeholder landscape planning.

75. **Third, the Project will strengthen the capacity of provincial and district governments** to promote landscape management and VCD that will also generate positive 'sustainability spin-off' effects at the local level.

V. KEY RISKS

A. Risk Ratings Summary Table

Risk Categories	Rating
1. Political and governance	S
2. Macroeconomic	S
3. Sector strategies and policies	M
4. Technical design of the project and program	S
5. Institutional capacity for implementation and sustainability	S
6. Fiduciary	M
7. Environmental and social	M
8. Stakeholders	S
9. Other (Land tenure regularization)	S
Overall	S

B. Overall Risk Rating Explanation

76. **Political and governance.** The country remains susceptible to further outbreaks of political and social conflict, though a return to full-scale civil war is unlikely. While some risk persists as long as Mozambican National Resistance (*Resistência Nacional Moçambicana*, RENAMO) remains armed, the more likely risks are that continual and perhaps more frequent episodes of localized unrest and violence—as well as unofficial labor protests—could affect the rural economy including the districts in the Project Area through lower production, deterring of foreign investment and slow development of supporting infrastructure, as well as exacting a significant human toll. To mitigate potential political and governance risks, the Project will sequence interventions to take into account constraints on the ground which may affect the effective and timely achievement of the project development objectives. The security situation and the political economy dynamics will be monitored closely.

[27] Consolidated experience and tools such as FAORuralInvest will be considered for this purpose.

77. **Macroeconomic.** The increase in debt levels, the depreciation of the metical, and external shocks (such as commodity price) have heightened Mozambique's macroeconomic vulnerability and exposure to fiscal risk. A deteriorating macroeconomic context may affect the appetite to invest in Mozambique's agriculture sector and create a difficult business environment for the private sector through higher prices, exchange rate volatility, and lower demand. While presently investors remain confident about Mozambique's long-term growth prospects, driven by the gas sector, macroeconomic instability, or low commodity prices could have a major impact on growth and opportunities in sectors such as agriculture. The program will seek to mitigate these risks by strengthening market opportunities and investing in infrastructure that would help maintain a favorable investment environment for agriculture. Broader macroeconomic risks are also being mitigated through policy dialogue, technical assistance and future policy-based lending under the broader country program. Continued close coordination with the IMF and budget support partners will also help to encourage the adoption of needed reforms re-establish macroeconomic stability.

78. **Technical design of the Project.** The market orientation of the project design and intervention model mitigates key risks related to the absorption of supported VC products and ensures that potential benefits outweigh costs to beneficiaries and implementers. While sound VC analysis and market assessments have underpinned the intervention's design, markets may change in unexpected ways during the lifetime of the Project. Hence, some flexibility has been built into the project design to enable the capture of emerging opportunities and reduce residual risk. Expected outcomes related to more sustainable management of natural resources are dependent on enforcement of existing legislation and reduced levels of unethical behavior by Government authorities, which are generally thought to represent key barriers at provincial and district levels. The Bank has been working closely with MITADER, as well as with provincial and district authorities to increase sector transparency, particularly with regard to the management of forests. MITADER and the Bank have been fostering alignment between the Project and Mozambique Investment Plan of the Forest Investment Program (FIP) to ensure that comprehensive forest law reforms and investments into sustainable forest management expected under FIP effectively mitigate project-related risks.

79. **Institutional capacity for implementation and sustainability.** The GoM and MITADER are strongly committed to promoting rural development, including through enabling increased participation of the private sector in commercial agriculture and forestry, LTR, and sustainable management of natural resources. However, institutions at the central, provincial, and district levels are undergoing reform for improved alignment with the Government's new strategy and vision, which presents implementation uncertainty, particularly with regard to links between project implementation arrangements and broader governmental structures. Capacity at the district level is weak. Residual risk during implementation is therefore assessed as Substantial until such structures have been defined and are under implementation. The success of the operation and achievement of the PDO is premised on the capacity of project management to guarantee effective day-to-day coordination across several Government and nongovernment institutions at central, provincial, and district levels. The Bank has supported the establishment of the UGFI to respond to these needs. The UGFI has been effective at nurturing links to key directorates at MITADER, as well as with other line ministries (MASA, MOPHRH, and MIC) and government institutions expected to play important roles in project implementation.

80. **Stakeholder risks**. The integrated landscape management approach promoted under the Project is new to many stakeholders. Not only does it require a new multi-sectorial mind-set, but also effective functioning of recently established key institutions to enable overcoming long-standing institutional cultures that reflect decades of vertical separation between sectors. MITADER is developing and starting to implement a strong communication and stakeholder engagement strategy, to ensure that contributions from and benefits to each stakeholder are clearly communicated, enabling the promotion of multi-stakeholder communication and guaranteeing high-level government (governor, provincial directors, district administrators, and district directors) buy-in. Additionally, funding has been marked for capacity building across all Project components, where aspects related to integrated landscape management and stakeholder cooperation will be mainstreamed. Efforts geared to strengthening the DPTADER in both provinces and supporting frequent consultations across provincial authorities are envisaged as relevant risk mitigation measures.

81. **Other risks. Land tenure regularization**. Successful land rights registration requires a strong and sustained political commitment from the Government. The GoM has shown strong commitment to a more integrated and inclusive development strategy, as reflected by the establishment of MITADER and its publicly announced goal of issuing 5 million titles (DUATs) in the next five years. The Project will support the issuances of 150,000 DUATs and 270 CDCs. The major risks in LTR are (a) low capacity of the provincial and district offices to support the registration process and ensure good quality control and efficient registration; (b) unreliability of the registration system with regard to data quality and the evolution capacity to be used properly at all levels (central, provincial, district, and municipal level). Currently, the Land Information Management System (*Sistema de Gestão de Informação sobre a Terra*, SIGIT) relies on donors' funding; and (c) the process needs to be streamlined and simplified to ensure that the ambitious goals of the Terra Segura Program are achieved. To address those, the Project will (a) work with an SP with demonstrated capacity to support LTR; (b) provide further financial support to SIGIT and continue dialogue with the Government and donors on the sustainability strategy for the system; and (c) continue dialogue with MITADER on the LTR methodology and make resources available for inputs into an improved methodology (such as access to high resolution satellite images).

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

82. **A cash flow model is used to assess the ex ante efficiency of the Project investment.** Annual cash flows are estimated as the difference between without-project and with-project net benefits for direct beneficiaries (see Annex 7 for more details). Efficiency indicators include the economic and financial net present values (NPVs) and the respective internal rates of return (IRR), as well as the impact on farm productivity, household incomes, and employment. Based on available farm-level and VC studies and other relevant information compiled during preparation, gross margins and representative farm models have been developed for priority crops and forestry production in the Project area. The team conducted this analysis for both Project 1 alone (US$40 million), and for Project 1 and Project 2 combined (US$80 million), both results are presented below.

83. **Incremental net benefits are estimated for smallholder farmers and market-oriented farmers targeted in the Project (Component 1**). In the Project 1 alone scenario, 15,000 smallholders and 5,100 market-oriented farmers are considered; where as in the Project and 2 combined scenario, 30,000 smallholder farmers and 10,200 market-oriented farmers are considered. In both scenarios, some benefits are also estimated from improved carbon balance due to avoided deforestation, afforestation, and changes in land use, including perennial and annual crops with conservation agriculture practices (Components 1 and 2). Project investments for land administration and project management (Components 2 and 3) are necessary to achieve the net benefits captured in other components and are therefore included in the economic and financial analysis (EFA).

84. **In Scenario 1 (Project 1), the economic NPV (ENPV) is US$191 million (MZN 9.5 billion) discounted at 5 percent over a 50-year period with an economic IRR of 30 percent and a financial IRR (FIRR) of 20 percent.** The undiscounted annual average net benefit from the Project is US$13 million, which is 0.1 percent of the country's GDP, and 0.5 percent of the agriculture share of GDP. Of the benefits, 89 percent come from farm-level improvements, 9 percent from the economic value of improved carbon balance, and 1 percent from the post-harvest processing facilities.

85. **In Scenario 2 (Project 1 and Project 2 combined), the economic NPV (ENPV) is US$208 million (MZN 10.4 billion) discounted at 5 percent over a 50-year period with an economic IRR of 21 percent and a financial IRR (FIRR) of 12 percent.** The undiscounted annual average net benefit from the Project is US$15 million, which is 0.1 percent of the country's GDP, and 0.6 percent of the agriculture share of GDP. Of the benefits, 68 percent come from farm-level improvements, 31 percent from the economic value of improved carbon balance, and 1 percent from the post-harvest processing facilities.

86. **In Scenario 1, the combination of improved yields, technology, and change in the cropping pattern has the potential to improve farm income significantly,** such as a 27 percent increase on a smallholder farm and 163 percent and 197 percent increase on market-oriented and SECF farms, respectively. While not quantified in this analysis, investments in rural feeder roads, irrigation systems, and new post-harvest facilities are expected to increase employment in the Project area. Estimates indicate that the Project has minor impact on employment from hired farm labor.

87. **Overall, the Project (Scenario 1) returns are substantial even when considering key risk factors in the sensitivity analyses.** To capture the net benefits, it will be important to support beneficiaries with knowledge, technologies, and access to finance so that they can afford to switch to higher value and irrigated crops, bring currently idle land into production, and invest in storage and processing facilities in a financially and environmentally sustainable manner.

88. **The main expected net benefits that could not be quantified due to lack of data include** more post-harvest storage and processing facilities; rural feeder roads; value of reduced erosion both on-farm and through downstream sedimentation; timber- and agro-forestry; nutrition, domestic, and commercial values from natural forests; and valuation of biodiversity corridors and tourism.

B. Technical

89. **The Project incorporates elements that make it conceptually innovative, while ensuring a technically sound approach**. The Project design is supported by solid background information, including lessons learned from relevant operations and analytical work related to agricultural development and NRM in Mozambique.

90. **Technical soundness is also supported by the selection of the Project area, the institutional opportunity generated by the creation of MITADER and the GoM's commitment to promote decentralization**. Furthermore, the design of the Project is fully aligned with the GoM's policies, and through its integrated components, considers the potential needs and risks of the Project's area and its rural population.

91. **The VCs to be supported over the next five years by the operation were selected based on analysis of the 16 priority VCs defined in the PEDSA.** These VCs along with forest-related VCs were reviewed, assessed, and selected using the following criteria: (a) growth potential; (b) success in existing market opportunities and competitiveness in domestic and export markets; (c) potential for scaling up and impact on poverty reduction among target groups; (d) change potential, including the existence of lead firms with linkages with smallholders; and (e) comparative potential for higher returns to investment.

92. **The proposed techniques for degraded land restoration have been tested in Mozambique, but at a small scale.** Restoration techniques to be used will include assisted natural regeneration, enhanced planting, and commercial planting of natural species. These will conform to the latest silviculture knowledge on miombo stand dynamics and concrete experiences on the ground. The proposed approach for promoting integrated landscape approach follows years of practices, as summarized in the 'Landscape Handbook' (2016).

93. **The fit-for-purpose land administration approach has proven its efficiency in LTR in other African countries**. A training on this approach was recently given to National Directorate for Land (*Direcção Nacional de Terras*, DINAT) staff and management. The Project design is aligned with this fit-for-purpose approach and will seek to build on the existing methodology and update it in line with the recent training and modern technologies.

C. Financial Management

FM Assessment

94. **An FM assessment was conducted in accordance with the Financial Management Manual issued by the Financial Management Sector Board in March 2010**. Its objective was to determine whether the UGFI has acceptable and adequate FM arrangements to (a) ensure reliability of financial reporting; (b) effectiveness and efficiency of operations; and (c) compliance with legal covenants, laws, and guidelines.

FM Arrangements

95. **The conclusion of the review of the proposed FM arrangements was that the overall FM risk rating of the Project is Moderate**. The UGFI will, however, need to implement the

following mitigating measures to the identified risks, including the elaboration of an FM Procedures Manual as part of the PIM, registering the Project in the Government's budget for use of country systems such as the Single Treasury Account (*Conta Única do Tesouro*, CUT) and the Government's Integrated Financial Management Information System (IFMIS). The external audit will be the overall responsibility of the Administrative Tribunal (AT), which is constitutionally mandated to audit all Government funds. The proposed FM arrangements, as summarized in Annex 4, meet the requirements for FM under OP/BP 10.

D. Procurement

96. Procurement for the proposed Project will be carried out in accordance with the Bank's 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011, revised in July 2014 and 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011, revised in July 2014; and the provisions stipulated in the Legal Agreement. The procurement activities for the proposed Project have been identified during project appraisal.

97. **The procurement capacity of the implementing unit under MITADER was assessed on March 11, 2016, for its capacity to satisfactorily implement the proposed activities under the Project.** The assessment acknowledges that the unit was created recently with the aim of implementing the Agriculture and Natural Resources Landscape Management Project (ANRLMP), and that the unit may be responsible for more operations in the future. Furthermore, the assessment revealed that the unit is resourced with: (a) one procurement officer, however with limited exposure to the Bank's fiduciary procedures, no experience with complex procurement cases and in the selection of consulting services and experience is limited to Shopping and Single-Source Selection and (b) one procurement assistant with experience in human resources.

98. **The unit is physically housed in MITADER and has working conditions to carry out the procurement function but need to be strengthened with the addition of an experienced procurement specialist within the first 9 months of effectiveness. The procurement manual for the Project, which is part of the Project Implementation Manual, is being drafted, however, it will be prepared before project effectiveness.** The procurement capacity mentioned above will need to be enhanced for implementation of the Project. Thus, in general and based on the outcomes of assessment, the procurement risk associated with carrying out the Project is rated Substantial. The risk mitigation measure for the Project includes the enhancement of the procurement capacity for the procurement unit through the securing of an experienced procurement specialist immediately after project effectiveness, to provide on-the-job training for a period of up to six months. Furthermore, the MITADER should ensure that the procurement officer attends training in Bank-related procurement, before project effectiveness. Taking into account the above mitigating measures, the residual procurement risk for the Project is Moderate. More details on procurement arrangements for the Project are available in Annex 4.

E. Social (including Safeguards)

99. **The Project will finance activities that could necessitate involuntary land acquisition**, such as land delimitation and/or expansion, land-use planning, rehabilitation of small-scale irrigation schemes for agriculture, construction/rehabilitation of small-scale infrastructure (storage and administrative facilities), possibly resulting in the involuntary resettlement of people and/or loss of (or loss of access to) assets, means of livelihoods, or resources.

100. **The Involuntary Resettlement (OP/BP 4.12) policy is triggered due to foreseen low to medium civil works activities (that is rehabilitation, upgrade, and maintenance of feeder roads, rural bridges, small irrigation schemes, storage facilities, and other types of priority infrastructure, and so on) that may require land for temporary or permanent usage**. The land acquired for this purpose may lead to loss of assets, sources of income, or means of livelihoods for some poor households, especially in rural communities whether or not project-affected people must move to another location.

101. **To ensure that proper mitigation measures are set forth, the borrower prepared a Resettlement Policy Framework (RPF)** to guide the preparation of site-specific Resettlement Action Plans (RAPs) once such details are known. Similar to the Environmental and Social Management Framework (ESMF) and Integrated Pest Management Plan (IPMP), the RPF was fully consulted upon, reviewed, and cleared by the Bank, and publicly disclosed both in-country and in the Bank's InfoShop before project appraisal.

102. **The rehabilitation and strengthening of the affected infrastructure and public services activities, as proposed under Component 1,** will not involve any new construction of roads. However, Project activities may involve temporary displacement and therefore OP/BP 4.12 is triggered.

F. Environment (including Safeguards)

103. **Activities to be financed under the Project are expected to have minimal land-use changes or natural habitats transformation**. Nonetheless, potential adverse environmental and social impacts are expected to occur mainly due to investments in activities associated with clearing and rehabilitation of access roads, irrigation infrastructures, small water storage infrastructures, and storage facilities and use of pesticide, albeit on a small scale. The expected positive impacts from the Project can be attributed to the proposed operation's integrated approach tailored to achieve rural development impact by combining the promotion of economic activity with the management and conservation of natural resources. Additionally, the agriculture component comprises a VCD approach which will include a package of complementary measures to promote CSA production. On the other hand, the NRM component will bring better management of natural forests and rehabilitation of degraded areas.

104. **The proposed Project rating is Category B, owing to the nature of its foreseen environmental and social impacts, which are localized and easily manageable**. More specifically, the Project triggered OP/BP 4.01 Environment Assessment, largely because the proposed activities under Components 1 and 2 are likely to lead to some environmental and

social impacts that will require due safeguards attention. These activities are mostly related with clearing and rehabilitation of access roads, irrigation infrastructures, storage facilities, water storage infrastructures, irrigation schemes, including promotion of small-scale farming, and land delimitation. Some of the foreseen adverse environmental and social impacts resulting from the aforementioned activities may lead to soil erosion and degradation, decreased water quality, loss of vegetation, fauna disturbance, deposition of solid wastes, dust emission, social impacts related to loss of land, resource use conflict, impacts on vulnerable and marginalized groups, and health and safety of construction workers/artisans.

105. **OP/BP 4.36 on Forests was triggered because some of the proposed activities under Component 2 will promote sustainable management of natural forests and forest restoration**. Notwithstanding, the Project will not have any direct or indirect negative impact on health and quality of forests or the health and safety of people who depend on forests. Likewise, Project activities are expected to have significant positive impacts on natural habitats, as the Project will promote integrated sustainable NRM. OP/BP 4.04 Natural Habitats was triggered owing to the investments aimed at streamlining land delimitation and titling processes while protecting and restoring natural habitats critical for the VCs in the landscape. OP 4.09 on Pest Management was triggered since the project inputs under Components 1 and 2 may include the use of pesticides to boost agriculture productivity, though expected only on a small scale.

106. **The Project also preemptively triggers OP/BP 4.37 Safety of Dams due to foreseen investments in the rehabilitation of irrigation systems, small water storage, and water canals.** Nonetheless, it is not expected that the Project will be involved in any new investments in large dams such as those within the triggering definition of OP/BP 4.37 (15 m or higher and water storage infrastructure of 3 million m^3 reservoir capacity). The irrigation systems may include small gravity-fed irrigation schemes and, possibly, simple diversion weirs and other small-scale water control structures. Hence, site-specific Environmental and Social Management Plans (ESMPs) will be prepared for any new infrastructure. The ESMPs will be binding to the contractor's contract and ensure that safeguards recommendations are complied with during Project implementation. Moreover, any dam-related activity will be undertaken following the guidelines of the FAO's Manual on Small Earth Dams: A guide to Siting, Design, and Construction (2010).

107. **To ensure compliance with the safeguard policies, the borrower prepared, consulted upon, and disclosed an ESMF, IPMP, and RPF in-country and in InfoShop between April 5 and 6, 2016.** The ESMF, IPMP, and RPF provide essential guidance to be followed by the borrower before and during project implementation to ensure adequate monitoring and reporting of the safeguards requirements. The ESMF also includes both an environmental and social screening form and a set of Environmental and Social Clauses for project implementers. MITADER has acquired considerable experience in implementing and addressing safeguards needs in projects. Nonetheless, a dedicated environmental and social safeguards specialist was hired to provide needful safeguards support during the project life cycle. During the implementation of this operation, further steps will be taken to strengthen the Government's overall technical capacity on safeguards and gender, particularly through TA and training. All the safeguards instruments will be considered in the development of the PIM, which will guide project implementation, as well as serve as a due-diligence tool with which the borrower has to comply.

Other Safeguards Policies Triggered

Table 4. List of Safeguard Policies Triggered by the Project

Safeguard Policies	
Environmental Assessment OP/BP 4.01	**Yes**
Natural Habitats OP/BP 4.04	**Yes**
Forests OP/BP 4.36	**Yes**
Pest Management OP 4.09	**Yes**
Physical Cultural Resources OP/BP 4.11	**No**
Indigenous Peoples OP/BP 4.10	**No**
Involuntary Resettlement OP/BP 4.12	**Yes**
Safety of Dams OP/BP 4.37	**Yes**
Projects on International Waterways OP/BP 7.50	**No**
Projects in Disputed Areas OP/BP 7.60	**No**

G. World Bank Grievance Redress

108. **Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring - Project 1

Country: Mozambique

Project Name: Agriculture and Natural Resources Landscape Management Project - Project 1 (P149620)

Results Framework

Project Development Objectives

PDO Statement

The proposed PDO is to integrate rural households into sustainable agriculture and forest-based value chains in the Project Area and, in the event of an Eligible Crisis or Emergency, to provide immediate and effective response to said Eligible Crisis or Emergency.

These results are at Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Direct project beneficiaries (Number) - (Core)	0	20,100	30,150	70,350	95,475	100,500	100,500
Female beneficiaries (Percentage - Subtype: Supplemental) - (Core)	50	50	50	50	50	50	50
Rural households integrated into sustainable agriculture and forest-based value chains in the targeted landscape (Number)	0	2,015	4,029	12,069	16,094	20,100	20,100
Smallholder farm households (Number) – (Subtype: Breakdown)	0	2,000	4,000	12,000	16,000	20,000	20,000
Female smallholder farm households (Number) – (Subtype: Breakdown)	0	900	1,575	4,725	7,837	9,000	9,000

Small Emerging Commercial Farmers (Number) – (Subtype: Breakdown)	0	15	22	52	71	75	75
MSME agribusinesses (Number) – (Subtype: Breakdown)	0	5	7	17	23	25	25
Completion of activities agreed in the annual strategic action plans (SAP) of the participatory multi-stakeholders Landscape Forums (MSLFs) (Percentage)	0	0	30	50	65	75	80
Community Delimitation Certificates issued (Number)	0	27	33	67	108	270	270
Area restored or re/afforested (ha) - (Core)	0.00	0.00	150.00	500.00	800.00	1,600.00	1,600.00
Area restored (ha) – (Subtype: Breakdown) - (Core)	0.00	0.00	150.00	500.00	800.00	1,600.00	1,600.00

Intermediate Results Indicators

		Cumulative Target Values					
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Smallholders implementing VCD activities and being serviced by SECFs (Number)	0	2,000	4,000	12,000	16,000	20,000	20,000
Smallholders' satisfaction with services provided by SECFs (Percentage)	0	0	0	50	0	75	75
Value Chain Development business plans implemented by SECFs (Number)	0	20	25	60	95	100	100
MSME Agribusinesses implementing approved VCD business plans (Number)	0	5	7	17	23	25	25

Beneficiaries of weather-based crop insurance (Number)	0	2,833	14,497	27,657	42,472	59,117	59,117
Area provided with irrigation and drainage services (ha) - (Core)	0	0	50	100	150	250	250
Area provided with irrigation and drainage services - Improved (ha) (Subtype: Breakdown) - (Core)	0	0	50	100	150	250	250
Roads maintained (Kilometers)	0	65	130	195	240	260	260
Clients who have adopted an improved agric. technology promoted by the project (Number) - (Core)	0	2,000	4,000	6,000	8,000	10,000	10,000
Clients who adopted an improved agric. technology promoted by project - female (Number) – (Subtype: Breakdown) - (Core)	0	400	1,000	2,100	2,800	4,000	4,000
Land area where sustainable landscape mgt practices were adopted as a result of the project (ha)	0	2,000	4,150	12,500	8,800	11,600	11,600
Smallholder yields in priority value chains (Number)	-	-	-	-	-	-	-
Maize (Number - Subtype: Breakdown)	1.50	1.70	1.90	2.10	2.30	2.50	2.50
Sesame (Number - Subtype: Breakdown)	0.80	0.80	0.90	0.90	1.00	1.00	1.00
Beans (Number - Subtype: Breakdown)	1.10	1.20	1.30	1.30	1.40	1.50	1.50
Soya (Number - Subtype: Breakdown)	1.50	1.60	1.70	1.80	1.90	2.00	2.00

Land parcels with use/ownership rights recorded as a result of the project (Number) - (Core)	0	15,000.00	37,500	75,000	120,000	150,000	150,000
Land parcels with use/ownership rights recorded as a result of project - female (Number) – (Subtype: Breakdown) - (Core)	0	4,500	13,125	33,750	66,000	90,000	90,000
Client satisfaction with land administration services (Percentage)	0	0	0	50	0	75	75
Meetings of the Multi-Stakeholder Landscape Forums (MSLF) with participation above the 70% threshold of agreed Forum representatives (Percentage)	0	50	60	70	70	80	80
Land area supported by community land-use plans (ha)	0	40,500	101,250	202,500	324,000	405,000	405,000
Time taken for first disbursement of funds requested by Government for an eligible crisis or emergency (Weeks)	0	8	8	8	8	8	8

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition and so on)	Frequency	Data Source/Methodology	Responsibility for Data Collection
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental formation. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.	Yearly	Reports	MITADER
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	Yearly	Reports	MITADER
Rural households integrated into sustainable agriculture and forest-based value chains in the targeted landscape (Number)	This indicator refers to the number of rural households able to market their sustainable agriculture and forest-based outputs year after year in the Project area as a result of the Project.	Yearly	Perception of improved access to markets disaggregated by VC, collected through surveys	MITADER and SP
Smallholder farm households	Of which smallholder farm households.	Yearly	Perception of improved access to markets disaggregated by VC, collected through surveys	MITADER and Service Provider

Female smallholder farm households	Of which female-headed smallholder farm households.	Yearly	Perception of improved access to markets disaggregated by VC, collected through surveys	MITADER and Service Provider
Small Eemerging Commercial Farmers	Of which SECFs, as defined in the PAD.	Yearly	Perception of improved access to markets disaggregated by VC, collected through surveys	MITADER and Service Provider
MSME agribusinesses	Of which, MSME agribusinesses, as defined in the PAD.	Yearly	Perception of improved access to markets disaggregated by VC, collected through surveys	MITADER
Completion of activities agreed in the annual strategic action plans (SAPs) of the participatory multi-stakeholders Landscape Forums (MSLF)	Each of the Multi-Stakeholder Landscape Forums at the Provincial levels will prepare annual strategic action plans, stating agreed activities for a given year. This indicator measures the extent to which those activities were completed.	Yearly	PIUs at the provincial level	MITADER
Community Delimitation Certificates issued	This indicator measures the number of community delimitation certificates issued as a result of the Project.	Yearly	Reports	MITADER
Area restored or re/afforested	This indicator measures the land area targeted by the Bank intervention that has been restored or reforested/afforested. The baseline value is expected to be zero.	Yearly	Reports	MITADER
Area restored	No description provided	Yearly	Reports	MITADER

Intermediate Results Indicators

Indicator Name	Description (indicator definition, and so on)	Frequency	Data Source/Methodology	Responsibility for Data Collection

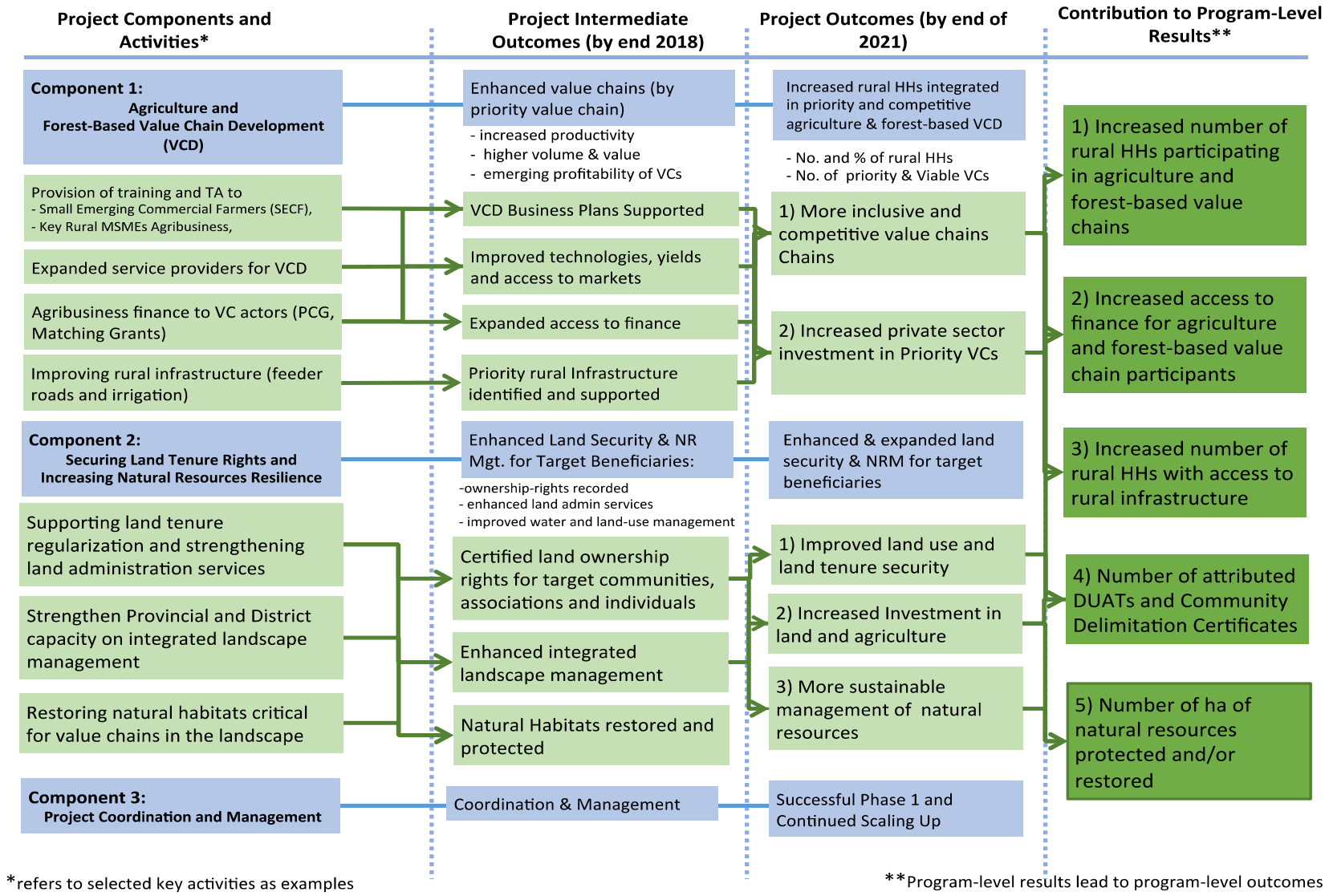
Smallholders implementing VCD activities and being serviced by SECFs	Refers to the number of smallholders reached by SECFs supported by the Project, including though the provision of inputs, extension and mechanizations services, and output markets.	Yearly	M&E system/survey	SP/MITADER/MASA
Smallholders' satisfaction with services provided by SECFs	Refers to percentage of smallholders satisfied with services provided by the SECFs supported by the Project.	Two times - MTR and final evaluation	Reports	MITADER and Service Provider
VCD business plans implemented by SECFs	Refers to business plans developed by SECFs targeted by the Project under implementation.	Yearly	M&E system established by SP and MITADER	SP/MITADER/MASA
MSME agribusinesses implementing approved VCD business plans	Refers to MSME agribusinesses implementing VCD business plans supported by financial schemes established under the Project.	Yearly	Reports	MITADER, MASA, and districts
Beneficiaries of weather-based crop insurance	Refers to the number of beneficiaries incorporated into the weather-based crop insurance scheme supported by the Project as a result of the Project.	Yearly	Reports	MITADER
Area provided with irrigation and drainage services (ha)	This indicator measures the total area of land provided with irrigation and drainage services under the project, including in (i) the area provided with new irrigation and drainage services, and (ii) the area provided with improved irrigati on and drainage services, expressed in hectare (ha).	Yearly	Reports	INIR and MITADER
Area provided with irrigation and drainage services - Improved (ha)	No description provided.	Yearly	Reports	INIR and MITADER

Roads maintained	Kilometers of all rural roads maintained as a result of the project. Rural roads are roads functionally classified in various countries below Trunk or Primary, Secondary of Link roads, or sometimes Tertiary roads. Such roads are often described as rural access, feeder, market, agricultural, irrigation, forestry or community roads. Typically, rural roads connect small urban centers/towns/ settlements of less than 2,000 to 5,000 inhabitants to each other or to higher classes of roads, market towns or urban centers.	Yearly	Reports	ANE, MITADER, and districts
Clients who have adopted an improved agricultural technology promoted by the Project	This indicator measures the number of clients of the project who have adopted an improved agricultural technology promoted by the project.		Report	MITADER, MASA, and districts
Clients who have adopted an improved agricultural technology promoted by the Project - female	No description provided.		Report	MITADER, MASA, and districts
Land area where sustainable landscape mgt practices were adopted as a result of the project	This indicator measured the land area (ha) that as a result of the Bank project incorporated and/or improved sustainable landscape management (SLM) practices.	Yearly	Reports	MITADER
Smallholder yields in priority value chains	Measures yields of smallholders reached by SECFs supported by the Project in tons/ha in priority value chains in the targeted landscape.	Yearly	Reports	MASA, MITADER, and Districts
Maize	Smallholder yields in tons/ha for maize in the targeted area.	Yearly	Reports	MASA, MITADER, and Districts

Sesame	Smallholder yields in tons/ha for sesame in the targeted area.	Yearly	Reports	MASA, MITADER, and Districts
Beans	Smallholder yields in tons/ha for beans in the targeted area.	Yearly	Reports	MASA, MITADER, and Districts
Soya	Smallholder yields in tons/ha for soya in the targeted area.	Yearly	Reports	MASA, MITADER, and Districts
Land parcels with use or ownership rights recorded as a result of the project	This indicator measures the number of land parcels with use or ownership rights recorded in the land admin system as a result of the project. The TTL should also indicate the number of land parcels with women as a record holder, either join tly or individually. The baseline value is expected to be zero.	Yearly	Reports	MITADER
Land parcels with use/ownership rights recorded as a result of project-female	No description provided.	No description provided	No description provided	No description provided
Client satisfaction with land administration services	The indicator measures the percentage of direct Project beneficiaries satisfied with land administration services in the targeted landscape.	Twice - MTR and final evaluation	Survey	MITADER
Meetings of the Multi-Stakeholder Landscape Forums (MSLF) with participation above the 70% threshold of agreed Forum representatives	The indicator measures the percentage of meetings of the provincial Multi-Stakeholder Landscape Forums supported by the Project with participation above the 70% threshold of agreed number of Forum members.	Yearly	Forum reports	MITADER and MSLFs
Land area supported by community land use plans	Refers to land area supported by micro land use plans as a result of the Project. The development of such plans occurs during the process of delimitation.	Yearly	Reports	MITADER and Districts

Time taken for first disbursement of funds requested by Government for an Eligible Crisis or Emergency	This indicator measures the effectiveness of the instrument to provide rapid access to financing to Mozambique in the event of an Eligible Crisis or Emergency. Time will be measured from the moment the Bank receives the Government's official request for assistance.	Yearly	Reports	MITADER

Figure A1.1. Mozambique: Agriculture and Natural Resource Landscape Management Project (Project 1) – Results Chain



Annex 2: Indicative Results Framework and Monitoring - Projects 1 and 2

Country: Mozambique

Project Name: Agriculture and Natural Resources Landscape Management Project (P149620)

Indicative Results Framework

Project Development Objectives

PDO Statement

The proposed project development objective is to integrate rural households into sustainable agriculture and forest-based value chains in the Project Area and, in the event of an Eligible Crisis or Emergency, to provide immediate and effective response to said Eligible Crisis or Emergency.

These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Baseline[28]	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Direct project beneficiaries (Number) - (Core)	0	20,100	60,300	140,700	190,950	201,000	201,000
Female beneficiaries (Percentage - Subtype: Supplemental) - (Core)	0	50	50	50	50	50	50
Rural households integrated into sustainable agriculture and forest-based value chains in the targeted landscape (Number)	0	3,015	9,045	21,105	28,642	30,150	30,150

[28] All baseline values are 0, since all indicators refer to values achieved as a result of the Project.

Smallholder farm households (Number - Subtype: Breakdown)		3,000	9,000	21,000	28,500	30,000	30,000
Female smallholder farm households (Number - Subtype: Breakdown)		900	3,150	9,450	15,675	18,000	18,000
Small Emerging Commercial Farmers (Number - Subtype: Breakdown)		15	45	105	142	150	150
MSME Agribusinesses (Number - Subtype: Breakdown)		5	15	35	47	50	50
Completion of activities agreed in the annual strategic action plans (SAPs) of the participatory multi-stakeholders Landscape Forums (MSLF) (Percentage)	0	0	30	50	65	80	80
Community Delimitation Certificates Issued (Number)	0	27	67	135	216	270	270
Area restored (Hectare(Ha)) - (Core)	0	0	300	1,000	1,600	2,000	2,000

Intermediate Results Indicators

		Cumulative Target Values					
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Smallholders being serviced by SECFs	0	2,000	8,000	24,000	32,000	40,000	40,000

(Number)							
Smallholders satisfaction with services provided by SECFs (Percentage)	0	-	-	50		75	75
Value Chain Development business plans implemented by SECFs (Number)	0	20	50	120	190	200	200
MSME Agribusinesses implementing approved VCD business plans (Number)	0	5	15	35	47	50	50
Beneficiaries of weather-based crop insurance (Number)	0	2,833	14,497	27,657	42,472	59,117	59,117
Area provided with irrigation and drainage services (ha) (Hectare(Ha)) - (Core)	0	0	360	560	1,130	1,700	1,700
Area provided with irrigation and drainage services - Improved (ha) (Hectare(Ha) - Subtype: Breakdown) - (Core)	0	0	360	360	730	1,100	1,100
Area provided with irrigation and drainage services - New (ha) (Hectare(Ha) - Subtype: Breakdown) - (Core)	0	0	0	200	400	600	600
Roads Maintained (Kilometers)	0	272	545	817	1,090	1,362	1,362
Clients who have adopted an	0	4,000	8,000	12,000	16,000	20,000	20,000

improved agr. technology promoted by the project (Number) - (Core)							
Clients who adopted an improved agr. technology promoted by project – female (Number (Core)	0	800	2,000	4,200	5,600	8,000	8,000
Land area where sustainable landscape mgt practices were adopted as a result of the project (Hectare(Ha))	0	4,000	8,300	13,000	17,600	22,000	22,000
Smallholder yields in priority value chains (Number) (tons/ha)	-	-	-	-	-	-	-
Maize (Number - Subtype: Breakdown)	1.50	1.70	1.90	2.10	2.30	2.50	2.50
Sesame (Number - Subtype: Breakdown)	0.80	0.80	0.90	0.90	1.00	1.00	1.00
Beans (Number - Subtype: Breakdown)	1.10	1.20	1.30	1.30	1.40	1.50	1.50
Soya (Number - Subtype: Breakdown)	1.50	1.60	1.70	1.80	1.90	2.00	2.00
Land parcels with use or ownership rights recorded as a result of the project (Number) - (Core)	0	15,000	37,500	75,000	120,000	150,000	150,000

Land parcels with use/ownership rights recorded as a result of project-female (Number - Subtype: Breakdown) - (Core)	0	4,500	13,125	33,750	66,000	90,000	90,000
Client satisfaction with land administration services (Percentage)	0	-	-	50	-	75	75
Meetings of the Multi-Stakeholder Landscape Forums (MSLF) with participation above the 70% threshold of agreed Forum representatives (Percentage)	0	50	60	70	70	80	80
Land area supported by community land use plans (Hectare(Ha))	0	40,500	101,250	202,500	324,000	405,000	405,000
Time taken for first disbursement of funds requested by Government for an Eligible Crisis or Emergency (Weeks)	0	8	8	8	8	8	8

Annex 3: Detailed Project Description

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

1. **As a basis for the Project's activities and selection of geographical areas, a VC approach has been applied with a focus on rural areas with existing and future market supply potential.** Based on extensive consultations with the private sector, farmers, processors, and other intermediaries, a number of VCs have been identified that have already proven to be competitive and that have the potential for scaling up.[29] This initial selection was made using criteria such as the sustainability and competitiveness of VCs, market connectivity, and potential for smallholder inclusion. To ensure economic and environmental sustainability, an integrated landscape management approach has been applied that combines agriculture commercialization with land rights registration and improved NRM.

2. **The key entry points for the implementation of the Project are**

(a) enhancing productive capacity and market connectivity among rural households through a network of SECFs to participate in agriculture and forest-based VCs;

(b) addressing financial access constraints of SECFs, agro-dealers, and local traders/aggregators and other MSME agribusinesses in VCD;

(c) resolving key infrastructure constraints, such as rehabilitation and maintenance of feeder roads, rural bridges, small irrigation schemes, storage facilities, and other types of priority infrastructure, that are currently limiting the expansion of agriculture and forest-based VCs;

(d) promoting cross-sectoral multi-stakeholder planning tools at the landscape level, through multi-stakeholder forums, spatial and joint planning, and monitoring tools;

(e) securing land rights and improving land administration for all key stakeholders, including communities in the landscape; and

(f) protecting natural resources (soil, water, and forests) and restoring degraded land in the landscape that are critical to the VCs being proposed.

3. **The Project is structured in four components as detailed below**.

Component 1: Agriculture and Forest-Based Value Chain Development (Project 1 US$21.0 million equivelant from IDA; Project 2 US$36.0 million)

4. **Activities under this component aim to address the constraints that currently prevent VCs from further developing and expanding.** This includes the need to (a) strengthen technical capacity and skills among farmers[30] to produce improved quality and increased quantity of selected commodities and to aggregate production for onward marketing; (b)

[29] As identified in the Mozambique Agriculture and Rural Development NLTA (2016).
[30] Farmers are defined as those who engage in primary production, including forestry products.

facilitate knowledge flow and the adoption of new technologies; (c) strengthen other important VC functions, such as financial services and risk management mechanisms; and (d) invest in critical infrastructure to enhance market access and improve yields. Support will be provided to farmers, traders/aggregators, input dealers, processors, exporters, and other VC actors. The Project will primarily use training and TA through SPs, MGs, and a PCG mechanism to support individual activities, using a demand-driven approach. Public extension agents will be incorporated into all training and activities of the SP. This will allow the public extension agents and SPs to exchange knowledge and best practices. The agriculture VCs that have been identified include poultry, maize, soya, sesame, cashew nuts, beans, oilseeds, horticulture, and non-timber forest products (honey) (the non-timber forest products to be piloted). The natural and planted forest VCs include honey, natural oils, and planted forest products such as timber and pulp.

5. To meet the above objectives, the component will support the following activities:

Provision of training and TA to SECFs and other key rural MSMEs Agribusinesses (Project 1 US$6.0 million equivelant from IDA; Project 2 US$3.0 million)

6. **The Project will promote and scale up the role of rural change agents, known in Mozambique as the SECF model.**[31] Training and TA will be provided to a network of 100 SECFs (Project 1) (and other key MSME agribusinesses with linkages to smallholder farmers) that will be identified and supported to enhance the general agronomic and agribusiness knowledge base and to promote new and improved technologies. This capacity enhancement will form an important foundation for achieving improved productivity, quality, and profitability among producers as well as local MSME agribusinesses, thus contributing to VC competitiveness and offering opportunities for improved market access and VC expansion.

7. **The benefits of SECFs' enhanced technical and business capacity will ultimately accrue to smallholder farmers, especially as the Project will cofinance demand-driven VC activities in which SECFs play a central role.** Capacity building on technical/productivity issues and managerial skills will be extended to other actors that benefit smallholders, such as MSME agribusinesses, and banks/MFIs. One of the objectives of the capacity-building activity is to generate business plans and bankable projects for financing through the Project's MG mechanism and commercial banks. These activities will focus on the adoption of improved inputs (seeds/seedlings, fertilizers, and pesticides), replanting of old tree stock (mainly cashew), mechanization, aggregation and storage capacity, VC financing, and developing market linkages (for example, out-grower schemes). For banks and MFIs, capacity building will be on systems, procedures, products, and services to scale up agricultural lending. According to current experiences with other programs (for example, DANIDA and USAID), a critical component is to assist SECFs and MSME agribusinesses with the development of managerial, financial, and technical skills. Training and TA will be provided by a Value Chain Service Provider (VCSP) hired to support the SECF network.

[31] This model, developed in Mozambique by the iDE, CLUSA, TechnoServe, and others, is based on the catalytic role of SECFs as change agents who, being successful farmers in their communities, become important providers of demonstration effects of technology adoption and farming practices. Many also double as input dealers, engage in crop aggregation and marketing, and provide mechanization services.

8. **Once selected, SECFs will be trained on good agronomic practices (that is, seed production, new land-use techniques, and CSA practices) and business and marketing skills (that is, FM, business planning, and business development).** The 'Training of Trainer' approach will be adopted so that SECFs can further train and assist their farmer clients. Training schedules will account for women's household responsibilities so as to increase their rate of participation in the Project. SECFs will be supported to establish effective demonstration plots to train smallholder farmers on the benefits of new technologies. Demonstration plots, set up by SECFs with support from the Project, will be key tools to demonstrate the effects of new technology packages per crop to both farmers and government or NGO extension workers. The demonstration plots will provide a site for training workshops and demonstration of good agronomic practices. In their role as a rural change agent and SP, SECFs will utilize the MASA extension services network. An SECF will thus have the ability to work with between 200 and 300 smallholder farmers. The model will be adapted on a pilot basis for the forest-based VCs (planted forests and non-timber forest products, such as honey and natural oils).

9. **SECFs will be trained on nutrition-sensitive agriculture.** The promotion of nutrition-sensitive agriculture by the Project will focus on household-level food and nutrition security with special attention given to women and children. Crop rotations, especially the use of legumes for home and community consumption, food diversification, and nutrition, will be promoted. Where possible, the proposed Project will promote collaborations between SECFs and rural health centers to ensure participation by women and also with any school garden production programs.

10. **The Project will support the rollout of the GoM's NAPA, 2015–2020, particularly with respect to the promotion of CSA.** This will be done in close coordination with SPs, SECFs, agribusiness and forest-based companies, and other VC actors that are involved in the selection of agricultural and forestry technology, promotion of farming practices, and other aspects of production, aggregation, and processing. The CSA principles of mitigation, enhanced productivity, and adaptation/resilience will be mainstreamed in extension services provided by SECFs. These practices will include, among others, the promotion of locally adapted drought-tolerant and short-maturing crop varieties, more efficient and effective fertilizer products, conservation agriculture techniques such as agroforestry, contour farming, mulching, reduced tillage, crop rotation, integrated pest management, and water management. Some of these practices will be implemented in conjunction with land restoration activities promoted under Component 2. Evidence suggests that CSA practices frequently lead to additional and disproportionate burden on women. The Project will devote efforts toward monitoring and tackling any gender-biased negative impacts.[32]

11. **SECFs will also be trained and supported to develop business plans.** These plans will define their business model and detail how they will provide TA, access inputs, and determine what mechanization equipment will be needed to provide mechanized services to their smallholder farmer's clients. These business plans will then be presented for potential financing (for example, under the MG scheme), commercial banks, and possible PCG. SECFs will be trained on methodologies and tools for identification, preparation, analysis, and results

[32] For example, particularly in the first few seasons, men's workloads may fall because of limited or no ploughing, while women's may increase substantially, as more weeding is normally required. The negative and disproportionate impacts on women's workload may be resolved by promoting the adoption of new roles by men (contributing to weeding, for example) within the scope of extension and TA provided.

monitoring of business plans. Consolidated methodologies and analytical tools such as FAO RuralInvest will be considered for such training efforts. Key elements will take into account (a) farmers' participation to identify business ideas and to assess feasibility, sustainability, and profitability at of project design; (b) systematic treatment of market/demand considerations, environmental considerations, TA and management aspects, cash flow assessment, proper valuation of in-kind income and costs so as to properly assess feasibility and sustainability, and proper assessment of incremental returns (with-project versus without-project situations); and (c) database systems that allow results monitoring throughout the project life cycle (from business or project proposal to fully functioning farm business or project).

12. **SECFs will constitute and/or facilitate market linkages between rural households and larger agribusinesses (anchor enterprises) in key commodities.** Additionally, in the planted forests sector, the SP to be engaged by the Project will support smallholders in starting production of forest products (access to high-quality tree seedlings and training on planting and tree maintenance techniques) and in negotiating offtake agreements of forest products (poles, planks, and so on) with companies promoting planted forests in the targeted landscape.

13. **The Project will be implemented with the support of one or more SPs who will identify, train, and support a network of 100 SECFs (average of 10 SECFs per district for Project 1).** The SP will be required to have VC expertise and demonstrated experience with timber and non-timber forest products, CSA as well as broader NRM knowledge, as well as an eligible MSME agribusiness. They will work under the coordination of the national coordination unit (the UGFI) and PIUs and work in collaboration with the Nampula and Zambézia provincial directors for agriculture (including CEPAGRI delegate), DPTADER, and the district administrators and their SDAEs and SDPIs. They will also interface with service centers/agribusiness hubs led by MASA.

14. **The network of SECFs will be identified, trained, and supported to provide support services to rural households.** The SP will be contracted at the start of the Project and will:

(a) identify SECFs to be supported in the Project districts;

(b) provide training to identified SECFs on best practices related to agronomy, CSA, business development and management, risk mitigation, and marketing;

(c) provide support to the development of VCD business plans that enable access to finance from the MG and PCG and other commercial finance institutions;

(d) establish linkages with key financial institutions supporting agriculture in the Project area;

(e) facilitate linkages between SECFs and input suppliers and output buyers and markets;

(f) identify and provide advice on opportunities related to increased value addition or impact generation; and

(g) monitor SECFs against key performance and socioeconomic indicators. The SP will be required to apply gender-sensitive approaches to all activities, from the identification of SECFs to subsequent support provided.

15. **The Project will target both male and female emerging farmers, including the recruitment of both genders as SECFs. This will allow SECFs to better address gender-specific needs and to help farmers learn the benefits of adopting improved practices, producing seed, and delivering key inputs and services to the smallholder farmers/clients.** The contracted SP will conduct rigorous capacity assessments and due diligence of potential SECFs (including site visits) to finalize the selection of SECF candidates. Key criteria will be that SECFs should have a minimum of 3–5 ha and demonstrate an entrepreneurial aptitude, technical farming proficiency, and capability to act as local role models for behavioral change (lead farmers).

16. **The SECF network will cover 10 districts, directly supporting smallholder cultivation and marketing of appropriate mixes of target crops—poultry, maize, soya, sesame, cashew nuts, beans, oilseeds, horticulture, and non-timber forest products (honey) (the non-timber forest products to be piloted).** The 200 SECFs will have the capability to provide mechanization services and access to improved seed varieties and other inputs for an estimated 40,000 smallholder farmers.

17. **The key outputs of this activity will be a network of 100 SECFs,** established and functioning, that are providing extension, TA, input provision, access to mechanization services, and established market linkages between smallholder farmers and agribusiness enterprises for key VCs; 20,000 smallholder farmers that are supported by SECFs; and 25 MSME agribusinesses with financeable business plans. Productivity and incremental income among smallholder farmers will increase with improved access to quality TA, inputs, mechanization, and access to markets.

18. **Project 1 will finance the provision of technical support to 100 SECFs and 25 MSME agribusinesses**. The inclusion of an additional 100 SECFs and 25 MSME agribusinesses within the same 10 districts will be financed by additional funding under Project 2.

Agribusiness finance to VC actors (Project 1 US$10.0 million equivelant from IDA; Project 2 US$10.0 million)

19. **The Project will support the growth of MSME agribusinesses, including SECFs, particularly in processing agricultural commodities, providing logistic services to smallholders (for example, storage, sorting, grading, and transport) and the provision of inputs.** MSME agribusinesses depend on linkages and business relationships with smallholder farmers and it is therefore in MSMEs' interest that producers improve their productive capacity. The distinction between SECFs and MSME agribusinesses is not always clear as some of the SECFs are or become integrated agribusinesses engaged in production, processing, input supply, and services. In contrast, there are many MSME agribusinesses that are not in primary crop production and specialize in processing and/or input supply and services. **SECFs and MSME agribusinesses are the critical link between the large number of smallholder farmers and**

the few large agribusinesses. SECFs and MSME agribusinesses thus become the critical missing middle in Mozambique's agricultural VC system.

20. **This activity aims to address both the demand and supply constraints that hold back credit to SECF and MSME agribusinesses.** The Project will expand access to finance and financial services for SECFs and MSMEs in the key VCs that are supported. This activity will provide and facilitate financing through MGs and PCGs and facilitate access to commercial loans for the following activities:

- **Acquisition of assets,** such as equipment, tractors, micro irrigation, and storage units, that can enable SECFs and MSME agribusinesses to (a) have an acceptable collateral for banks; (b) improve productivity, enable processing, and generate additional income; and (c) enable the provision of services to smallholder farmers (for example, hiring a tractor or renting storage space).

- **Working capital** to SECFs and MSME agribusinesses that will enable the financing of additional and improved inputs and operating costs of machinery and other assets and thus increase productivity and incomes. SECFs can also facilitate financing to smallholder farmers/clients through either input financing or MFIs and ssavings and credit cooperatives.

21. **Financing schemes.** The Project will support two financing elements for agribusinesses: MGs and PCGs, as summarized below. See Annex 12 for details on the operation of the MG scheme and the PCG fund.

22. **MG Scheme (Project 1 US$7.0 million equivelant IDA; Project 2 US$7.0 million). MGs will part-finance investments by SECFs and MSME agribusinesses for longer-term asset acquisition, such as equipment, tractors, micro irrigation, greenhouses, and storage units.** These assets will enable SECFs and MSME agribusinesses to strengthen the linkages with the many smallholder farmers in their VC/location. Based on a demand assessment carried out during Project preparation, the potential MG beneficiaries were identified to include the following: (a) network of 100 SECFs to be identified within the first 12 months of Project implementation and (b) 25 MSME agribusinesses, including input suppliers, buyers, processors, and cooperatives. Agribusiness funding will be eligible to support business plan proposals submitted by SECFs, private agribusiness firms that are vested with a legal personality in Mozambique, and cooperatives and associations that are also legally vested in Mozambique. The grant will also generate a collateral for banks.

23. **MGs will be provided through two windows:**

(a) *Small grant window*, for projects between US$5,000 and US$100,000: 50 percent grant; 40 percent loan (by commercial banks or from their own resources); 10 percent own contribution (minimum), with an expected average project size of US$80,000 (total window allocation of US$10.5 million)

(b) *Medium to large grant window*, for projects above US$100,001 and up to US$1,000,000: the additional funding above US$100,000 and up to US$1 million

will benefit from a 20 percent MG and the rest is own contribution and/or loans. Expected average project size for MSME agribusiness: US$200,000 (total window allocation of US$3.5 million)

24. **With an expected 100 SECFs and 25 MSME agribusiness beneficiaries, the MG scheme value comes to approximately US$6.5 million**.[33] The MG fund includes a reserve of US$0.5 million.

25. **The MG scheme will be implemented by a dedicated MGU in the UGFI staffed by individuals recruited competitively and on individual contracts.** The unit will be headed by an MG manager, who will report to the project-level project coordinator. This individual will have international experience. The unit will also include two grant advisors and a financial and administrative officer. Depending on the demand of the MG scheme, the unit may hire extra resources or outside consultants as needed. Selection of unit staff will be done competitively with prior review by the Bank of the TOR, short list, and proposed candidates.

26. **The VCSP will work with the applicant SECF/MSME for their business plan development and grant application, which will then be reviewed by the MGU, with final approval occurring at the level of an Investment Committee created for the Project MG scheme and PCG fund.** The Investment Committee will consist of five members that will include a representative from the FSP, the MGU manager, the UGFI, an independent agricultural finance expert, and a business community representative. All proposed members on the Investment Committee will be subject to prior review and 'no objection' by the Bank. The committee will strive to achieve gender balance. The VCSP will participate as an observer on the committee. The first 10 grants will be submitted for Bank prior no objection as well as those above threshold approvals (project size greater than US$500,000) and any repeat applications. The committee will be guided by the Project's objectives and agreed selection criteria and will be responsible to review and approve the quarterly reports. The additional details on the Investment Committee will be further defined in the PIM and the MG scheme and PCG fund manuals.

27. **SECFs and MSME agribusinesses are expected to provide the additional funds needed for the project through either own resources or a combination of own resources and bank loans.** Investments using MGs will need to demonstrate that they will benefit a significant number of smallholder farmers in the area (see Annex 12 for details).

28. **Banks are expected to provide loans to fund the investments beyond the MG as they will have 35–60 percent collateral (25–50 percent from the MG and 10 percent own contribution); thus, they will be financing an asset with a loan-to-value ratio of 65–40 percent.** The banks can do this financing from their own funds (liquidity is not a constraint in the market) and offer the financing on commercial terms. The benefits that justify the Project grant financing are that it: (a) generates a collateral that is challenging, particularly for SECFs and many MSME agribusinesses to obtain; (b) generates externalities that through the asset that it

[33] For 200 SECFs, average project size of US$80,000 with 50 percent grant results in total grant value for SECFs of US$8 million. For 50 MSME agribusiness, the first US$100,000 of project size receives a 50 percent grant and the additional US$100,000 receives 20 percent (average project size is US$200,000) resulting in total grant value for MSME agribusiness of US$3.5 million.

will generate, benefits will accrue to many smallholder farmers and not just the SECF or the MSME agribusiness; (c) creates a new business model for SECFs and MSME agribusinesses with some uncertainty regarding its returns; and (d) helps introduce SECFs and MSME agribusinesses to banks. Banks are likely to require guarantees for funding such projects because they involve new types of clients, new types of activities, and longer-term maturities.

29. **PCG (Project 1 US$2.5 million equivelant from IDA; Project 2 US$2.5 million).** In addition to MGs, the Project will establish a PCG fund for loans to SECFs and MSME agribusinesses on a first-come, first-served basis. The fund is expected to lower the risk exposure of financial institutions through a PCG arrangement and thus increase the incentives for financing agricultural activities. The fund will target the MSME agribusinesses and SECFs for their financing needs whether these are for fixed assets or for working capital. For PFIs wishing to benefit from the guarantee coverage, a prequalification process will be undertaken. Financial institution eligibility criteria will be transparent and open to all institutions that have an interest to lend to the beneficiaries of the Project (SECFs, MSME agribusinesses, and formal producer organizations). It is expected that up to 4–5 PFIs will be selected initially, though there is no limit being set and more institutions can be included as the PCG is rolled out and based on the institutions meeting the eligibility criteria. The PCG will cover 50 percent of the risk pari passu for loans to SECFs and MSME agribusinesses and it will be priced to cover the administration costs and risks it covers. However, the PCG fees will be priced so that the facility will remain sustainable after the project conclusion and will continue to serve this market segment.

30. **PCG size. For 100 SECFs with an average loan of US$60,000 at 50 percent PCG will translate into US$3.0 million guarantee coverage; and for 25 MSME agribusinesses with an average loan size of US$200,000 at 50 percent PCG will translate into US$2.5 million guarantees.** Assuming a leverage ratio for the guarantee of 1 to 2.5 (for example, US$1 million of funds for US$2.5 million of outstanding guarantees) issuing total PCGs of US$5.5 million will require US$2.2 million of funds to back these guarantees. A 1 to 2.5 multiplier ratio for this is conservative compared to international standards, including developing country contexts (where ratios of 1 to 5 or 1 to 10 are feasible), but will be prudent to start with given the pilot nature of the program. The ratio will be reviewed at MTR. The PCG fund capitalization will need US$2.2 million to back the guarantees issued (at 1 to 2.5 leverage) plus US$0.6 million for first three years administration costs of the fund and dedicated TA on the administration of guarantees, including promotion campaigns and awareness-raising events for the PCG. Total allocation for the PCG component is US$5.0 million (Project 1 and Project 2).

31. **The PCG fund will be governed in accordance with applicable Bank policies and the recently issued Principles for Public Credit Guarantee Schemes (CGSs) for MSMEs.** In line with international good practice, the PCG will be managed by a competitively selected private FSP on a performance-based contract. The FSP will be expected to have a permanent presence in Zambezi and/or Nampula Province and will report to the project coordinator and Project Steering Committee. The FSP will be responsible for (a) technical, economic, and financial appraisal of proposals; (b) identification and resolution of potential conflict-of-interest issues and fiduciary risks in the contractual agreements with SECFs and SMEs; (c) submission of recommendations for guarantee to the Investment Committee; and (d) data collection with M&E and drawing lessons for future investments.

32. **Once a proposed loan is presented to the FSP and submitted to and approved by the Investment Committee, the request for issuances will be sent to the dedicated MGU in the UGFI for the guarantee to be prepared and issued.**

33. **Agricultural insurance: Project 1 US$0.5 million equivelant from IDA; Project 2 US$0.5 million).** Given the significant weather risks that could impact production and create the inability of farmers to repay loans and/or input financing, the Project will scale up the initial pilot program, which was supported by the trust-funded Global Index Insurance Facility (GIIF) that took place between 2011 and 2013 for the cotton sector and involving the Cotton Institute, Hollard and Empresa Mocambicana de Seguros (EMOSE) (insurance companies), and two cotton companies (Olam and Sanam, out of 14 cotton concessionaires). The Project will focus on restarting and expanding the cotton program to cover more cotton farmers with the two previously participating cotton companies and also expanding to other cotton companies. The target will be to increase by 2.5 times, in five years, the amount of farmers from the original program, meaning from 43,000 to 102,000 farmers corresponding to about 40 percent of all cotton farmers. Insurance coverage will still be based on recovering input costs but at a higher amount (sum insured) than previously. Activities will consist of capacity building, funded by the GIIF (trust-funded), and risk financing (premium subsidy or stop loss) to reduce the cost to the beneficiaries that are the farmers.[34] Risk financing will be critical for the implementation of income insurance, as the cost of increasing the level of coverage is likely to increase without some government financial support and thus premiums will be supported by the Project. In addition, the Project will support a study to analyze and review the feasibility of developing revenue insurance for cotton and also the feasibility of developing weather index or revenue insurance for other important crops. This study will be funded by the GIIF trust fund. A preliminary estimated amount for risk financing/insurance is US$1.0 million. The parallel TA in the value of US$500,000–US$700,000 will be provided by the GIIF (see Annex 12 for more details).

34. **The key outcomes of this activity are the number of agribusiness and forest-based enterprises** receiving financing for market-oriented initiatives; number of business plans developed, approved (for financing), and implemented; and number of bank loans for VC business plans approved and implemented.

35. **Project 1 will finance MG and PCG support of US$10.0 million equivelant from IDA for 100 SECFs and 25 MSMEs and weather-based agriculture insurance premiums.** MG and PCG finance for the remaining 100 SECFs and 25 MSMEs will be provided by additional funding under Project 2.

Improving rural infrastructure (Project 1 US$5.0 million equivelant from IDA; Project 2 US$23.0 million)

36. **The strategic objective of this activity is to improve agriculture and forest-based VCs by enabling factors related to key rural roads and irrigation infrastructure.** This will be achieved through (a) identifying and resolving key infrastructure bottlenecks in the Project

[34] Farmers benefit indirectly from insurance and each farmer does not have an individual policy. Insurance is bought for an area where a number of farmers operate (portfolio coverage). When adverse weather hits the area and creates losses, payouts are distributed to the aggregator and then to affected farmers in the affected area.

area; (b) financing preparatory studies to identify the most critical links in a the feeder road network (core network), explore the vulnerabilities of different interventions to maintain it in stable condition and provide stakeholders with transparent information to prioritize the most robust interventions; (c) financing feasibility and design studies for ground and surface water to assess and prioritize the more relevant irrigation infrastructure needed to support the development of the selected VCs; and (d) financing the most critical roads rehabilitation and maintenance and irrigation rehabilitation and new system needs. Constraints pertaining to forests will also be taken into account. It is recognized that while they frequently overlap in nature (for example, quality assurance, industry standards, and organization), they also often require specific support.

37. **Feeder roads (Project 1 US$2.0 million equivelant from IDA; Project 2 US$6.5 million). The country's overall road network has a wide coverage, but road density is fairly low at only 2.9 km per 100 km^2 of land area, which compares unfavorably with some of its neighboring countries**, for example 10.8 km in Kenya and 5.5 km in Tanzania. Out of a total network of about 29,363 km, about 23 percent is paved, of which about 35 percent is assessed to be in poor condition, including roads in the Project's 10 districts. The road quality of nonprimary roads remains a main concern, particularly for unpaved roads. Only about one-quarter of secondary and tertiary roads are in good condition, while the rest are in poor condition and need to be rehabilitated (Table A3.1). This is mainly because of continuing infrastructure deficit, lack of maintenance, and capacity constraints to plan and execute works at the provincial level. As a result, there are large areas with substantial production potential that are being disconnected from markets with high transportation costs and few buyers. This has resulted in the creation of substantial inefficiencies in the agricultural VCs from farm production to final domestic market and export, diminishing of profit margins at all levels, and hindering of the competitiveness of local agricultural products.

Table A3.1. Road Network Length by Road Class and Condition (km)

	Paved				Unpaved			Unknown	Total
	Good	Fair	Poor	Very Poor	Good	Fair	Poor		
Primary	2,376	2,293	4	3	74	322	667	206	5,946
Secondary	431	432	0	0	358	2,111	1,346	133	4,811
Tertiary	252	250	40	0	824	6,383	3,089	1,445	12,283
Vicinal	9	38	10	0	43	2,814	2,426	983	6,323
Total	3,068	3,013	54	3	1,299	11,630	7,529	2,767	29,363
Percentage	10.4	10.3	0.2	0.0	4.4	39.6	25.6	9.4	100.0

Source: ANE.

38. **The Project will lay the ground work to improved physical linkages between production areas and markets, contributing to increased production and marketing and lower transaction costs, leading to enhanced market access among producers and VC expansion**. Priority infrastructure needs, based on market demand and VCD will be identified and designs prepared for implementation by the Project and other operations.

39. **The Project will finance preparatory studies to identify the most critical links in a network (core network), explore the vulnerabilities of different interventions to maintain it**

in stable condition, and provide stakeholders with transparent information to prioritize the most robust interventions. The studies will assess the performance of alternative network configurations and interventions under distinct variables of traffic demand and climate/extreme weather threats. The studies will use a network approach to capture system-wide benefits of different interventions and to compare purely financial decision metrics to socioeconomic ones. The Project will also finance downstream designs of the selected prioritized interventions.

40. **This activity will finance preparatory studies and designs for improvement of critical spots on economically strategic feeder roads. The criteria for road selection are related to their potential economic return (production potential, number of producers, and market linkages).** Based on these criteria, key infrastructure bottlenecks are being preidentified on commercially strategic feeder roads based on discussions with district administrators and agribusiness companies procuring substantial volumes for processing and/or export. This identification process is also being informed by the provincial and district development plans.

41. **The Project will finance spot improvements and maintenance of selected feeder roads to enhance connectivity to agricultural marketing centers**, high agricultural production areas, and the classified road network. The objective is to improve about 272.4 km of feeder roads in 10 Project districts per year, amounting to 1,362 km in five years. The actual amount of roads that can be improved will depend on the final cost estimate of the detailed engineering designs. This activity will finance preparatory activities, including design and bid document preparation of priority roads to be improved under the proposed Project and updating Environmental and Social Impact Assessments, civil works, and supervision services. Spot improvements in priority feeder roads will be done through partnerships with communities, creating jobs at district (community) level. This will contribute to diversify the sources while increasing income of rural households.

42. **The UGFI through ANE (in charge of the rehabilitation and maintenance of the entire network, including rural feeder roads) and the Road Fund (*Fundo de Estradas*) will be in charge of coordinating the road rehabilitation studies, including** (a) the final selection with key stakeholders through the district authorities; (b) the procurement process for the recruitment of private contractors in charge of the feasibility and design studies; and (c) the procurement process for the independent control and monitoring, which will be undertaken by selected contractors in coordination with ANE at the provincial level together with the director of infrastructure at the district level.

43. **Water-for-agriculture infrastructure (Project 1 US$3.0 million equivelant from IDA; Project 2 US$16.5 million).** Government authorities and private sector operators have emphasized the need for improved water-related infrastructure in both Nampula and Zambézia to unlock business development. Key needs stressed included improved small- and medium-scale irrigation infrastructure, as well as small-size dykes and dams. These are particularly important in light of the need to build resilience to climate change and should be considered depending on the VC supported and subsequent prioritization exercises.

44. **With regard to irrigation infrastructure development, the Project will focus on two major interventions:** (a) rehabilitation and modernization of existing irrigation infrastructure to increase water availability and improve irrigation efficiency; and (b) development of new

irrigation infrastructure in new areas once the specific studies or plans have been completed, including groundwater assessment.

45. **Rehabilitation and modernization of irrigation infrastructure to increase water availability and improve irrigation efficiency.** Based on a 2014 inventory undertaken by INIR, the Project has identified 40 schemes (of which 33 are owned by 758 smallholder farmers) within the Project area covering about 1,400 ha that require rehabilitation. The objective of this activity is to finance irrigation infrastructure required to increase the productivity and profitability of smallholder farmers'/EFs' irrigated agriculture. The Project will therefore assist these farmers with rehabilitation and expansion, as needed, of existing water intake structures, storage facilities, and irrigation and drainage channels. On the basis of participatory designs and the eligibility criteria for EFs, the Project will finance the costs of the schemes' rehabilitation/construction. Irrigation infrastructure development will be based on the economic viability and the sustainability of the schemes including the ability of the beneficiaries to cover the operation and maintenance costs. No infrastructure investments will be made before the local district authorities confirm that the named beneficiaries possess the correct land rights. Based on PROIRRI data, it is estimated that costs of rehabilitation are between US$8,000 and US$10,000 per ha.

46. **Development of new irrigation schemes prioritized through the river basin planning process.** There are 10 river basins in the Project area that account for almost 40 percent of the national potential irrigable land. However, limited information is available on current water uses, existing water infrastructure, and potential for further irrigation development using both surface and ground water. These river basins are periodically affected by floods and other weather-related events. On the basis of participatory river basin planning for water allocation, the Project will fund water availability assessment studies and river basin plans to promote integrated water resources management and climate-resilient infrastructure development for irrigation and other uses. Based on the outcome of the studies, the Project will finance feasibility and design studies for priority small- and medium-scale infrastructure, including reservoirs, intakes, dykes, and canals to facilitate further scale-up of irrigated agriculture. Such infrastructure is particularly important in light of the need to build resilience to climate change and will be prioritized depending on the VC to be supported and other factors to ensure economic viability and sustainability.

47. **Development of systems based on groundwater irrigation.** There is an untapped potential for groundwater exploitation in agricultural development in the Project areas. Groundwater is mainly used for domestic water supply in rural settlements and could potentially be expanded for agriculture development given the highly variable interannual rainfall and river flows and lack of regulation infrastructures. Groundwater availability will be assessed through the river basin studies. Depending on ground water availability in priority agriculture areas, the Project intends to finance the design of irrigation schemes to be funded under the MGs' activity. The estimated cost per ha on infrastructure is estimated at US$10,000 per ha, based on PROIRRI schemes.

48. **INIR (in charge of the development of irrigation infrastructure and services), DNGRH (responsible for water resources management), and ARA Centro-Norte (in change of water use monitoring and licensing) will be responsible for prioritizing the development**

of irrigation infrastructure and the technical oversight and input needed for this subcomponent. The UGFI will be responsible for the fiduciary management including procurement, FM, and environmental and social safeguards compliance.

49. **Project 1 will finance feasibility and design studies for irrigation and feeder roads as well as 250 ha of rehabilitation of irrigation schemes and 260 km of rehabilitation and maintenance of rural roads.** Additional infrastructure (that is, civil works and so on) of 1,450 ha of rehabilitation and new irrigation schemes and 1,102 km of rehabilitation and maintenance of rural roads will be financed by additional funding under Project 2.

Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience (Project 1 US$14.0 million equivelant from IDA; Project 2 US$2.0 million)

50. **The objectives of the component are: (a) to secure land tenure rights of 270 rural communities and 150,000 individuals; (b) to promote integrated landscape management in the targeted landscape; and (c) to restore 2,000 ha of critical natural habitats in the landscape.** This will be achieved by (a) supporting community land delimitation and individual land tenure titling; (b) streamlining land delimitation and titling processes at the provincial and district levels and strengthening the capacity of provincial and district offices to issue CDCs and DUATs; (c) strengthening provincial and district capacity to pursue integrated landscape management, including multi-stakeholder platforms, spatial planning,[35] and joint planning and monitoring tools; and (d) restoring natural habitats critical for the VCs in the landscape. This component will finance consultants (that is, SPs), goods, and operational costs related to delimiting communities and carrying out land titling work, providing needed inputs, equipment, and training for landscape restoration and priority civil works in the targeted landscape. The component will be organized around four main activities:

Land Tenure Regularization (Project 1 US$7.0 million equivelant from IDA)

51. **The objective of this activity is to contribute to (a) strengthening land tenure security of rural communities and individuals and (b) increasing their ability to negotiate with investors requiring land and participate in VCs.** This will be achieved through (a) supporting community delimitation[36] and individual land tenure titling (DUATs) and (b) strengthening CGRNs and other CBOs. This is expected to result in a firm base of land rights, strengthened CBOs, including with strengthened capacity to negotiate with potential investors requiring land, and the development of community-level land-use plans in the targeted landscape. This is also expected to enable broader participation in VCs and increase incentives for investments in long-term land use and for adoption of sustainable land use and sustainable NRM practices.

52. **Community delimitation offers a first step toward promoting new VC-based investments that bring real benefits to rural households along with more sustainable NRM.** The delimitation identifies where local land rights exist (the collective ones of the local communities and/or the more individualized DUATs held by households or associations) and ensure these rights are officially registered. Where communal tenure is secure, sustainable

[35] This includes the development of community-level land-use plans.
[36] The delimitation process includes the development of community-level land-use plans.

exploitation of resources is more likely to occur, while environmentally harmful projects in the area are less likely to be approved, given that potential negative impact will be experienced first-hand by community members, whose assets may be irreversibly degraded (Clarke 2009).

53. **By including the development of community-level land-use plans, community delimitation also facilitates the identification of land areas that communities are prepared to allocate to investors through negotiated partnerships or other agreements.** This reduces transaction costs related to land identification and negotiation for communities, investors, and governments. The process of delimitation also organizes and prepares community leadership and structures to negotiate partnerships and other mutually beneficial arrangements in exchange for the use of their land in the context of new VCD. These structures include the CGRNs and other CBOs.

54. **Linking the delimitation process to significant, business-oriented strengthening of CGRNs and CBOs is a key aspect of the Project approach.** Capacity building[37] provided will have a dual goal, related to strengthening their management skills and capacity to (a) transform the sustainable management of natural resources into benefits to communities—for example through activities such as nature-based tourism and forest-based VCD (timber and non-timber forest products) and (b) negotiate and implement mutually beneficial partnerships with investors interested in land or other resources available in the area. In addition to ensuring communities' benefit from ongoing private-led ventures, this will also enable attracting increased investments, by reducing the transaction costs involved in investor-community partnerships, which are an important deterrent in Mozambique (World Bank/UNIQUE 2016). More specifically, the Project will support the strengthening of organization and business management, including FM (for funds from different sources, including from donors, 20 percent from forestry or tourism, and so on), procurement, M&E, community projects design, and business plan preparation; leadership and brokerage (to establish fruitful relations with local governments and investors); NRM (for example, fire and wildlife management, soil and water conservation techniques, and community monitoring of natural resources); and CBOs' governance structures (for example, internal organization and decision-making structures, inclusiveness and participation of youth, women, and vulnerable members of the community, accountability, and regulations governing functional terms).

55. **Community land delimitation will reach over 50 percent of communities in the Project area (estimated at 450 communities in total, with over 100 of them already delimited).** Sequencing of LTR activities will take into account the concentration of SECFs. Where appropriate, these SECFs will be prioritized for individual LTR support, creating incentives for increased and more sustainable investment in their respective land. More broadly, the Project is expected to support the issuance of about 150,000 DUATs contributing significantly to the 5 million target established in *Terra Segura* for the period 2015–2019; in addition to 270 CDCs.

56. **Gender aspects will be taken into consideration in the support provided to the issuing of community, family group, and individual land titles.** According to Mozambique's

[37] Capacity-building activities will be guided by the ongoing NLTA on Land and Community-based Natural Resources Management.

Land Law, customary rules and governance structures within collective holdings may be used as long as they do not contravene principles of the constitution, which include gender equality in land ownership. However, implementation of this principle has shown to be lacking. In Mozambique's rural areas, customary laws favor male access/control over land, with women having particular difficulties in defending their rights in the delimitation process, particularly when this is carried out as a step toward attribution of land use to investors (DAI and Nathan Associates 2014). Within the scope of the Project, gender-responsive practices, such as ensuring that both husbands' and wives' names, as well as those living in consensual union or married under customary or religious law, are listed on land documents and registered, will be mainstreamed.

57. **Community land-use plans will provide an important, participatory, and bottom-up basis to feed into district- and provincial-level land-use plans.** The community land-use plans will contribute to spatial planning efforts in the Project area, as information gathered during the delimitation process will feed into any relevant district- and provincial-level spatial planning activities. This could enable better decision-making with regard to the allocation of land to investors, taking into consideration land already zoned for investment by communities during delimitation.

58. **The outputs of this activity will be delimitation of an estimated total of 270 local communities, including the preparation of community land-use plans and strengthening of CBOs, and issuance of an estimated 150,000 DUATs.** Financing will be provided for consultants, goods, and operational costs. The LTR activities (gathering data for issuing DUATs and community land certificates, preparation of community land-use plans, and strengthening of CBOs) will be implemented mainly by SPs recruited by the UGFI, working in close coordination with the DPTADER and the district authorities, particularly at the cadastral services.

59. **The Project will finance 150,000 DUATs and 270 CDCs**.

Strengthening land administration services (Project 1 US$2.0 million equivelant from IDA; Project 2 US$1.0 million)

60. **The strategic objective of this activity is to** (a) improve the competencies of the provincial and district cadastral officers and national-level DINAT staff assigned to the Project activities and (b) strengthen the capacity in land administration services.

61. **The delivery of CDCs and individual DUATs are heavily dependent on District Cadaster and Land Registration Services and the Provincial Services of Geography and Cadastre (*Serviços Provinciais de Geografia e Cadastro*, SPGC) in Mozambique.** When existing, District-Level Cadaster and Land Registration Services play a key role in process orientation, as well as in the compilation and transfer of documents to SPGCs (provincial level) after land surveying is carried out, normally with support of a private surveyor. SPGCs receive, verify, and transfer the documentation to the provincial governor (below 1,000 ha), MITADER's minister (above 1,000 ha and below 10,000 ha), or council of ministers (above 10,000 ha), who are responsible for signing off on the process. SPGCs may then issue the official title document (DUAT) and register the information in the mapping cadaster. Subsequently, they revert the

document to the district for delivery to end beneficiaries (communities, associations, and individuals).

62. **SPGCs and district officers play an important role in quality control of the work that will be performed by SPs in LTR activities, in addition to supporting dispute-resolution mechanisms**. They will be trained in (a) community land-use plans; (b) operationalization of simplified and updated LTR and delimitation methodologies, data capturing and registration, certificate and title issuing procedures, and integration of community land-use plans into district-level land-use plans; and (c) land dispute resolution so as to reduce the number of conflicts at the end of the delimitation/registration process. Training sessions given in the Project area will be professionally recorded for utilization by all SPGC and district staff throughout the country. Because SPGCs and district offices are underequipped and without reliable access to the official registration system, the Project will support the acquisition of required equipment, aligned with the roles and responsibilities of SPGCs and district offices.

63. **Support to the national system to administer land information in Mozambique - SIGIT.** Ensuring that Mozambique's land information and management system is functioning well with linkages across district-, provincial-, and central-level institutions will strengthen the land tenure security of rights-holders. Therefore, the implementation of a single land information and management system at district, provincial and central levels is part of the *Terra Segura* Program and should result in increased transparency and accountability and in reduced transactions costs related to the formalization of rights or access to land by individuals, families, communities, and private investors. The Government, with support from donors, has been working on SIGIT[38]—the registration system developed to gather, process, organize, update, and make available land information on all DUATs in Mozambique. SIGIT is currently accessible only in provincial offices, and the Government has limited capacity to manage it. In partnership with other donors, the Project will support the application of SIGIT (or any other land administration system the government adopts) in the Project area provincial and district offices.

64. **The outputs of this activity will be** better trained staff, better equipped human resources and offices in the targeted area; and an improved registration system supporting both immediate and medium-term needs. The Project will finance consultants, operational costs, and goods (information and communications technology and other equipment needed for the effective functioning of the national land administration system and DINAT) and the purchase of geospatial data.

65. **The Project will finance training of relevant staff at the recipient's district and provincial levels and the upgrading of the land administration system**, and infrastructure rehabilitation for critical district and provincial land administration offices will be financed by additional funding under Project 2.

[38] The system allows for near real-time access to the data registered in all provinces (based on paper files sent by districts) in the country, as well as in 8 municipalities. It enables generating aggregated reports, applying filters, querying for titles, validation, as well as the visualization of title boundaries and data geolocation. The system is based on Oracle, Java, and ArcGIS. Servers are set up in all provinces, and the maintenance and help desk are provided by the developing company, EXI.

Strengthening capacity on integrated landscape management (Project 1 Total US$1.0 million equivelant IDA)

66. **The strategic objective of this activity is to enhance the local capacity of several public and private sector stakeholders** (provincial and district governments, private sector entities working on land use, and civil society organizations) **to utilize tools related to integrated landscape management.** This includes multi-stakeholder coordination, spatial planning, and landscape-level monitoring. The utilization of these tools will contribute to ensuring that the agriculture and forest-based VCs that are developed enhance the sustainability and resilience of the natural resources (soils and water) on which they depend. Spatial planning tools allow for land-use decisions in the targeted landscape to be made considering their impacts on natural resources and rural households. The establishment of effective multi-stakeholder forums at the provincial level is expected to allow a common vision for the management of the landscape to be negotiated among stakeholders across the landscape, which should also contribute to better land-use decisions, particularly important as pressure for agriculture and forestry expansion increases. Landscape-level monitoring contributes to strengthen synergies across initiatives occurring in the landscape. The following are the main subactivities to be supported:

67. **Strengthening of MSLFs on land use in Nampula and Zambézia.** Integrated landscape management entails a continued process of negotiation across several stakeholders with different interests on how a given landscape should be used and managed. Experience has shown that a well-functioning forum that brings together the government, private sector, and civil society can provide the venue for stakeholders to build a common vision on how resources should be used and devise self-enforcing rules (see section III.E). The Project will support existing structures to serve as this forum. This permanent multi-stakeholder forum will enable building a shared common vision about the management of the landscape (what areas should be protected or restored, what priority economic activities should be pursed where, and so on) across stakeholders and break down this 'vision' into implementable SAPs that will be monitored. The forum will also allow continued reflection on the extent to which this vision is being achieved. Such a forum has been established in Zambézia as part of the ongoing REDD+ process, with representation of several provincial and district-level government authorities, civil society organizations, and the private sector (logging concession holders and forest and agriculture firms), and will be further strengthened through the Project. The Project will implement provisions to ensure the participation of women, youth, and other vulnerable groups in the forum, which will be considered a key aspect when assessing its performance.

68. **Spatial planning at the provincial, district, and watershed levels.** Spatial planning allows trade-offs over land allocation to be discussed among stakeholders and better decisions to be made. Spatial tools can inform land-use planning, by bringing state-of-the-art technologies and information to the discussions. This subactivity will support land use at provincial, district, and watershed levels by financing capacity-strengthening interventions (staff training, knowledge exchange, and so on) and office equipment. Efforts will also be devoted to the development of spatial planning capacity (including GIS). Building on the skills supported by the Project, the two DPTADERs will be expected to maintain a GIS database for the landscape, which will inform Project implementation and other decisions concerning the area. These activities will also be coordinated with the river basin plans mentioned under Component 1.

69. **Landscape-level planning and monitoring will be promoted to ensure better coordination of initiatives active in the landscape.** The 10 targeted districts have limited capacity to coordinate projects (planned and under implementation) in multiple sectors that have direct effect on land use, as well as to monitor ongoing initiatives in areas such as agriculture and forestry. Hence, district-level landscape facilitators (district directors of MITADER) will partially fulfill these roles. They will benefit from required capacity building, including with regard to GIS-based spatial planning, joint planning (with other stakeholders), and monitoring.

70. **The outputs of this activity will be the establishment and maintenance of an MSLF in the two targeted provinces; training and workshops provided to DPTADER in Nampula and Zambézia; trainings and workshops to district government staff including the district-level landscape facilitators; and establishment of a landscape GIS database to inform Project implementation and other decisions concerning the area**. Financing will be provided for operational costs of the MSLF, including communication material preparation, workshops, and annual meetings; staff training, and capacity building of DPTADER, as well as equipment needed for its effectiveness; and recruitment, training, and basic equipment for district landscape facilitators. The PIUs in Nampula and Zambézia will be responsible for ensuring the forums are operational, implementing the capacity-building activities, and coordinating with the targeted districts.

71. **The Project will finance training of MSLFs,** promoting the use of spatial tools and equipment needs for provinces and districts for integrated landscape management and training to relevant recipient staff at provincial and district levels.

Restoration of natural habitats critical for the VCs in the landscape (Project 1 US$4.0 million equivelant from IDA; Project 2 US$1.0 million)

72. **This activity will restore degraded lands that are critical for the VCs promoted by the Project.** Restoration of degraded land is expected to protect the productivity of topsoil, reduce erosion, and provide biological corridors for biodiversity. Critical areas for restoration will be identified through spatial analysis and participatory tools and are currently being applied to the targeted landscape.[39] These tools aim to identify the most viable and effective areas within a landscape to be protected and restored, within the overall goal being pursued in the landscape. In the Project, this means protecting and restoring natural resources and land that the VCs depend on—particularly soils and water. These tools draw on the latest technologies for spatial analysis and emphasize multiple stakeholders' involvement in land-use planning to ensure broad buy-in for the proposed conservation and restoration measures.

73. **Natural resources protection will be pursued through the involvement of local communities and private landowners in NRM, with potential partnership with the private sector**, including SECFs and MSME agribusinesses, anchor enterprises, and local governments. Ongoing Bank analytical work on community-based NRM has identified the most important elements to ensure community support to NRM—including clear roles and responsibilities

[39] The Project is currently applying the Restoration Opportunities Assessment Methodology, produced by the International Union for Conservation of Nature and the World Resources Institute. It provides a flexible and affordable framework approach for countries to rapidly identify and analyze land restoration potential and locate specific areas of opportunity at a national or subnational level.

among community members to manage common resources, concrete benefits from NRM shared among community members, and transparent decision-making mechanisms. These will be applied in the priority area to be identified.

74. **Restoration of degraded land will include assisted natural regeneration, active enrichment planting with native and exotic species for conservation and domestic and commercial uses.** Assisted natural regeneration has low costs and is well suited for miombo forests given their regenerative capacity. Enrichment planting is needed in highly degraded areas or to ensure that certain species are part of the new emerging forests. Plantation with natural species has been tested at very small scale in Mozambique, with experiences in Gorongosa and with forest concession holders (refer to section III.E), but offers a unique opportunity for the valuation of natural forest products, as seen in other countries (such as in Brazil, with the experience with Brazilian mahogany or *paricá* in the Amazon). This type of plantation could be intercropped with exotic high-growth species, such as eucalyptus, to increase the economic feasibility.

75. **Restoration can itself be viewed as a VC.** It involves the sourcing of seeds from farmers and/or the government, the establishment of private, community, or government-led nurseries, transportation of planting material, planting on the ground, maintenance and management of planted areas over several years (weeding, fire protection, fencing, and so on), and finally harvesting. The Project will pilot different techniques of land restoration in the landscape, which could be scaled up in future projects in the SoP. This could generate economic models of restoration with application beyond the targeted landscape, particularly in other dryland countries (Tanzania and Zambia, for instance) because there is limited knowledge on the topic worldwide.

76. **The targeted landscape is home to important biodiversity hotspots with different degrees of protection.** Some are legally protected and have an active administration, such as the GNR,[40] managed by ANAC, others have legal status but no active administration such as the MFR,[41] while others currently have no formal protection status, such as Mount Namuli.[42] Some of these biodiversity hotspots, including Mount Namuli and the MFR, are heavily threatened

[40] Established in 1932 and comprising an area of 2,861 km^2, the GNR is "a unique protected area in the Zambézia Province, Northern Mozambique. The reserve offers exceptional biodiversity and hosts various critically endangered species. Heavily damaged during the civil war period the reserve now faces growing pressures on its natural resources. Of great interest is the granitic inselberg habitats which are either inside or around the GNR" (World Bank. 2014).

[41] The MFR "is situated in the north of the Nampula Province. It forms a triangle with the apex of the triangle pointing to the north and the lower-left corner of the town of Mecuburi. The area covered by the Mecuburi Forest Reserve is presently 195,400 ha. The topography is gently undulating with a number of drainage lines running toward the Mecuburi River, which crosses the reserve from the southwest corner toward the middle of the eastern boundary. The soils are mainly sand grading to clayey loams in some places" (Müller, Sitoe, and Mabunda 2005).

[42] At 2,419 m, Mount Namuli "is the high point of a massif and associated granite peaks situated near Gurué town, Zambézia Province in north-central Mozambique, and the second-highest peak in the country. It is surrounded at lower altitudes by extensive tea plantations, now being rehabilitated, and has perhaps the best agro-ecological conditions in the country. Increasingly, people are settling in the area and slowly encroaching up the slopes. Although recognized for many years as being of particular biological interest, Namuli is not formally protected, is little-explored and the conservation threats to its biodiversity have not yet been properly documented. The massif supports extensive areas of montane forest and grassland, both habitats rich in biodiversity and of limited extent in southern Africa and habitats that are under increasing threat" (Timberlake et al. 2009). For more information on Namuli, see *Mt Namuli, Mozambique: Biodiversity and Conservation* (Idem. 2009).

with encroachment by local communities, shrinking habitats because of natural habitat conversion driven by slash and burn agriculture and/or unsustainable fuelwood collection, and high-value timber extraction. These areas will be given special attention during the selection of the critical areas to be restored.

77. **The outputs of this activity will be** restoration of 2,000 ha[43] of degraded land in critical areas for the VCs; identification of efficient and cost-effective technologies to restore degraded land with the potential for scaling up; and awareness campaigns on the importance of critical natural habitats. An SP will be hired to support the restoration activities, working in close coordination with DPTADER and district authorities.

78. **Project 1 will finance the restoration of 1,600 ha of degraded lands. Additional funding under Project 2 will finance the restoration of an additional 400 ha of degraded lands**.

Component 3: Project Coordination and Management (Project 1 US$5.0 million equivelant from IDA; Project 2 US$2.0 million)

79. **This component includes activities related to project coordination and management, fiduciary management, safeguards management, M&E, and communications.** A project coordinating unit, the UGFI, has been established at MITADER, with significant capacity at the national level. PIUs comprising four technical staff each have been hired to oversee the implementation of the operation in each province. MITADER's provincial and district directors will carry out the function of landscape facilitators at the provincial and district levels. Further details of the role and functions of the UGFI and PIU members are detailed in Annex 4.

80. **The objective of this component is to coordinate and monitor project activities and manage financial and human resources in an efficient and results-oriented manner, in accordance with the Project's objectives and fiduciary procedures.** To achieve this objective, the component will support activities related to project coordination and management including costs related to the work undertaken by SPs and other types of TA and consultant services both at the central and at the provincial/district level and will finance the necessary project audits, MTR, and other studies as per the AWPs and budgets. The component will also be responsible for costing and financing all office equipment. The component also includes resources for the preparation of the subsequent project of the SoP as part of the Mozambique Landscape Management Program.

81. **Coordination and supervision of all Project activities, including management and monitoring of contracts and oversight of field activities implemented by SPs, contracted private sector operators, technical assistants, and consultants, include**

- oversight of compliance with social and environmental safeguards policies;

[43] The Project is also promoting the adoption of sustainable land management practices (agro-forestry, low tillage, mulching, and so on) among the smallholders to be supported by the SECF. It is expected that 20,000 ha will adopt sustainable landscape management practices, in addition to 2,000 ha restored.

- interministerial consultations and interagency coordination, in particular with MASA, MOPHRH, MIC, and relevant subnational development agencies in the Project area;

- development of a communication strategy, communication tools, and stakeholders consultations; and

- quality oversight through independent financial and technical audits.

82. **Institutional development. To ensure sustainability of its interventions in the different components, the Project will support institutional development among relevant institutions.** Cross-cutting activities at central and local levels will include strengthening the capacities of key public and private sector entities in various aspects (for example, planning, budgetary, and M&E capacities with regard to systems and competencies, especially to promote integrated landscape management).

83. **The outputs of this activity will be** overall coordination of project implementation including preparation and implementation of activity plans and budgets; M&E of activity implementation and update information on project progress in all Project components and indicators; and preparation and management of, and full compliance with, the project procurement plan and FM in accordance with Bank procedures and guidelines. The Project will finance consultants, goods, and operational costs; Project Coordination Unit and PIUs operational costs (including salaries, travel expenses, rent, office equipment, and so on); development of a communications strategy; capacity building for involved public and private sector entities in key themes (for example, planning, budgeting, M&E, and integrated landscape management); consultancy to undertake the Project's baseline studies and analytical work needed for the preparation of the second project in the SoP; environmental and social safeguards implementation; stakeholder consultations and meetings; and a SP to carry out independent technical and financial audits.

84. **Project 1 will finance the establishment and operation of the UGFI and PIUs in the targeted provinces for the duration of the Project.** The preparation of the second project of the SoP (Landscape Program) will be financed by additional funding under Project 2.

Component 4: Contingency Emergency Response (US$0.0 million)

85. **This component will provide immediate response in the event of an eligible crisis or emergency.** By including a 'zero-dollar' Contingency Emergency Response Component, the Project can finance emergency works in case of a disaster event. Following an adverse event that causes a major disaster, the GoM may request the Bank to channel resources from this component into an IRM. The IRM will enable the use of a portion of uncommitted funds from the overall IDA portfolio to respond to emergencies. Specific details around this component (including activation criteria, eligible expenditures, and specific implementation arrangements, as well as required staffing for the coordinating authority) will be defined in greater detail in the IRM Operations Manual, which will go through a consultation and clearance process.

Table A3.2. Activities, Key Outputs, and Implementers

Activities	Key Outputs	Implementers
Component 1: Agriculture and Forest-Based Value Chain Development		
Provision of training and TA to SECFs and other key rural MSMEs agribusinesses	• Network of 200 SECFs established and functioning	• VCSPValue Chains Service Provider
Agribusiness finance to VC actors		
• MGs	• Number of SECF business plans developed and approved (for financing)	• Financial services SP
• PCG scheme	• Number of bank loans for VC business plans approved	• Financial services SP and participating banks
• Weather-based insurance	• Number of beneficiaries of weather-based insurance	• Insurance companies (Hollard and EMOSE)
Improving rural infrastructure		
• Rehabilitation of feeder roads	• Number of km of rehabilitated roads	• ANE; *Fundo de Estradas*; and contractors
• Water-for-agriculture infrastructure	• Number of ha of irrigation schemes rehabilitated • Number of new irrigation schemes	• MOPHRH; INIR; and contractors
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience		
Land Tenure Regularization	• Harmonized and simplified methodology aligned with the fit-for-purpose land administration approach	• DINAT
	• Number of CDCs and individual DUATs issued • Number of community land-use plans and CBOs strengthened	• LTR SP
Strengthening land administration services	• Key staff trained	• Land capacity SP
	• Improved registration system supporting both immediate and medium-term needs	• DINAT
	• Equipped human resources and offices in the target area	• UGFI
Strengthening capacity on integrated landscape management	• Strengthened MSLFs • Key DPTADER and district staff trained on spatial planning and integrated landscape management	• Landscape management SP with local academia
	• GIS database to inform Project implementation and other decisions concerning the area	• District-level landscape facilitators and DPTADER
Restoration of natural habitats critical for the VCs in the landscape	• Restoration of 2,000 ha of degraded land in critical areas for the VCs	• Restoration SP, communities, and private sector
	• Efficient and cost-effective technologies to restore degraded land • Awareness campaigns on the importance of critical natural habitats	• Restoration SP
Component 3: Project Coordination and Management		
Project coordination	• Overall coordination of Project implementation • Activity plans and budgets • Updated information on Project progress and results	• UGFI and PIUs
Component 4: Contingency Emergency Response		

Annex 4: Implementation Arrangements

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

Institutional and Implementation Arrangements

1. **MITADER will be responsible for overall strategic guidance and will coordinate project implementation.** The recent creation of the new ministry offers an excellent opportunity to bring land management and administration, community development, and agricultural investment together within a single, integrated project. The lead agency for project coordination in MITADER will be the UGFI. The following national directorates within MITADER will be involved in coordinating project implementation: DINAT, National Directorate of Rural Development, and National Directorate of Forests. When appropriate, the UGFI will work with the following national directorates in other line ministries: MASA through DNAS, DNEA, INIR, and CEPAGRI; MOPHRH through ANE and DNGRH; and MIC through the National Directorate of Commerce (*Direcção Nacional de Comércio*). Each of the above national directorates will appoint a project focal point who will be available to interact with the UGFI on a regular basis for technical discussions. In particular, the focal points will participate in the preparation of the AWPs and budgets, annual progress reports, and TOR in their respective areas of expertise and contribute to the supervision of the actions under their areas of responsibility.

2. **Project oversight. A Steering Committee will be responsible for strategic guidance of the Project.** The Steering Committee will be responsible for overall Project oversight and guidance. Specific tasks of the Steering Committee will include approving the AWP, MTR report, and end-of-project report. The Steering Committee will meet twice a year and will hold extraordinary meetings when necessary. The committee will be chaired by the minister of MITADER and will have the following composition: one of the national directors, appointed by the respective ministers: Land, Rural Development, or Forests from MITADER; Agricultural Services and Planted Forests, Agricultural Extension, Irrigation Institute, or CEPAGRI from MASA; National Roads Authority or National Water Resources from MOPHRH; and Commerce from MIC. The UGFI coordinator will serve as the secretary. The provincial directors of DPTADER of the project provinces and the director of ARA Centro-Norte will be part of the Steering Committee, as observers.

3. **Project management. The day-to-day project management will be led by the UGFI at MITADER.** At the central level, the UGFI will be responsible for the management of fiduciary issues, in conformity with the standards and requirements contained in the Legal Agreement agreed with the Bank and will be tasked with the day-to-day management of all project activities, including technical supervision and coordination, overall project planning, quality oversight, communication, reporting, procurement, FM, issuance of guarantee certificates under the PCG fund, and monitoring of project activities. The UGFI coordinator will serve as the overall project coordinator, and the UGFI project management team will comprise a financial manager, a procurement specialist, and an accountant, as well as an M&E officer, communication specialist, and technical specialists for coordination in the following areas of expertise: land, forestry, VCs, rural development and irrigation, and administrative staff. Additional staff for the MGU will include an MG manager, two grant advisors, and a financial and administrative officer. Technical design and supervision of the irrigation infrastructure and

services development will be led by INIR. DNGRH and ARA Centro-Norte will provide technical input and oversight to INIR for the water availability assessments.

4. **At the provincial level, implementation of project activities will be coordinated by the DPTADER,** through a provincial project coordinator in each project province and technical specialists as needed, which will make up the PIUs. The provincial project coordinators will coordinate and monitor progress in project implementation at the provincial level and propose decisions in line with the project objectives and institutional arrangements. They will report to the UGFI coordinator at the central level and will keep the DPTADER director informed about project implementation. In addition to housing the PIUs, DPTADERs will serve as 'Landscape Coordination Units,' responsible for (a) coordination of different initiatives across the provincial landscapes (including both state and nonstate projects and programs with significant impact on the landscape) and (b) ensuring that environmental and social considerations are taken into account when interventions are implemented in the area (for example, commercial agriculture impact on forest cover and critical natural habitats).

5. **Activity implementation on the ground will primarily be handled by SPs** with the involvement of local technical staff at the provincial directorates of MITADER, MASA, MOPHRH, and MIC and with the district administrator and SDAE and SDPI units and a MITADER unit, to be created, at the district level. The SP's work at the provincial and district levels will be supervised by the provincial coordinators in coordination with DPTADERs and district units. Each district administrator will be the champion of the Project in the respective district, and the SDAE director will be the focal point. The district administrator will be responsible for ensuring coordination across the various district units.

6. **The provincial MSLFs supported by the Project will play an important role in project coordination and integrated landscape management.** The two provincial MSLFs will bring together stakeholders on relevant issues in the landscape, including NRM challenges and land-use trade-offs. PIU coordinators, in partnership with DPTADER, will provide support to the respective forum secretariats and assist members in the development of annual SAPs, which will enable monitoring activities and tracking performance against clear goals established in a participatory manner. SAPs will include annual project activities and their linkages with activities planned by other stakeholders, will assess the work of SPs, and will provide recommendations for improving performance. MSLFs and SAPs will thus contribute to fostering project ownership and awareness among landscape stakeholders, as well as orient strategic efforts and create synergies within the project area.

7. **Implementation arrangements for the MG scheme and PCG fund.** The MG and PCG will be governed in accordance with applicable Bank policies and the recently issued Principles for Public CGSs for MSMEs. In particular, the MG scheme will be managed by an MGU created in the UGFI and staffed by individuals recruited competitively and on individual contracts. The MGU will be headed by an MG manager, who will report to the overall project coordinator. This individual will have international experience. The unit will also include two grant advisors, plus a locally recruited financial and administrative officer. Depending on the demand of the MG scheme, the unit may hire extra resources or outside consultants as needed. Selection of MGU staff will be carried out competitively with prior review by the Bank of the TOR, short-list, and proposed candidates.

8. **The VCSP will work with the applicant SECF/MSME to support their business plan development and grant application, which will then be reviewed by the MGU.** Final approval of grant applications will be managed by an Investment Committee created for the Project MG scheme and PCG fund.

9. **The Investment Committee will consist of five qualified members to include a representative from the FSP, the MGU manager, the UGFI, an independent agricultural finance expert, and a business community representative.** The TOR and selection of all proposed members of the Investment Committee will be subject to the Bank's prior review and no objection. The Investment Committee will strive to achieve gender balance. The VCSP will participate as an observer on the committee. The first 10 grants will be submitted for the Bank's prior review and no objection as well as those above threshold approvals (project size greater than US$500,000) and any repeat applications. The committee will be guided by the Project's objectives and agreed selection criteria and will be responsible to review and approve the quarterly reports. The additional details on the Investment Committee will be further defined in the PIM and the MG scheme and PCG fund manuals.

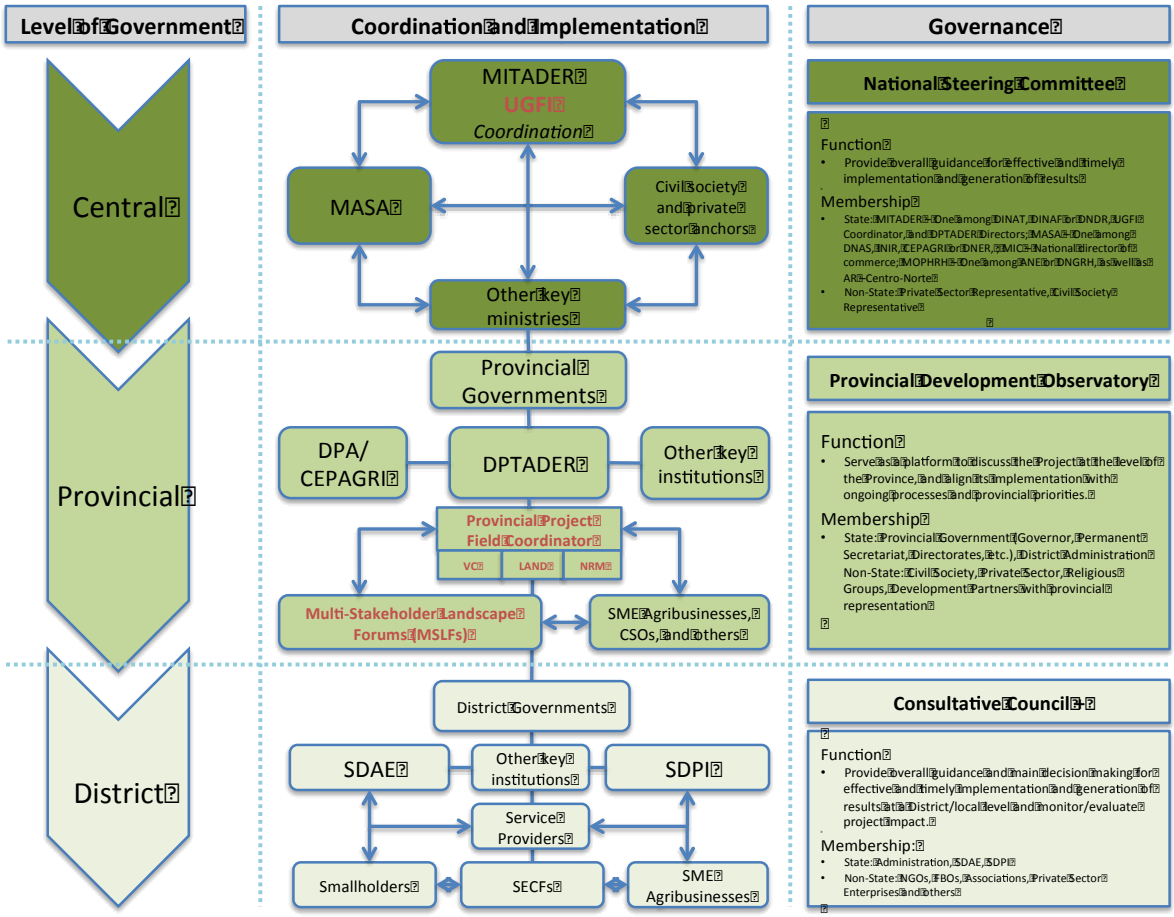
10. **The FSP will be expected to have a permanent presence in Zambezi and/or Nampula Provinces and will report to the project coordinator and Project Steering Committee**. The FSP will be responsible for (a) technical, economic, and financial appraisal of proposals; (b) identification and resolution of potential conflict of interest issues and fiduciary risks in the contractual agreements with SECFs and MSMEs; (c) submission of recommendations for guarantee to the Investment Committee; and (d) data collection with M&E and drawing lessons for future investments.

11. **Once a proposed loan is presented to the FSP and submitted to and approved by the Investment Committee,** the request for issuances will be sent to the dedicated MGU in the UGFI for the guarantee to be prepared and issued.

12. **An Operational Manual for the PCG will be developed and approved by the Bank before disbursement for the fund that will detail governance structure, implementation arrangements, borrower selection criteria, guarantee issuance, claims processing, reporting, and monitoring requirements.** The sustainability of the PCG will be sought to be maintained through an appropriate structuring of the fees and efficient management of the guarantee reserve funded investment portfolio. The risk sharing fees, which will be used for covering the operating expenses of the PCG, together with the investment income from the portfolio investments, are projected over time to cover the costs of the PCG and enable it to function as a sustainable facility beyond the project period.

13. **The proposed project organogram is presented below.** The structure's underlying principles are (a) to build on and strengthen existing government structures and systems, thereby avoiding the creation of parallel structures, while promoting capacity development of relevant stakeholders; (b) to find the right balance between implementation and accountability; and (c) to foster a sense of ownership by provincial and district-level entities, and to involve key state and nonstate actors.

Figure A4.1. Project Organogram



Financial Management, Disbursements, and Procurement

Financial Management

14. **FM assessment. An FM assessment was conducted in accordance with the Financial Management Manual issued by the Financial Management Sector Board in March 2010.** Its objective was to determine whether the UGFI has acceptable and adequate FM arrangements to ensure (a) reliability of financial reporting; (b) effectiveness and efficiency of operations; and (c) compliance with legal covenants, laws, and guidelines. The conclusion of the review of the proposed FM arrangements was that the overall FM risk rating of the Project is Moderate. The UGFI will, however, need to implement the following mitigating measures to the identified risks, including the elaboration of an FM Procedures Manual as part of the PIM, registering the Project in the Government's budget for use of country systems such as the Single Treasury Account (*Conta Única do Tesouro*, CUT) and the Government's Integrated Financial Management Information System (IFMIS).

15. **FM arrangements. MITADER, through the UGFI, will be the lead coordinating agency for the Project.** The overall responsibility for project FM implementation will rest with the UGFI, a public entity that is already staffed and has some experience in handling Bank-

financed operations (REDD+ and Project Preparation Advance [PPA] for this operation) and is therefore becoming familiarized with the Bank's procedures, including disbursements and reporting. The UGFI will also be able to seek support and advice from the National Sustainable Development Fund (*Fundo Nacional de Desenvolvimento Sustentável*, FNDS), which is also a public entity housed in MITADER that is fully staffed and has experience in handling Bank-financed operations. The Project will use the country's FM systems for budgeting, accounting, internal controls, funds flow, financial reporting, and auditing as outlined below.

16. **Budgeting. Budgeting, budgetary control, and budget revisions will follow national procedures requiring that the project budget is included as part of MITADER's budget and approved by parliament.** In coordination with all government project stakeholders such as DNAT, National Directorate of Rural Development (*Direcção Nacional de Desenvolvimento Rural*), and National Directorate of Forests from MITADER and DNAS and CEPAGRI from MASA, AWPs and budgets will be prepared in line with Mozambique's budget preparation cycle. The Project's AWPs will need to be approved by the Project Steering Committee during one of their two annual meetings and subsequently by the Bank by no later than November 1 each year. To be able to make use of the country's FM systems, the Project's budget will need to be registered with the National Directorate of Budget (*Direcção Nacional do Orçamento*, (DNO) and National Directorate of Treasury (*Direcção Nacional do Tesouro*, DNT), soon after signing of the Financing Agreement but before project effectiveness. Budget monitoring will take place directly on the Financial Administration System of the State (*Sistema de Administração Financeira do Estado*, e-SISTAFE); however, the Project may also make use of an accounting software given that e-SISTAFE follows the government's economic classification and not necessarily by component/subcomponent/activity.

17. **Internal control and accounting procedures. A significant strength is that, the internal controls and accounting will similarly be based on the national procedures.** Both MITADER and MASA have their own internal control oversight bodies, *Inspeção Geral da Agricultura* and *Inspecão Geral do MITADER*, which are responsible for carrying out independent and objective assurance about the ministries' operations. It is expected that project activities will be part of the audit plans of the two inspectorates to ensure they add value to the project operations. The Ministry of Economy and Finance also has its own *Inspeção Geral das Finanças*, which has the overall responsibility for the internal controls and oversight of the *Orgãos de Contole Interno* of the Government through their inspections, which take place at least on a yearly basis. There will be a need for the different internal control bodies to coordinate and share their yearly audit plans to avoid duplication of efforts and maximize efficiency.

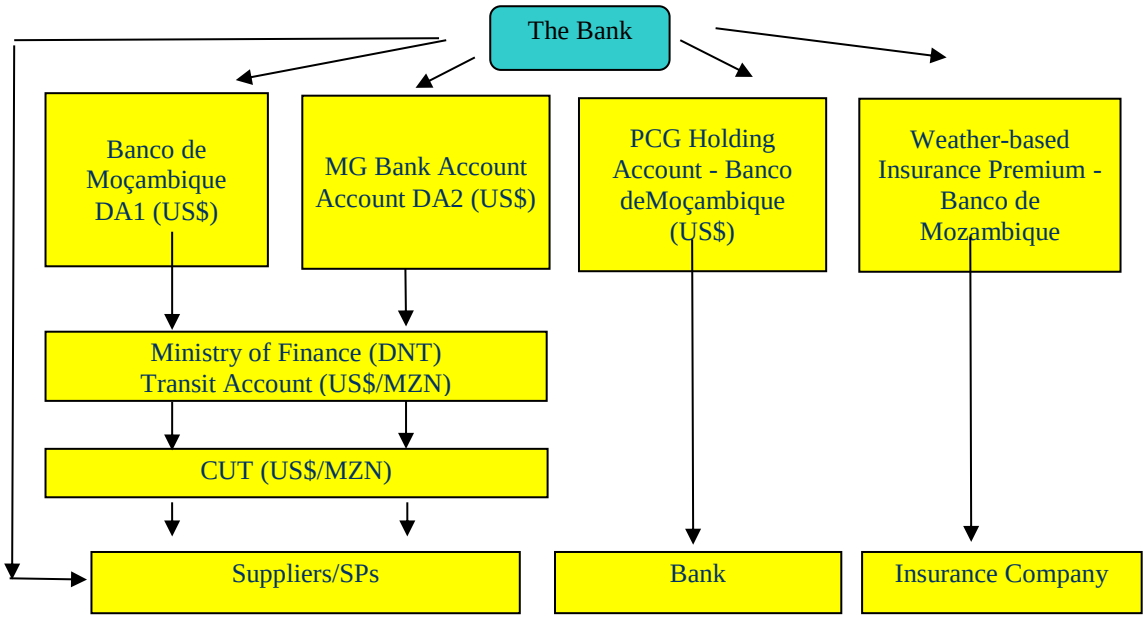
18. **The UGFI will adopt and utilize the FNDS FM procedures manual for this operation.** The manual already contains accounting procedures for approval of transactions, travel and per diem procedures, and supporting documentation, which are issues that are normally raised by independent audits. However, procedures relating specifically to the Project including the disbursements and reporting templates will need to be finalized and captured in the FM procedures manual as part of the PIM. In addition, given the different stakeholders of the Project, the FM manual will also provide procedures and guidance on coordination between the entities and the project coordination team.

19. **Staffing. The Project has already recruited a finance manager through the PPA.** The finance manager will benefit from hands-on training on the policies and procedures in FM and disbursements for Bank-financed operations. However, a finance personnel from FNDS responsible for FM aspects of Bank-financed operations will also play a key support role in ensuring that knowledge is transferred. The Project will also need to recruit an accountant who will work under the oversight of the finance manager, particularly as project activities increase. The recruited personnel will also be responsible for training and working along with the government counterparts to ensure sustainability, through systematic training and involvement in the project FM processes. The accounting staff from the Directorate of Administration and Finance (*Direcção de Administração e Finanças*, DAF) of FNDS already have access to the government e-SISTAFE and CUT and will be able to support the UGFI in executing transactions within the IFMIS. To ensure adequate oversight of accounting activities, the finance manager or accountant will need to have access to the Government's e-SISTAFE either as an internal control agent or financial execution agent, making the FM consultant an integral part of the financial execution process. MITADER/UGFI will need to make the necessary arrangements with the Ministry of Economy and Finance and Ministry of Public and State Administration for this to take place before effectiveness of the project.

20. **Accounting system. The UGFI, with support of the FNDS, will be connected to the Government's IFMIS, e-SISTAFE, and the Project will make use of it for capturing and summarizing transactions.** The system has embedded segregation of duties, which is a fundamental internal control requirement. Preparation of the accounting information will be on a cash basis in accordance with GoM requirements and are in alignment with the International Public Sector Accounting Standards. As the IFMIS makes use of the Government's economic classifiers, the Project may opt to make use of spreadsheets or a simplified accounting software system to be able to classify expenditures by activity/component, thus making it easy to follow project progress.

21. **Funds flow.** The Project will operate two designated accounts (DAs) in U.S. dollars at *Banco de Moçambique* managed by the UGFI. The first account, DA1, will be used to cover regular project expenditures through transfers to CUT, and the second, DA2, will be used for the MG funds as shown in Figure A4.2. To simplify the process, the same DA being used for the PPA will also be used after effectiveness of the Project as DA1. Transfers for the PCG and weather-based insurance will also flow from IDA to bank accounts hosted at *Banco de Moçambique*, through advances for the PCG and the reimbursable disbursement method for the weather-based insurance. The UGFI will be responsible for managing the PCG holding account as defined in Annex 12.

Figure A4.2. Flow of Funds



22. **In coordination with DNO and DNT, the funds will be coded to ensure that only the Project has access to the funds.** Upon submission of acceptable withdrawal applications, funds will be advanced to the DA1 held in *Banco de Moçambique*. Based on the Project's needs and work plans, the UGFI will request the DNT to transfer funds into CUT, where payments will be effected directly to suppliers in (a) meticais, (b) U.S. dollars, (c) euros, and (d) South African rand. Expenditures will be posted directly into e-SISTAFE, enabling the project finance manager to compile expenditure information and produce the necessary regular reports. Guidelines from the DNT on project funds flow through CUT will also be shared with the project team for a seamless insertion of the Project on to the Government's systems. DA2 shall be used upon the GoM showing satisfactory evidence of fulfilling the Disbursement Conditions.

23. **Reporting. Quarterly reports will be prepared and submitted to the Bank within 45 days of the end of each calendar quarter reported on.** These quarterly reports will include:

- sources and uses of funds;
- detailed use of funds schedule by project component/disbursement categories, comparison with budgets; and short-term forecasts of expenditure;
- summary statements of DA expenditures subject to prior review; and
- a narrative description of implementation highlights and challenges for the quarter, which help the readers understand the financial statements with more clarity.

24. **The UGFI will submit the audited annual financial statements together with the management letter to the Bank within six months of the end of the fiscal year.** These audits will be conducted by the AT in accordance with International Standards on Auditing. The annual financial statements for the Project will incorporate all activities and will be prepared in

accordance with International Public Sector Accounting Standards for cash basis and specifically including among others:

- a statement of sources and uses of funds by expenditure categories, showing funds from IDA and how they were applied;
- the supporting notes in respect of significant accounting policies and accounting standards adopted by management; and
- DA activity for the year showing deposits and replenishments received, payments substantiated by withdrawal applications, interest that may be earned on the account, and the balance at the end of the fiscal year.

25. **External auditing. The audit ToR have been agreed with the Supreme Audit Institution, the AT which is constitutionally mandated to audit all government funds, including projects financed by external sources.** Therefore, the AT will have overall responsibility for the audits of the Project. The audits may be subcontracted to a firm of private auditors, with or without participation by the AT staff in the actual audit. The Recipient shall ensure that an external auditor for the Project be recruited within six (6) months from Effective Date under terms of reference satisfactory to the Association. Any firm of auditors subcontracted by the AT to carry out the audit will have to meet IDA's requirements with regard to independence, qualifications, and experience, which are designed to provide assurance on whether the annual financial statements fairly present the financial transactions and balances associated with the Project. The Project will need to set aside funds to cover AT's reasonable incremental costs (travel, per diem, and accommodation) to cover the audit, which will be transferred to the AT once a year. The audited financial statements, along with the auditor's report and management letter (incorporating management's comments) covering identified internal control and accounting system weaknesses, will be submitted to IDA within six months of the end of each fiscal year. A single audit opinion will be issued and will cover all project receipts and payments and DA. Funds under the PCG holding account shall not be subjected to the audit by the AT.

26. **In addition to the above arrangements, the UGFI will have to ensure that the PIM (which will include FM procedures) is in place by effectiveness.** The FM procedures of the PIM will be the guiding tool where all procedures to be followed regarding FM will be documented to ensure consistency of procedures. The finance manager will be responsible for ensuring that the Project's FM arrangements are adequate and satisfactory throughout the life of the Project.

Table A4.1. Table of Audit Compliance Requirements

Action	Submission Date	By whom
Submit annual audited financial statements together with the management letter	Annually by June 30	UGFI

Table A4.2. FM Action Plan

Action	Indicative Date	By whom
Completion of Financial Management Section of PIM	Condition of effectiveness	UGFI

Disbursements

27. **Disbursement arrangements. The Project will use traditional transactions-based disbursement procedures through the advance disbursement method.** The Project may also make use of other disbursement procedures such as (a) reimbursement disbursement method, whereby the Bank reimburses the borrower for eligible expenditures that the borrower has prefinanced from its own resources; (b) direct payment method, by which at the borrower's request, the Bank makes direct payments to suppliers and contractors from the grant account; and (c) the special commitment method, whereby the Bank will issue special commitment to commercial banks for payment of eligible expenditures. The Bank will issue the Disbursement Letter, which will specify the additional instructions for withdrawal of the proceeds of the grant.

28. **The Project will open DA1 in U.S. dollars with the Central Bank (*Banco de Moçambique*) managed by MITADER/UGFI.** The DA will be used for all project payments and funds will be transferred to a bank account to be opened within FNDS. FNDS is a public entity under MITADER and has various bank accounts with commercial banks, and all its financial resources are managed through CUT. While all FNDS financial resources are on CUT, managing the Project funds will not necessarily imply use of CUT processes to access funds for day-to-day use in project activities. Using FNDS is therefore an appropriate approach to allow for easy access to funds for rapid project implementation while using government systems. To further ensure that the funds are only accessible to the Project (the UGFI), they will be coded and will be deposited in a specific bank account.

29. **Disbursement of funds to the DA will be subject to submission of quarterly withdrawal applications and statement of expenditures that are acceptable to the Bank.** Once each withdrawal application is approved, funds will be advanced to the DA in *Banco de Moçambique*. Based on the Project's needs for funds, MITADER/UGFI will request FNDS to transfer funds from the DA into the project bank account within FNDS. Payments will then be effected directly to suppliers in (a) meticais, (b) U.S. dollars, (c) euros, and (d) South African rand. Expenditures will be posted directly into e-SISTAFE by FNDS. The project FM officer will hence have the ability to organize expenditure information and produce the necessary regular reports. Similar FM arrangements will be worked out for any parallel financing that may be available.

30. **Project funds for the PCG will be disbursed in tranches in the name of the Project managed by the UGFI.** The disbursement will follow direct transfers to a segregated operation account at the Central Bank using the advances disbursement method. The account will have two subaccounts, that is, one for fees paid by participating banks and one for interest earned. The initial tranche will be 25 percent of the PCG funds needed for the guarantee, US$1.1 million or equivalent. Subsequent disbursements will be calculated based on PCG utilization. Project funds for the weather-based insurance premium will be disbursed annually once the insurance company

presents evidence of premium billing and payment of concessioners' share of the premium for the year based on reimbursement disbursement method. All money flows related to the guarantees are managed within this account and managed by the UGFI without any involvement of the PCG FSP.

Procurement

31. **Procurement activities for the proposed Project will be carried out in accordance with the Bank's 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers,' dated January 2011**, revised July 2014; 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers," dated January 2011, revised July 2014; and the provisions stipulated in the Financing Agreement for the Project. Further, the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants,' dated October 15, 2006 and revised in January 2011 will apply. The following activities form part of the Project and are subject to Bank procurement procedures: Works - at appraisal; Goods - at appraisal; and Consultancies - at appraisal.

32. **Particular methods of procurement of goods, works and nonconsulting services: International Competitive Bidding.** Except as otherwise provided in paragraph 34 below, goods, works, and nonconsulting services shall be procured under contracts awarded on the basis of International Competitive Bidding (ICB).

33. **Other methods of procurement of goods, works and nonconsulting services.** The following methods, other than ICB, may be used for procurement of goods, works, and nonconsulting services for those contracts specified in the Procurement Plan:

Table A4.3. Procurement Methods for Goods, Works and Non-Consulting Services

(a) National Competitive Bidding (NCB), subject to the provisions of paragraph 34 below
(b) Shopping
(c) Direct Contracting
(d) Community participation procedures acceptable to the Association

34. **All bidding documents for use of NCB will be satisfactory to the Bank,** based on the national bidding documents and taking into account the following additional procedures and exceptions.

Additional Procedures for National Competitive Bidding

(a) **General.** The procedures to be followed for NCB shall be those set forth in the *'Regulamento de Contratação de Empreitada de Obras Públicas, Fornecimento de Bens e Prestação de Serviços ao Estado'* of the Republic of Mozambique of May 24, 2010 (the Regulation), according to Decree No. 15/2010, with the modifications described in (b) to (m) below.

(b) **Eligibility.** No restriction based on nationality of bidders and/or origin of goods shall apply. Foreign bidders shall be allowed to participate in NCB without restriction and shall not be subject to any unjustified requirement that will affect their ability to participate in the bidding process such as, but not limited to, the proof that they are not under bankruptcy proceedings in the recipient's territory; have a local representative; have an attorney resident and domiciled in the recipient's territory; and form a joint venture with a local firm. In cases of joint ventures, they shall confirm joint and several liability. Prior registration or obtaining a license or agreement shall not be a requirement for any bidder to participate in the bidding process. The recipient's government-owned enterprises or institutions shall be eligible to participate in the bidding process only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not dependent agencies of the recipient.

(c) **Bidding documents.** Standard bidding documents acceptable to the Association shall be used for any procurement process under NCB.

(d) **Preferences.** No domestic preference shall be given for domestic bidders and/or for domestically manufactured goods.

(e) **Applicable procurement method under the Regulation.** Subject to these NCB exceptions, procurement under NCB shall be carried out in accordance with the Regulation's public competition (*Concurso Público*) method.

(f) **Bid preparation time.** Bidders shall be given at least twenty-eight (28) days from the date of the invitation to bid or the date of availability of bidding documents, whichever is later, to prepare and submit bids.

(g) **Bid opening.** Bids shall be opened in public, immediately after the deadline for their submission, in accordance with the procedures stated in the bidding documents.

(h) **Bid evaluation.** Qualification criteria shall be clearly specified in the bidding documents, and all criteria so specified and only such criteria so specified shall be used to determine whether a bidder is qualified; the evaluation of the bidder's qualifications should be conducted separately from the technical and commercial evaluation of the bid. Qualification criteria shall be applied on a pass or fail basis. Evaluation of bids shall be made in strict adherence to the criteria declared in the bidding documents; criteria other than price shall be quantified in monetary terms. A contract shall be awarded to the qualified bidder offering the lowest-evaluated and substantially responsive bid. Bidders shall not be eliminated on the basis of minor, nonsubstantial deviations

(i) **Rejection of all bids and rebidding.** All bids shall not be rejected and new bids solicited without the Association's prior concurrence.

(j) **Complaints by bidders and handling of complaints.** The recipient shall establish an effective and independent complaint mechanism allowing bidders to complain and to have their complaint handled in a timely manner.

(k) **Right to inspect/audit.** In accordance with paragraph 1.16(e) of the Procurement Guidelines, each bidding document and contract financed from the proceeds of the financing shall provide that (i) the bidders, suppliers, and contractors and their subcontractors, agents, personnel, consultants, service providers or suppliers shall permit the Association, at its request, to inspect their accounts, records, and other documents relating to the submission of bids and contract performance and to have them audited by auditors appointed by the Association and (ii) the deliberate and material violation by the bidder, supplier, contractor, or subcontractor of such provision may amount to obstructive practice as defined in paragraph 1.16(a)(v) of the Procurement Guidelines.

(l) **Fraud and corruption.** Each bidding document and contract financed from the proceeds of the financing shall include provisions on matters pertaining to fraud and corruption as defined in paragraph 1.16(a) of the Procurement Guidelines. The Association may sanction a firm or individual, at any time, in accordance with prevailing Association sanctions procedures, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time (i) to be awarded an Association-financed contract and (ii) to be a nominated subcontractor, consultant, supplier, or service provider of an otherwise eligible firm being awarded an Association-financed contract.

(m) **Debarment under the national system.** The Association may recognize, if requested by the recipient, exclusion from participation as a result of debarment under the national system, provided that the debarment is for offenses involving fraud, corruption, or similar misconduct, and further provided that the Association confirms that the particular debarment procedure afforded due process and the debarment decision is final.

35. **Particular methods of procurement of consultants' services. (a) Quality- and Cost-Based Selection.** Except as otherwise provided in Table A4.4 below, consultants' services shall be procured under contracts awarded on the basis of Quality- and Cost-Based Selection (QCBS); and **(b) other methods of procurement of consultants' services.** The following methods, other than QCBS, may be used for procurement of consultants' services for those contracts that are specified in the Procurement Plan:

Table A4.4. Procurement Methods for Consultants' Services

Procurement Method
(a) Quality-Based Selection (QBS)
(b) Selection under a Fixed Budget (FBS)
(c) Least-Cost Selection (LCS)
(d) Selection Based on Consultants' Qualifications (CQS)

Procurement Method
(e) Single-Source Selection (SSS) of consulting firms
(f) Selection of Individual Consultants (IC)
(g) Single-Source procedures for the Selection of ICs
(h) Selection of United Nations Agencies

36. **Review of procurement decisions by the Bank. The review thresholds are shown in Table A4.5.** The Procurement Plan shall set forth those contracts that shall be subject to the prior review by the Bank. All other contracts shall be subject to post review by the Bank. The Bank may, at its own discretion, require that a sample of contracts below the threshold be subject to prior review at any time or when the Procurement Plan is updated.

Table A4.5. Thresholds for Procurement and Review Methods

Expenditure Category	Contract Value Threshold (US$)	Procurement/ Selection Method	Contracts Subject to Prior Review
Works	≥ 15,000,000	ICB	All
	≥ 5,000,000 and < 15,000,000	NCB	All
	≥ 100,000 and < 5,000,000	NCB	None (post review)
	< 100,000	Shopping	None (post review)
	All values	Direct Contracting	All
Goods	≥ 3,000,000	ICB	All
	≥ 500,000 and < 3,000,000	NCB	All
	≥ 75,000 and < 500,000	NCB	None (post review)
	< 75,000	Shopping	None (post review)
	All values	Direct Contracting	All
Consulting Services - Firms	≥ 300,000	QCBS/Other (QBS/FBS /LCS)	All
	≥ 200,000 and < 300,000	CQS/Other (QCBS/QBS/FBS/LCS)	All
	< 200,000	CQS/Other (QCBS/QBS/FBS/LCS)	None (post review)
	All values	SSS	All
Consulting Services - Individual Consultants	≥ 100,000	IC - Qualification	All
	< 100,000	IC - Qualification	None (post review)
	All values	IC - SSS	All

37. **Procurement Plan. The recipient has developed a Procurement Plan for the first 18 months of project implementation.** This plan was agreed between the recipient and the Bank during negotiations. The plan will be made available at the Project's database, and in the Bank's external website after board approval. The Procurement Plan will be updated annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The frequency of procurement supervision missions will be once every six months. Special procurement supervision for post procurement reviews will be carried out at least once every 12 months.

Procurement Plan for the First 18 Months

- Works procurement packages with methods and time schedule
- Goods procurement packages with methods and time schedule
- Consultancy assignments with selection methods and time schedule

I. Procurement Packages with Methods and Time Schedule

A. Civil Works

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
Component 1: Agriculture and Forest-Based Value Chain Development										
1.2.2	01-ANRLMP/W/2016	Feeder roads rehabilitation (Nampula-Malema and Mecuburi; and Zambézia-Alto-Molocue and Ile)	IDA	1,200,000	NCB	No	No	Post	1/06/16	2/02/170
1.2.3	02-ANRLMP/W/2016	Feeder roads rehabilitation/ maintenance (Nampula-Rapale Lalaua, and Ribaué; and Zambézia-Mocuba and Gilé)	IDA	1,800,000	NCB	No	No	Post	1/09/16	18 months
1.3.1	03-ANRLMP/W/2016	Improve irrigation infrastructure (Nampula-Ribaué and Malema; and Zambézia-Ile)	IDA	1,500,000	NCB	No	No	Post	1/06/17	2/01/18

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
1.3.4	04-ANRLMP/W/2016	Rehabilitation of existing irrigation schemes (Nampula-Ribaué and Malema; and Zambézia-Gurué and Alto-Molocue)	IDA	1,300,000	NCB	No	No	Post	3/01/17	18 months

Note: UNDB = United Nations Development Business.

B. Goods

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
All Components										
—	07-ANRLMP/W/2016	IT equipment	IDA	54,400	Shopping	No	No	Post	6/03/17	6/06/17
a) CT Ref: 2.1.5 and 2.3.2.										
—	08-ANRLMP/W/2016	IT equipment (10 districts)	IDA	219,600	NCB	No	No	Post	2/05/16	1/08/16
b) CT Ref: 2.2.2.1; 2.2.2.2; 2.2.2.3; 2.2.2.4; and 2.2.2.7										

Ref. No. Cost Table	1	2	Source of Funds	3	4	5	6	7	8	9
	Procurement Plan Item No.	Contract (Description)		Estimated Cost (US$)	Procurement Method	Advertise in UNDB (Yes/No)	Procys Submission (Yes/No)	Review by Bank (Prior/Post)	Expected Bid-Opening Date	Completion Date
2.3.6.4	09-ANRLMP/W/2016	Motorcycles (Nampula-Rapale, Mucuburi, Malema, Ribaué, and Lalaua; and Zambézia-Mucuba, Ile, Molocue, Gurué, and Gilé)	IDA	60,000	Shopping	No	No	Post	6/03/17	6/06/17
2.2.2.7	10-ANRLMP/W/2016	12 Motorcycles (Nampula, Rapale, Mucuburi, Malema, Ribaué, and Lalaua; and Quelimane, Mucuba, Ile, Molocue, Gurué, and Gilé)	IDA	78,000	NCB	No	No	Post	2/05/16	1/08/16
3.2.1.4	11-ANRLMP/W/2016	Vehicles (Nampula and Zambézia Provinces)	IDA	100,000	NCB	No	No	Post	3/10/16	2/1/17
—	12-ANRLMP/W/2016	Office supplies	IDA	46,600	Shopping	No	No	Post	3/10/16	2/1/17
c)	**CT Ref: 2.2.2.10;3.2.1.4;**									

C. Nonconsulting Services

Ref.	1	2	Source	3	4	5	6	7	8	9

No. Cost Table	Procurement Plan Item No.	Contract (Description)	of Funds	Estimated Cost (US$)	Procurement Method	Advertise in UNDB (Yes/No)	Procys Submission (Yes/No)	Review by Bank (Prior/Post)	Expected Bid-Opening Date	Completion Date
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience										
2.4.2	13-ANRLMP/W/2016	Restoration of 1,000 ha degraded land in Nampula Province	IDA	250,000	NCB	No	No	Post	3/10/17	4/04/18
2.4.2	14-ANRLMP/W/2016	Restoration of 1,000 ha degraded land in Zambézia Province	IDA	250,000	NCB	No	No	Post	3/10/17	4/04/18

II. Selection of Consultants

Additional Requirements

(a) All selection methods are subject to TOR approval.

1. Short list entirely comprising national consultants. Short list of consultants for services, estimated to cost less than US$200,000 equivalent per contract, may entirely comprise national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

2. Consultancy Assignments with Selection Methods and Time Schedule

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
Component 1: Agriculture and Forest-Based Value Chain Development										
1.2	15-ANRLMP/W/2016	Agribusiness finance to VC actors	IDA	2,804,000	QCBS	Yes	Yes	Prior	10/10/16	3/02/17

Ref. No. Cost Table	1	2	Source of Funds	3	4	5	6	7	8	9
	Procurement Plan Item No.	Contract (Description)		Estimated Cost (US$)	Procurement Method	Advertise in UNDB (Yes/No)	Procys Submission (Yes/No)	Review by Bank (Prior/Post)	Expected Bid-Opening Date	Completion Date
1.1	16-ANRLMP/W/2016	SP (capacity building of rural households, SECFs, and MSME agribusinesses)	IDA	2,700,000	QCBS	No	Yes	Prior	2/06/16	10/02/17
(a) CT Ref: 1.1.2.1; 1.1.2.2; and 1.1.2.3										
1.2.1	17-ANRLMP/W/2016	Mapping feeder roads network	IDA	10,000	CQS	No	No	Post	4/07/16	3/2/17
—	18-ANRLMP/W/2016	Assessment of the priority feeder roads and project design	IDA	90,000	CQS	No	No	Post	1/07/17	18 months
1.2.4	19-ANRLMP/W/2016	Supervision of civil works - roads rehabilitation	IDA	150,000	CQS	No	No	Post	1/09/16	18 months
1.3.3	20-ANRLMP/W/2016	Capacity building of district officials	IDA	100,000	CQS	No	No	Post	2/01/17	18 months
1.3.4	21-ANRLMP/W/2016	Field assessments of existing irrigation schemes and project design	—	25,000	CQS	No	No	Post	3/07/16	—
1.3.5	22-ANRLMP/W/2016	River basin studies	IDA	1,500,000	QCBS	Yes	Yes	Prior	2/01/17	—
1.3.6	23-ANRLMP/W/2016	Irrigation feasibility studies on 2,000 ha (US$400 per ha)	IDA	360,000	QCBS	Yes	Yes	Prior	2/01/18	—

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
1.3.7	24-ANRLMP/W/2016	Supervision of civil works - irrigation schemes rehabilitations	—	488,000	QCBS	Yes	Yes	Prior	3/01/17	—
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience										
2.3.6.1	25-ANRLMP/W/2016	Facilitation of the development of a common landscape vision	IDA	74,000	IC	No	No	Post	1/10/16	—
2.1.3	26-ANRLMP/W/2016	Strengthening of DPTADER and districts planning staff on land-use planning and monitoring in the Nampula and Zambézia Provinces	IDA	153,600	CQS	No	No	Post	2/01/17	—
2.3.3	27-ANRLMP/W/2016	Hiring of SP for implementation of the land component communication strategy in target areas based on DINAT communication strategy	IDA	150,000	CQS	No	No	Post	1/07/16	—

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
2.1.1	28-ANRLMP/W/2016	Hiring of SP for systematic community land delimitation	—	1,972,944	QCBS	Yes	Yes	Prior	1/07/16	—
2.1.2.4	29-ANRLMP/W/2016	Hiring of SP for digitalization of all new incoming documents as part of the Project	—	255,000	QCBS	Yes	Yes	Prior	1/07/16	—
—	30-ANRLMP/W/2016	Hiring of SP for installation and TA and maintenance for SIGIT	—	360,000	QCBS	Yes	Yes	Prior	1/07/16	—
Component 3: Project Coordination and Management										
3.1.3.1	31-ANRLMP/W/2016	Communication strategy	IDA	49,500	IC	No	No	Post	2/01/17	—
3.1.4.1	32-ANRLMP/W/2016	Project audits	IDA	45,400	LCS	No	No	Post	2/01/17	18 months
Subcomponent 3.2: Management of Financial and human resources										
3.2.1.1.1	33-ANRLMP/W/2016	National coordinator	IDA	129,600	IC	No	Yes	Prior	1/07/16	18 months
3.2.1.1.2	34-ANRLMP/W/2016	Provincial coordinator	IDA	180,000	IC	No	Yes	Prior	1/07/16	18 months
3.2.1.1.3	35-ANRLMP/W/2016	Specialists (VC, rural development, land administration, communication, environmental/ resilience, and forest)	IDA	648,000	IC	No	Yes	Prior	1/07/16	18 months

Ref. No. Cost Table	1 Procurement Plan Item No.	2 Contract (Description)	Source of Funds	3 Estimated Cost (US$)	4 Procurement Method	5 Advertise in UNDB (Yes/No)	6 Procys Submission (Yes/No)	7 Review by Bank (Prior/Post)	8 Expected Bid-Opening Date	9 Completion Date
3.2.1.1.4	36-ANRLMP/W/2016	Fiduciary (procurements and finance)	IDA	180,000	IC	No	Yes	Prior	1/07/16	18 months
3.2.1.1.5	37-ANRLMP/W/2016	Fiduciary assistant's (procurements and finance)	IDA	144.000	IC	No	Yes	Prior	1/07/16	18 months
3.2.1.1.6	38-ANRLMP/W/2016	M&E	IDA	90.000	IC	No	No	Post	1/07/16	18 months
3.2.1.1.7	39-ANRLMP/W/2016	Technical teams (Nampula and Zambézia - VC, rural development, and land specialist field operator)	IDA	270.000	IC	No	Yes	Prior	1/07/16	18 months

III. Training

1 AWP Ref No.	2 Procurement Plan Item No.	3 Description of Assignment	4 Estimated Cost (US$)	5 Source of Funds	6 Expected Duration
Component 1: Agriculture and Forest-Based Value Chain Development					
1.3.2	40-ANRLMP/W/2016	Training irrigation associations	120,000	IDA	—
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience					
2.3.2	41-ANRLMP/W/2016	Consultancy of fit-for-purpose LTR and delimitation methodologies	150,000	IDA	—

Environmental and Social (including safeguards)

38. **This is a Category B operation because of the potentially adverse environmental and social impacts associated with investments in small irrigation infrastructures, rural access roads, including inclusive access to inputs (especially seeds and fertilizers), promotion of sustainable management of the natural resources, and land delimitation and demarcation.** The infrastructures comprise storage facilities, connecting rural roads to provide access to those facilities, water storage infrastructures, small-scale irrigation schemes, weirs, and possibly small-scale water control structures. Under the Project, the social safeguard policy on Involuntary Resettlement (OP/BP 4.12) is triggered because some activities, such as land delimitation and/or demarcation, land-use planning, rehabilitation of small-scale irrigation schemes for agriculture, and construction/rehabilitation of small-scale infrastructure (storage and administrative facilities) may lead to involuntary land acquisition that could result in people's loss of (or access to) assets, means of livelihoods or resources, and involuntary restriction of access to legally designated protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

39. **Compliance with the Bank safeguard policies and preparation of safeguard documents build on the positive experience of similar projects regarding OP/BP 4.12 aimed at ensuring that proper mitigation measures are set forth.** Hence, the borrower has prepared and exhaustively consulted on an RPF to guide the preparation of site-specific RAPs once specific details of the proposed investments are known. The RPF has been prepared by the borrower and reviewed by the Bank safeguards specialists and has been disclosed publicly both in-country and at the Bank's InfoShop on April 5 and 6, 2016, respectively.

40. **Under the Project, the following environmental safeguards are triggered:** (a) OP/BP 4.01 - Environment Assessment, largely because of small infrastructure investments in the Project area; (b) OP/BP 4.04 - Natural Habitats, because the Project may intervene in sensitive natural habitat; (c) OP/BP 4.36 - Forests, because Project activities will promote sustainable natural forest management practices; (d) OP 4.09 - Pest Management, because the Project intends to finance mechanisms and modalities to support smallholder farmers and communities in the development of viable, community-based agriculture and forest management VCs that may stimulate minimal use of chemicals; and (e) OP/BP 4.37 - Safety of Dams. The Project will preemptively trigger these policies because activities under Component 1, such as upgrade and maintenance of small irrigation schemes, rehabilitation of water storage facilities, and other types of water control structures of priority, may cause minimal adverse impacts in the Project area.

41. **OP/BP 4.36 - Forests was triggered because some of the proposed activities under Component 2 will promote sustainable management of natural forests and forest restoration.** Notwithstanding, the Project will not have any direct or indirect negative impact on health and quality of forests or the health and safety of people who depend on forests. Likewise, Project activities are expected to have significant positive impacts on natural habitats, as the project will promote integrated sustainable NRM. OP/BP 4.04 - Natural Habitats was triggered owing to the investments aimed at streamlining land delimitation and titling processes while protecting and restoring natural habitats critical for the VCs in the landscape. OP 4.09 - Pest Management was triggered because the Project inputs under Components 1 and 2 may include the use of pesticides to boost agriculture productivity, though expected only at a small scale.

42. **The Project also preemptively triggers OP/BP 4.37 - Safety of Dams because of foreseen investments in the rehabilitation of irrigation systems, small water storages, and water canals.** Nonetheless, it is not expected that the Project will be involved in any new investments in large dams such as those within the triggering definition of the OP/BP 4.37 (15 m or higher and water storage infrastructure of 3 million m^3 reservoir capacity). The irrigation systems may include small gravity-fed irrigation schemes and, possibly, simple diversion weirs and other small-scale water control structures. Hence, site-specific ESMPs will be prepared for any new infrastructure. The ESMPs will be binding to the contractor's contract and will ensure that safeguards recommendations are complied with during project implementation. Moreover, any dam-related activity will be undertaken following the guidelines of the FAO Manual on Small Earth Dams: A guide to Siting, Design, and Construction (2010).

43. **The borrower has prepared and extensively consulted upon an ESMF to comply with environmental and social safeguards policies triggered by the Project.** The ESMF contains detailed guidelines for the preparation of specific ESMPs for subproject activities, including a set of Environmental and Social Clauses for project implementation. The ESMF and IPMP have been reviewed by the Bank and publicly disclosed both in-country and at InfoShop on April 5 and 6, 2016, respectively.

44. **MITADER is leading the implementation of the proposed Project.** MITADER houses the newly created the UGFI, responsible for day-to-day management of the Project. However, the newly established National Directorate for Environmental Assessment at MITADER is responsible for development of policies, review of environmental and social impact studies and mitigation plans, and issuing of environmental and social permits. MITADER has proven experience and expertise in managing Bank-funded operations, particularly in agriculture, climate change, and NRM sectors. Over time, the Bank has been providing a series of social and environmental safeguards training workshops and advisory support that has contributed to improved perception and implementation of safeguards policies. Nonetheless, the ESMF, RPF, and IPMP prepared under the Project have specified supplemental training and capacity-building needs for MITADER and its affiliated local directorates to adequately address safeguards recommendations.

45. **Additionally, MITADER has hired a dedicated environmental and social safeguards specialist to oversee the Project activities.** This specialist is working in close collaboration with another safeguards specialist at the UGFI, in charge of other Bank-financed operations (REDD+ and FIP). These two specialists will provide day-to-day supervision of the ESMF, RPF, and IPMP preparation and implementation and ensure that subsequent ESMPs and RAPs are fully addressed during the project lifecycle.

Monitoring and Evaluation

46. **The Project's M&E system will generate timely relevant information and analytical evidence required for assessing and managing the Project's implementation performance and ensuring progress toward meeting the PDO and results at three levels:** impact, outcome, and output. The Project's Results Framework is underpinned by a strong results chain and corresponding 'theory of change' (for example, priority VCs that will drive the generation of the Project's production and income benefits, which will, in turn, be enhanced by complementary

land administration and NRM interventions, catalyzed by rural infrastructure investments, and facilitated by participating agencies with strengthened capacities). The Results Framework for Project 1 is presented in Annex 1 and the indicative Results Framework for Projects 1 and 2 in Annex 2.

47. **This Results Framework defines the performance indicators (at the outcome level) for each component.** Each component and subcomponent activity comprises a corresponding outcome and output indicator and target. These output indictors and targets provide the basis for monitoring priority activities to be financed by the Project in a systematic manner. Collecting baseline data for each indicator has been initiated and will be completed during the first year of project implementation.

48. **The Project's M&E reports will include the following:**

- Quarterly progress reports. These reports will monitor and consolidate progress on key activities and outputs and will be produced on a quarterly basis. These progress reports will provide useful inputs to support the six-monthly joint implementation support reviews to be carried out jointly by MITADER and the Bank.

- Yearly progress reports. These reports will track and consolidate progress on key activities, outputs, and outcomes and will be produced annually to key stakeholder participants.

- Midterm Review. By the end of year 2, a comprehensive MTR of the Project will be undertaken by the Bank and MITADER, along with other implementing entities. The MTR will focus on assessing project progress toward the impact and outcome targets and corresponding indicators (with special attention on assessing the key indicators outlined in the Results Framework). Selected thematic in-depth assessments will be identified (in year 2) and carried out as evidence-based inputs for the MTR (for example, assessing the emerging viability of the VC business plans supported by the Project and updating crop budgets and farm models on an ex post basis to assess progress in increasing rural household incomes of the beneficiaries in the target districts).

- Final evaluation. Six months before project completion, an independent evaluation will be conducted with special focus on identifying key operational lessons that can be used for designing the next project.

49. **The Project is establishing a participatory Management Information System (MIS) that will comprise and manage the above activities.** Overall responsibility for the Project's MIS/M&E will be the responsibility of an experienced M&E specialist, who will be a core member of the UGFI project coordination team. The M&E specialist will work and coordinate closely with the relevant M&E specialists from the various departments/directorates, at the provincial and district levels. The MIS/M&E systems and specialists will be strengthened through strategic capacity-building activities under the Project. The key outputs of the M&E activities will be submitted to the members of the Steering Committee (at national level), the provincial MSLFs, and the district-level consultative forums, as key inputs for obtaining strategic

guidance during their periodic meetings. There are state and nonstate members at each of these consultative forums, and therefore, the Project will promote a participatory approach to its MIS.

50. **To facilitate the MIS/M&E system, the M&E specialist will prepare a project-level M&E manual, as part of the PIM.** The M&E manual will provide details with regard to the definition of the Results Framework, methodology and instruments to be used for data collection, institutional arrangements and responsibilities for M&E functions, including at provincial and district levels, the GRM, and mechanisms and arrangements for disseminating information. In addition, the system will inform a communications strategy that will be developed and implemented by the UGFI.

Role of Partners

51. **The Project will engage in stakeholder consultations and dialogue with the aim of communicating project objectives and approach, thereby ensuring that all stakeholders, direct and indirect, have the opportunity to provide inputs that can lead to improved implementation performance.** All consultations will be primarily held in project provinces and districts, and in Maputo. To ensure that stakeholders are well informed about project activities at all stages, stakeholder consultations are conducted during project preparation and will continue during project implementation. Consultations held during project preparation were primarily aimed at ensuring that the project design benefits from insights from different stakeholders. Consultations during project implementation will aim at maintaining dialogue and information sharing about project interventions. Stakeholders to be consulted will include the National Peasants Union of Mozambique (*União Nacional de Camponeses*), provincial and district-level smallholder farmer associations, local and international NGOs, private sector operators, and government authorities directly concerned with the Project. The implementation of the stakeholder consultation and dialogue agenda will be achieved by organizing consultation meetings including a forum or working with individual or groups of stakeholders whenever necessary.

52. **For the implementation of the stakeholders consultation and dialogue, the Project will prepare a communications strategy that will highlight the Project's emphasis on the livelihoods of smallholder farmer and other rural households**, the importance and the benefits of delimitation and land registration as a prerequisite for facilitating inclusive agribusiness development, and sustainable NRM-based VCs, while improving governance and preventing malpractice. The communication strategy will be finalized at the start of the Project to stimulate demand for project support and increase participation by concerned stakeholders, in general, and farmer groups and communities, in particular. The Project will use different communication tools including community radios and discussion forums to convey key messages on the use of the best agricultural practices and technologies as part of an integrated NRM approach. Messages on nutrition, gender and other social issues, community land delimitation and land-use planning, CSA, and other good environmental practices will be the core of activities under the strategy. The preparation of the communication strategy will be contracted out to a specialized SP. This strategy will have an internal focus in MITADER, including other public sector institutions at the central and local level and an external focus for key project stakeholders.

Annex 5: Implementation Support Plan

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

Strategy and Approach for Implementation Support

1. The strategy for implementation support will include formal supervision visits, including field visits to the targeted provinces, districts, and landscapes and providing support to the implementing agency, MITADER/UGFI, and the PIUs.

2. **Implementation support plan.** Special focus will be given to (a) supporting the strengthening of the UGFI, including at the PIU level, and monitoring their performance; (b) reviewing progress of key policy and institutional reforms supported by the Project, as well as their impacts on implementation of agriculture and forest-based VCs, sustainable NRM, and LTR and management activities; (c) ensuring that the content of TA to SECFs and MSME agribusinesses for implementation of Component 1 is effectively delivered by SPs; (d) monitoring the development and performance of SECFs and MSME agribusinesses supported by the Project, including the implementation of their business plans; (e) reviewing the process and results of LTR activities under Component 2, including the effectiveness of SPs; (f) monitoring the process and content of TA provided by SPs and delivered to CBOs for implementation of Component 2; (g) monitoring the supervision of restoration and natural resources protection, particularly the survival rate of reforested areas; (h) implementing a proactive communication and consultation strategy that requires stakeholder engagement at local, district, provincial, landscape, and national levels; and (i) monitoring overall project implementation and performance, including its results indicators (as defined in Annex 2).

3. **Fiduciary requirements and inputs.** The FM implementation support plan will be risk-based and will include review of (a) the Project's FM system, including but not limited to accounting, reporting, and internal controls; (b) beneficiary institutions; (c) quarterly Statement of Expenditures; and (d) annual audited financial statements, as well as timely follow up of issues arising from the audit. The Bank FM team will participate in Project implementation support missions as appropriate. Review and monitoring of procurement activities, as guided by the Procurement Plan, will be undertaken to ensure compliance with the Bank procurement policies and procedures. The Bank's procurement team will also participate in implementation support missions.

4. **Environmental and social safeguards.** Implementation support will include supervision of social and environmental safeguards management, including the implementation of the ESMF, RPF, and IPMP, as well as provision of training and guidance to the UGFI, SPs, and project beneficiaries. As part of regular implementation support missions, reviews will be undertaken to assess how the Project manages social and environmental issues, including through adequate staffing and monitoring. This will also involve engagement with stakeholders, including SECFs and MSME agribusinesses, farmer-based organizations, and local communities.

Table A5.1. Implementation Support Plan

Time	Focus	Skills Needed	Resource Estimate (US$)

Time	Focus	Skills Needed	Resource Estimate (US$)
First 12 months	Verification of whether the risk mitigating measures implemented by project effectiveness are functioning as intended. Identification of any potential problems early in the life of the Project	FM and social and environmental safeguards	60,000
	Project start-up, the UGFI administration issues, and procurement of key SPs required for activities launched in year 1	Agriculture, forestry, VCD, land, infrastructure, NRM, and procurement expertise	100,000
12–60 months	Continued TA to the UGFI and PIUs, review of the continuing adequacy of financial, procurement, and safeguards arrangements, and other implementation requirements	Agriculture, forestry, VCD, infrastructure, land, NRM, and procurement expertise	640,000

Table A5.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
VCs and agriculture specialist	12	5	Based in Maputo
NRM and forestry specialist	12	5	Based in Maputo
Land specialist	5	5	
Infrastructure specialist	5	3	
Agriculture finance specialist	3	2	
FM specialist	5	2	Based in Maputo
Procurement specialist	5	2	Based in Maputo
Social safeguards specialist	10	5	Based in Maputo
Environmental safeguards specialist	5	3	Based in Maputo
M&E specialist	5	5	
Communications specialist	3	3	Based in Maputo

Annex 6: Value Chains Targeted by the Project

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

1. **During project design, detailed analysis was conducted to identify and select key high-value, high-potential agriculture and forest-based VCs. In addition, analysis of market data and key opportunities and constraints** for increasing participation in the selected VCs by smallholders, SECFs, and MSME agribusinesses, including more effective functioning of VCs, was also undertaken.

Value Chain Selection Process

2. **Recent analysis of agribusiness investment potential in Mozambique has identified nine VCs with significant growth potential** out of the 16 priority VCs defined in Mozambique's PEDSA to be supported over the next five years. For the purpose of the Project, these 16 priority VCs, including forest-based VCs, were reviewed using the following criteria: (a) growth potential and success in existing market opportunities and competitiveness in domestic and export markets; (b) potential for scaling up and impact on poverty reduction among target groups; (c) change potential, including the existence of lead firms with linkages with smallholders; and (d) comparative potential for higher returns to investment. These criteria are further in paragraps 4-6.

3. **The nine VCs analyzed for project-targeted interventions comprise** seven VCs namely poultry, soya, maize, horticulture, sesame, cashew nuts, and beans in agriculture. Forest-related VCs, including timber from planted forests and non-timber forest products (particularly honey and natural oils) will be supported on a pilot basis (see Table A6.6). [44] While the Project will continue to reassess the progress in the other PEDSA priority VCs, the main focus of the Project will be geared toward upgrading and expanding the selected VCs.

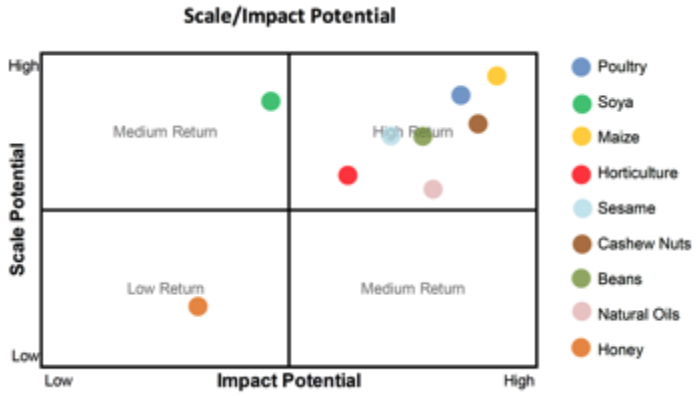
4. **Growth potential. The VC has proven to be successful in the market and is competitive.** The selected VC has the ability to achieve and maintain a competitive edge over market rivals and hence create significant and sustainable increases in income and employment. To determine growth potential, the following two factors were chosen: the growth potential for the industry in general based on market trends and Mozambique's ability to organize an effective supply response to the growing demand. The analysis

Figure A6.1. Growth Potential Analysis of Selected VCs

[44] The initial indicative VCs selected from the analysis are: maize, soya, sesame, cashew nuts, beans, oilseeds, horticulture, and non-timber forest products (honey).

for each VC was determined primarily on the basis of secondary data and interviews with key VC producers, suppliers, buyers, processors, and anchor enterprises. The analysis provides general elements to rank the different VCs.

Figure A6.2. Scale-up and Impact Potential Analysis of Selected VCs

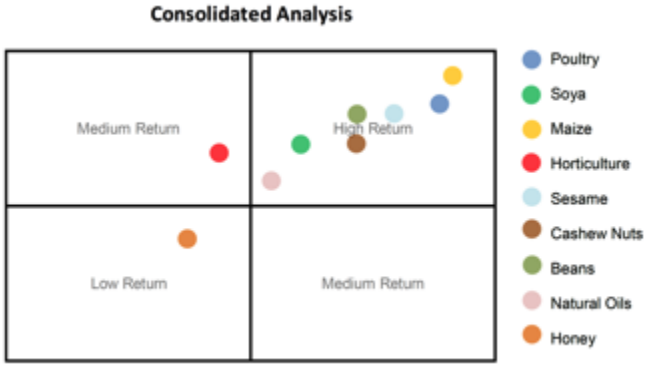


5. **Scale-up and impact potential. The VC has led to increased production with participation of a large number of farmers**, particularly smallholder farmers, and is likely to expand with increased productivity and sustainable access to markets. The VC has the ability to achieve the desired impact on the target group, demonstrating significant, sustainable increases in income and employment that lead to reducing poverty among participants. To determine the scale and impact potential, the potential scale, which is defined by the number of smallholders and MSME agribusinesses that could participate in and benefit from a growing industry was examined. Also examined was the potential impact on incomes, which is defined by the potential to generate income gains for smallholders, SECFs, and MSME agribusinesses.

6. **Change potential and industry leadership. The VC has proven to attract lead firms to invest time and resources to increasing VC competitiveness.** Lead firms can be broadly characterized as larger, financially stronger, or more innovative firms or farmer associations or well-organized, skilled farmer groups that are driving or could drive greater industry growth. Through large-scale investments in the VC, either at production or at the marketing stage, the lead industry enhances linkages with smallholder farmers. To determine industry leadership, the lead firms in the industry were analyzed to assess their commitment to upgrade MSME agribusinesses as an important part of industry competitiveness. The commitment of industry leaders to a growing participation and competitiveness of Mozambique's positioning in global or regional markets was also assessed.

Figure A6.3. Change Potential and Industry Leadership Analysis of Selected VCs

Figure A6.4. Consolidated Analysis of Selected VCs



7. **Consolidated analysis.** The comparative potential of the nine commodities to determine the higher priority VCs/industries that it should focus on initially was assessed. The Project will focus resources in the upgrading of poultry, maize soya, horticulture, sesame, cashew, beans, and honey VCs. In this assessment, no criterion has been taken in isolation, and 'indirect' impacts such as the multiplier effect have also been considered.. Additionally, there is limited capacity of the market to incorporate many new smallholder farmers into the production of chicks. Table A6.1 represents the numerical assessment of the VCs.

Table A6.1. Summary of the Analysis Results (1 = Low Potential; 5 = High Potential)

Criteria	Poultry	Soya	Maize	Horticulture	Sesame	Cashew Nuts	Beans	Natural Oils	Honey
Growth	5	4	4	2	5	3	5	4	2
Scale	5	4	5	3	5	3	5	5	2
Leadership	5	3	3	2	4	3	3	5	3
Comparative Potential	5	4	4	2	5	3	5	5	2

8. **Overview. The following VCs have firm-level investment potential and also involve contract farming and outgrower business models that include smallholder farmers:** (a) the integrated poultry/maize/soya VC is a promising industry, combining animal feed and animal protein production, responding to an increasing national urban demand for poultry products; (b) sesame has developed as a major cash crop in Mozambique with high farm gate prices and low input costs and potential for investment in production and processing; (c) pigeon peas show strong export potential to the Asian and European markets; (d) the cashew VC may remain competitive if investments in processing are made; and (e) sustainable harvesting, processing, packaging, and marketing of non-timber forest natural oils and honey products are highly valued in developing urban and international markets, particularly if certified (fair trade, organic, or carbon neutral). Values chains under (e) are nascent markets with relatively limited proof of concept in Mozambique. Hence, they should be tested at a pilot base at the beginning.

9. **The Project's VC selection is an ongoing and flexible process.** The Project will coordinate its market scanning activities closely with the GoM, and where significant market opportunities are identified, the Project will conduct due diligence before expansion into supporting other commodities.

10. **The Project will explore support to the development of forest-based VCs, including timber from planted forests and non-timber forest products.** Because of higher relative risk

related to limited in-country testing, these VCs will be supported as pilots. While natural oils and honey have been included in the consolidated analysis, separate analysis is being carried out for planted timber. Additionally, a mapping of non-timber forest product resources within the area of the Project has been launched and will enable identifying investment opportunities more accurately. An overview of the assessment work to-date on forest-based VCs is summarized in paragraphs 11 and 12.

11. **Planted timber. A preliminary assessment based on FAO and other secondary data has shown promising results for planted timber products, in particular, sawn wood, particle boards, medium-density fiberboard, and utility poles.** While world consumption of sawn wood has not fully recovered from the economic crisis ignited in 2008, African sawn wood consumption has increased by almost 40 percent since 2005. Similarly, while particle board consumption is stable worldwide, African consumption has grown by 20 percent since 2005. Medium-density fiberboard consumption has doubled worldwide from 2005 to 2014, with consumption having grown in Africa at a significantly faster pace (FAO 2015). According to assessments made by UNIQUE, utility pole demand has increased substantially in the last few years because of growing population and electrification rates, with growth being highly correlated with GDP growth. In 2013, actual east African production (800,000 poles) could not meet the demand (1,400,000), which represents a significant market opportunity. Available evidence provided by UNIQUE (2015) indicates that the existing gap is a result of lack of adequate raw material supply, with installed east African treatment capacities running at around 70 percent. Other products that may engender opportunities include parquet, furniture, paper, fuelwood, charcoal, and railway sleepers. Because of the nature of the material base, most support should be geared toward ensuring these VCs are developed in an inclusive manner, generating benefits across the whole VC.

12. **Non-timber forest products. Reliable data on non-timber forest products in Mozambique is scarce.** Discussions with key state and nonstate actors yielded a long list of products that could benefit from VC development support and result in substantial poverty reduction benefits, while at the same time mitigating market and nonmarket risks to rural dwellers by enabling livelihood diversification. This list included, among others, honey, mushrooms, medicinal plants/fruits, bamboo, cosmetic oils, as well as baobab and other exotic fruits. A study has been commissioned to assess the non-timber forest product resource base in the targeted landscape and identify key market opportunities and VCs for potential pilot support under the Project. Preliminary findings from the ongoing study are presented at the end of this annex.

Value Chains Market Analysis

13. **Analyses was done of the estimated supply and demand of each of the above crops identified as having a higher potential for targeted investments in the area covered by the Project.** Expanding the support to selected VCs in the project area provides a number of opportunities for smallholders, SECFs, and the MSME agribusiness private sector along with large anchor enterprise investors.

14. **One crucial issue underpinning agricultural development in Mozambique concerns whether actions taken to upgrade the functioning of selected VCs result in increased local**

crop production and whether sufficient market access is available to absorb this output without placing downward pressure on prices. Analysis of whether additional crop output is likely to have access to the national, regional, or world market has been carried out. First, a reasonable forecast for future output of each of the major crops in Mozambique and calculation of how much extra area this output will require, given yield increases, have been done for each commodity. Second, assessment was made of whether secure, remunerative markets are likely to be available for this expanded area and output. This was done by matching the supply increases with national and regional demand forecasts for each crop. This analysis identified which crop expansions can be most easily absorbed by domestic market growth, which will have to export surpluses to regional markets and which are likely to be destined to the world market.

15. **Forecasting Mozambican output. An assessment of the expansion potential for the selected VCs is provided in Table A6.2.** The assessment is based on long-run trends in output, while also allowing for the recent rates of increase that have taken place in many crops. These production forecasts are translated into assumptions for area, based on trend increases in yields to 2025. Tables A6.2 and A6.3 present the estimates for Mozambican crop production and crop area.

Table A6.2. Crop Production Forecasts for Mozambique to 2025 (tons, thousands)

	1995	2000	2005	2010	2013	2015	2020	2025	%Growth Rate, 2015-2025
Maize	734	1,180	942	2,090	1,207	1,705	1,902	2,098	2.1%
Soybeans	0	0	3	6	35	41	53	65	4.6%
Sunflower	12	9	7	14	18	18	19	20	0.9%
Sesame	3	5	20	63	39	58	89	120	7.5%
Cassava	4,178	5,362	4,782	9,738	4,303	6,215	6,587	6,959	1.1%
Cashew nuts	33	58	104	97	65	93	106	119	2.4%
Beans	0	0	96	180	283	254	323	392	4.4%
Tomatoes	9	7	90	185	230	234	248	262	1.1%
Onions	8	3	42	69	70	73	78	84	1.5%
Potatoes	72	80	90	179	206	226	288	349	4.4%

Source: FAOStat and national statistics.

Table A6.3. Crop Area Forecasts for Mozambique to 2025 (ha, thousands)

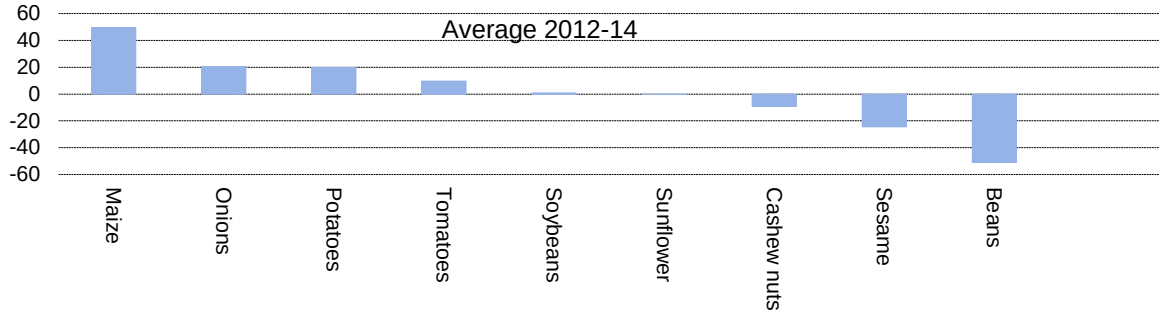
	1995	2000	2005	2010	2013	2015	2020	2025	%Growth Rate, 2015-2025
Maize	1,080	1,256	1,852	1,738	1,608	1,701	1,893	2,085	2.1%
Soybeans	0	0	9	12	31	37	36	35	-0.6%
Sunflower	27	17	15	33	25	23	23	23	0.0%
Sesame	3	5	20	63	39	58	89	120	7.5%
Cassava	986	926	1,108	1,254	780	1,038	1,054	1,069	0.3%
Cashew nuts	55	69	120	110	80	115	126	137	1.8%
Beans	0	0	462	698	777	831	1,094	1,376	5.2%
Tomatoes	1	1	9	25	27	26	27	29	1.1%
Onions	1	1	8	25	27	18	20	22	2.1%
Potatoes	8	6	8	12	15	15	18	21	3.3%

Source: FAOStat and national statistics.

16. **This analysis makes no allowance for the crucial parameter of whether a secure, remunerative market is likely to be available for this expanded area.** Therefore, analysis of which Mozambican crop expansion can be accommodated in the domestic, regional, and world markets will be further developed in the course of project implementation.

17. **Expansion for the domestic market. An open domestic market with import parity conditions will typically offer the most attractive farm gate prices to Mozambican producers.** Figure A6.5 identifies the current net import requirement for the crops of the proposed Project. The largest numbers represent the highest import requirement, with the negative numbers therefore representing net exports of those crops. Mozambique is a large net importer of maize and vegetables like onions, potatoes, and tomatoes. Crops such as soybeans, sunflower, and cassava are broadly at self-sufficiency levels. The country is currently a net exporter of beans, sesame, and cashew nuts. The basis for forecasting future exportable surpluses and import requirements for each crop is the domestic consumption forecast to 2025, shown on Table A6.4.

Figure A6.5. Net Imports of Selected Crops for Mozambique (tons, thousands)



Source: Global Trade Information Services.

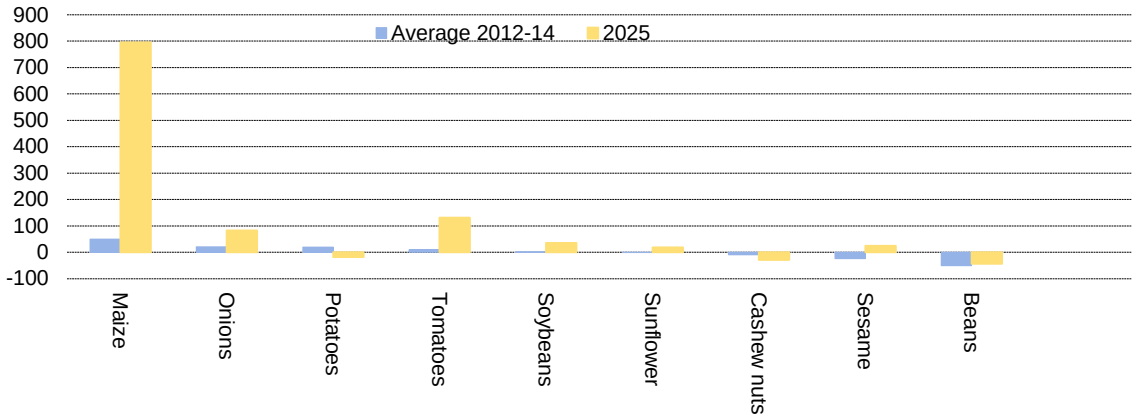
Table A6.4. Consumption Forecasts for Mozambique to 2025 (tons, thousands)

	1995	2000	2005	2010	2013	2015	2020	2025	%Growth Rate, 2015-2025
Maize	924	1,380	1,300	2,028	1,894	2,133	2,489	2,894	3.1%
Soybeans	1	2	3	6	35	42	67	99	8.8%
Sunflower	12	9	7	14	17	19	19	20	0.7%
Sesame	3	5	8	40	91	102	122	144	3.5%
Cassava	4,178	5,362	4,782	9,738	4,303	6,215	6,587	6,959	1.1%
Cashew Nuts	60	65	70	75	78	80	85	90	1.2%
Beans	0	0	96	180	180	213	277	349	5.0%
Tomatoes	9	7	90	185	236	247	315	393	4.7%
Onions	8	3	42	85	90	103	133	166	4.9%
Potatoes	78	88	91	200	233	244	285	331	3.1%

Source: FAO and national statistics.

18. **Forecasts for consumption combined with forecasts for production give an exportable surplus/net import requirement for all the selected crops to 2025.** Figure A6.6, compares the estimates for the Mozambican import requirement in 2025 with the current net import data as reflected above in Figure A6.1.

Figure A6.6. Current Mozambican Net Imports versus Forecast Import Requirement in 2025



Source: FAO national historical data.

19. **The analysis shows that the domestic import requirement for maize is set to widen dramatically.** This means that the forecast expansion of areas presented here will be insufficient to meet the predicted consumption growth. For maize, therefore, production can expand comfortably at the estimated rates presented in this analysis, with all the extra production absorbed easily in Mozambique without disturbing domestic markets. **Onions, tomatoes, soybeans, and sunflower** also look secure in market terms. Production is forecasted to increase at broadly the same rate as consumption with the consequence of Mozambique remaining a net importer of these products. Increasing output in Mozambique to substitute for the large import requirement may offer some opportunities. The imports of **potatoes** are projected to diminish until 2025 with the country turning to a net exporter of this crop, if production and consumption follow long-term trends. Therefore, the domestic market is likely to provide fewer opportunities for the expansion of potato production. **Sesame**, now at surplus levels, is likely to become a deficit crop, as domestic consumption is projected to grow more than the projected production under these assumptions. This slowdown in production is a reflection of falling prices, following the recent economic slowdown in China. **Cashew nuts** and **beans** are projected to continue to be surplus crops oriented to the export markets.

20. **Expansion for the regional market. Forecast rates of growth for Mozambican supply were compared against the forecast rates of growth for South African Development Community (SADC) demand.** If Mozambican supply growth is slower than SADC consumption growth, it is reasonable to assume that Mozambican output will be relatively easily absorbed in the wider SADC market. If, however, Mozambican output is growing faster than SADC demand, it will have to capture market share away from competing member-state producers. Table A6.5 compares forecasts for annual Mozambican supply increases to 2025 against forecasts of annual SADC demand increases to 2025. The data is presented with regard to percentage annual compound rates of growth and absolute increases in tons between 2015 and 2025.

Table A6.5. Mozambican Production versus Rest of SADC Consumption from 2015 to 2025

	Rest of SADC Consumption		Mozambican Production		Difference	
	% Growth Rate	Increase (tons, thousands)	% Growth Rate	Increase (tons, thousands)	% Growth Rate	Tons, thousands
Maize	1.8	5,176	2.1	393	-0.2	4,783
Soybeans	2.2	196	4.6	23	-2.4	172
Sunflower	2.7	488	0.0	0	2.7	488
Sesame	3.6	30	7.5	62	-3.9	-33
Cassava	3.5	13,782	1.1	744	2.4	13,038
Cashew nuts	n.a.	n.a.	2.4	26	n.a.	n.a.
Beans	3.0	535	4.4	138	-1.4	396
Tomatoes	2.3	348	1.1	27	1.2	320
Onions	2.0	214	1.5	11	0.5	202
Potatoes	4.8	3,702	4.4	123	0.4	3,579

Source: FAOStat.

21. **The negative numbers in the table indicate where annual Mozambican growth rates for supply from 2015 to 2025 are forecast to be faster than the forecast expansion in the rest of SADC demand.** The points of note from the table include: (a) for **maize, onions, tomatoes**, **soybeans**, and **sunflower**, it is already ascertained that the deficit Mozambican market is likely to absorb all of the additional output; (b) for **potatoes**, the rest of the SADC market could easily accommodate the very small increases expected from Mozambique; and (c) **sesame** looks more problematic, with initial basis for Mozambican output growth being faster than the rest of SADC demand growth rates. Even in absolute terms the projected Mozambican tonnage increase will be higher than the projected increase in the rest of SADC demand. So, failing the Mozambican increase in internal demand, this product will be dependent on continuing to accede to world markets. While no data was available to calculate SADC consumption of **cashew nuts**, this crop and **beans** are traditional export crops that rely on world markets. In combination with the national market size analysis, the crop most vulnerable to market size constraints for expansion is sesame.

22. **Expansion for the world market.** With the exception of maize and sunflower, all commodities shown on Figure A6.7 have to make the greatest percentage of exports outside of the regional market.

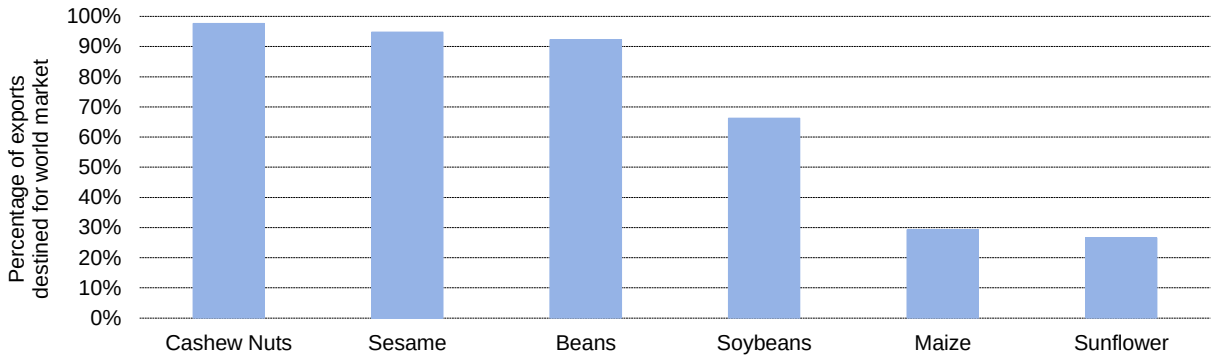


Figure A6.7. Percentage of Selected Mozambican Exports Destined for the World Market - 2014

Source: Global Trade Information Services data.

23. **The expansion of cashew nuts, sesame, and beans are less problematic as these products have a track record of access to global markets.** Although **soybeans, maize** and **sunflower** are exported onto the world market, Mozambique maintains a deficit in these crops; so, additional production is likely to be for the domestic market. Mozambique has good access to the higher-paying markets of Asia, the European Union, the United States, and others, through well-established sea and air routes. It is to be expected that a large share of Mozambique's exports continue to be directed to the world market, depending on the evolution of trade opportunities.

24. **Based on the forecasts for supply and demand balances to 2025, a hierarchic order exists for which the preidentified crops are most likely to find secure and remunerative market access a potential threat to their expansion in Mozambique.** When looking at production expansion based on trend values, all crops analyzed—with the exception of cashew nuts and beans as a whole—are expected to be at import parity price in Mozambique in 2025. With regard to market size opportunities and constraints, the analysis suggests that cassava, maize, soybeans, and vegetables (especially tomatoes and onions) will be able to expand production most easily. The Mozambican market is likely to maintain significant deficits in each of these crops. If logistical and marketing issues are rightly addressed, Mozambique has all the conditions to continue to export beans to India and the Middle East and cashew nuts to the Asian 'in shell' and the European and American 'shelled' markets while supplying the growing domestic market.

Value Chains Key Opportunities and Constraints

25. **Each VC analyzed presents opportunities and constraints and structural and dynamic factors, which are briefly highlighted along with recommendations for addressing them.**

26. **Maize is the dominant cereal, grown predominately in rain-fed conditions and by 71 percent of smallholders across the country.** Maize imports reached their highest volume in a decade in 2014 at 150,000 tons (US$35.0 million). The origins were South Africa (91 percent), Zambia (7 percent), and India (2 percent). Mozambique is also a traditional maize exporter to countries in the region. The volume exported in 2014 was 39,000 tons (US$13.0 million) with the maize being sold to Zimbabwe (74 percent) and Kenya (12 percent). Opportunities to upgrade the maize VC are as follows:

(a) Maize is purchased by capitalized buyers at the time of harvest to store and sell throughout the year. Small millers cannot afford to do this and so they pay higher prices to procure maize for their operations. A similar problem is that the majority of the maize purchased is processed by large-scale millers in the cities. When this maize is brought back to the districts where it was produced, already under the form of packed flour, it is outside of the purchasing power of the poorest inhabitants. Increasing working capital for local millers will expand the market;

(b) Another main constraint faced by the local maize millers is lack of proper TA, namely to ascertain longevity of stocks (percent relative humidity and so on), prepare good business plans for better management and access to credit, create long-

term partnerships between maize producer and maize buyers, and implement better quality control at production, storage, and processing.

27. **Soybeans. Oilseed production has registered increases, with soya passing from 706 tons to 35,000 tons between 2002 and 2013.** Soybean imports have been falling for the last four years to 715 tons in 2014 (US$0.7 million), with main origins being South Africa (71 percent) and Brazil (11 percent), in volume terms. Industry sources note that external trade parity prices are calculated relative to the Malawi (Lilongwe, Blantyre) and South African (SAFEX) markets. Demand from the poultry industry has been growing and the large-scale aviaries—located mainly in Nampula, Chimoio, and Maputo—are buying most of the soya production in Mozambique. Poultry production has increased by more than 400 percent in the last 10 years; however, the country is still a net importer of poultry meat. Imports have decreased markedly in volume terms, as the Mozambican industry grows, but in value terms, imports continued to grow showing the effect of the local currency depreciation against the U.S. dollar. The year 2014 saw the country import over 15,000 tons of poultry meat (worth US$27.0 million). The main origins were Brazil (63 percent) and South Africa (16 percent).

28. **Egg production has also increased significantly, a result of investments in additional large-scale aviaries in the Nampula Province.** Sunflower meal is preferred for egg production over soy and other oilseeds' meal. Sunflower production is however low and it is a very little traded commodity in Mozambique. Still, exports of sunflower jumped to 690 tons (US$0.5 million) in 2014 from 26 tons the year before. Buyers were in Malawi (72 percent) and China (28 percent). Only 23 tons of sunflower were imported in 2014, all from South Africa. Soybean oil has great acceptance, especially in the south, and all poultry production units extract soybean oil to sell, through physical or chemical means. The capacity of the crushing and refinery units varies between 10,000 and 20,000 tons, being smaller for poultry producers and larger for specialized crushing agribusiness. Buyers of soybeans at farm level include the main traders (Cargill, Agri-valor, and Export Trading Group [ETG]), the main poultry producers directly (Frango King, New Horizons, and Abílio Antunes), and a variety of other smaller-scale traders. The main constraints of traders and poultry producers are buying and storing grains and the spread of cash needed throughout the year. Warehouse receipt systems are only now starting in the Nampula and Zambézia Provinces covered by the Project. All actors stress the need for supply contracts that are transparent and enforceable.

29. **Opportunities to upgrade the soybeans VC include** (a) improving financing to the VC, including supporting the recently implemented warehouse receipt systems; (b) working with the VC actors to improve productivity and production so as to cater for projected increasing demand; (c) improving storage facilities and practices to improve product quality; and (d) investing in road maintenance to lower transport costs and facilitate logistics.

30. **Beans. Legumes production has been on an upward trend since 2008, with an increase in production of various beans as well as groundnuts.** The production of pigeon peas, in particular, grew by 250 percent between 2002 and 2013. Exports of dried, shelled beans have been increasing in the last three years. The record was achieved in 2014 with 87,000 tons (US$42.0 million) exported, the vast majority of which was to China (65 percent). Imports are residual. While common beans and other varieties of beans are produced largely for domestic consumption, pigeon peas are an export crop. ETG is the main promoter, processor, and trader of

pigeon peas in Mozambique. Its processing facilities include a processing unit in Nacala with an annual capacity of up to 70,000 tons of pigeon peas; a smaller factory in Beira with an annual capacity of 30,000 tons; and a unit in rehabilitation in Gurué that will be able to annually process 100,000 tons The processing activities carried out at these plants are skin removal, breaking the bean in to two pieces, and polishing. This semiprocessed product is then almost entirely exported to India where it is used to produce 'Dal'. The lack of enforcement of production contracts and the informal exports to Malawi are preventing the faster expansion of the pigeon pea processing in the country. Other large traders do not engage in trading pigeon peas because of the high transaction costs of dealing with a large number of small-scale producers and price volatility in the world market.

31. **Opportunities to upgrade the beans VC include** (a) training farmers to understand the Asian market, where these products are exported, to foresee any major changes; (b) improving access to inputs, TA, and farmer organization; (c) promoting rotation and consociation with other crops; (d) and improving quality control and implement market standards.

32. **Sesame also registered some truly strong growth, estimated to be almost 200 percent over 10 years.** The reasons are guaranteed market access and a strong demand from the domestic processing industry. Mozambique exported 33,000 tons of sesame in 2014 (US$40 million), up 44 percent from the previous year. China is by far the main buyer with 66 percent of the volume exported going to this country. Imports are residual. Over 2015, sesame has experienced a recent drop in prices associated with falling demand from China. Free on Board Nacala prices are reported to have fallen from US$2,500 per ton in 2014 to US$1,250 per ton in 2015 because of this. ETG annually processes 12,000 tons of sesame in packhouses where it dehulls, cleans, and sorts (separates white and black varieties). The company's main clients are in Japan, China, and Turkey.

33. **Opportunities to upgrade the sesame VC include** (a) improving TA and input supply for better agronomic results; (b) training farmers to understand the market for this crop so that they are not disappointed with the volatility in prices in the world market; and (c) supporting research agencies in their effort to develop crop varieties that have a lower cycle and higher resistance to pests. A portfolio of varieties is important for the risk management of this crop.

34. **Cashew.** After being the world's biggest producer in the early 1970s, Mozambique's annual production now officially is between 60,000 and 90,000 tons. Since then, other major players have joined the market, such as Vietnam (80,000 tons) and Guinea Bissau (180,000 tons); so, competition on the world market has been increasing. However, Mozambique is still a traditional exporter of cashew nuts, the vast majority of which is before shelling. In 2014, over 9,000 tons (US$10.0 million) of nonshelled cashew nuts were exported to India (93 percent), Vietnam (6 percent), and Singapore (1 percent). At 1,700 tons, exports of shelled cashew nuts were much lower in volume but of the same magnitude in value at close to US$10.0 million for the same year. Main destinations for shelled cashew nuts were the United States (32 percent), Canada (18 percent), and South Africa (13 percent). Imports are residual. According to industry sources, cashew is being exported illegally to Asia, which harms the national industry. This is not reflected in official statistics, so some cashew 'vanishes'—it is accounted for in production statistics but not in processing or trade statistics.

35. **The cashew industry is represented by the Associação Industrial do Caju.** Its members process 40,000 tons of cashew nuts but face numerous difficulties. This is done in 13 factories (12 in Nampula and 1 in Cabo Delgado). The total installed capacity is reported to be 50,000 tons. The main problem related to processing is the lack of good roads. For example, a truck that should carry 12 tons only carries 8 tons because of the poor state of the roads, coupled with water access and water use efficiency issues, energy cuts, and access to consumables and accessories. In addition, the Nacala Export Terminal at the port makes exports much more expensive for no reason. As an example, the cost of shipping a 20' container increased by US$800 since the new terminal started to operate. The Instituto de Fomento do Caju has an ambitious target to achieve 180,000 tons by 2020. To strengthen the cashew VC, a number of actions are needed, including the following:

(a) Integrated husbandry needs to increase from the current 5 million cashew trees to a total potential of 32 million trees. Action is needed on pruning, introduction of new varieties, and pest and disease control. An untreated tree produces 3 kg of cashew nuts on average, while a treated tree of a new variety produces between 30 and 50 kg annually.

(b) Trees need to be replanted. Each year, 1 million cashew trees die or stop producing (for example, after burning, a tree needs 2–3 years to produce again).

(c) Improve linkages between producers and processors.

(d) Research and its link to private sector are seen as essential for the industry.

36. **Some of the more established traders, processors, and exporters like Gani Comercial have access to financing by Mozambican banks in U.S. dollars.** International companies have access to foreign credit lines at even lower interest rates. Some new investments are coming on stream in the cashew sector. Condor is extracting cashew shell oil for the first time this year.

37. **Opportunities to upgrade the cashew VC include** (a) promoting the planting of cashew in consociations until year 3 with pigeon peas (for 3 months), and Oloko beans (for 6 months). The development cost is estimated at US$100 (MZN 5,000) per year but this can be compensated with the product of the consociations. By the fifth year, 1 ha will be producing 600 kg of cashew nuts, which is currently valued at US$500; and (b) engaging with the other donor projects that focus on cashew and extend their efforts into other districts of the Project (MozCaju).

38. **Horticulture.** Production and consumption of vegetables is set to increase in the next 10 years, following the estimated population increase trend (tables A6.2 and A6.4). One of the main constraints faced by producers is the lack of irrigation, to produce during the dry season. Another main constraint is the lack of proper access to markets. Vegetables being produced in great quantities in districts such as Ribaué are only bought by local population. Markets in Nacala, Pemba, and Nampula prefer to buy from South Africa or Maputo because of poor local product presentation/packaging. Boxes and packaging material are needed but are inexistent or unavailable to producers. Vegetable producers with large production volumes try to access markets in cities like Quelimane and Nampula, often with disastrous consequences when the

entire crop spoils on the way to the market. A processing unit is being built in Mingonha, Ribaué, by the roadside, for the preprocessing of vegetables: washing, selecting, packing, and cold storing. Quality standards will be implemented to make it possible to supply supermarket chains such as Shoprite and Recheio. Negotiations are underway for these supermarket chains to finance the VC at these upstream levels.

39. **The company Murrimo Macadamias/Crookes Brothers, based in Gurué, have obtained good agronomic results with tomato and potato production.** However, the company found the market to be flooded with imports from the north of South Africa that places these vegetables in the Mozambican market at very competitive prices. Besides the transport logistics problems, which are common to most other VCs, the company points to the lack of availability of proper tomato and potato seeds in Mozambique. There are some potato seedling producers in Gurué and Lichinga producing potato seeds at the agrarian station (10–15 ha at a time): the target is to produce 60 tons per ha of seed potato but these volumes have not yet been achieved. Murrimo Macadamias has an agreement to supply the supermarket Casa das Frutas in Quelimane, as well as Shoprite and Recheio in different locations. However, these supermarkets do not commit to guaranteeing a preestablished price.

40. **Opportunities to upgrade the horticulture VC include** (a) supporting producers with access to packaging materials and other product-enhancing materials and tools that may allow them better access to markets and the ability to compete against the more appealing import products; (b) financing logistics, in particular, cold chain and processing facilities; (c) assisting companies that wish to contract out the growing of fresh vegetables to supply local canteens and schools, thereby allowing for management time and providing TA to farmers who join such ventures. Investment is also needed in education to change nutritional habits and assist seed producers in their efforts to supply the Mozambican market.

41. **Cassava. Tuber production, in particular cassava, has registered impressive growth between 2002 and 2013, practically doubling from 3.4 million tons to 7.1 million tons.** Estimates of cassava consumption (Table A6.4) were pegged to production projections, as this is a commodity practically not traded across borders. However, if consumption was allowed to follow estimates of population increases in the country, it will nearly double from the values calculated. There is a large and growing market for this commodity, both for direct consumption and for the production of other food items by the processing industries. Ribaué hosts the Nampula SAB Miller beer-processing unit that buys and processes cassava for beer making. The success of this operation means that cassava is becoming a cash crop for the farmer. The main challenge faced at the factory level is to increase volumes as the processing unit is currently underused. One of the strategies to achieve increased volumes is to work closely with local agronomic stations—that reflect the agro-ecological conditions of the district—for improved breeding and introducing new cassava varieties. These new varieties are reported to have the potential to achieve a maximum 75 tons per ha but are realistically expected to reach an average 30–35 tons per ha, provided farmers follow extension advice. Still, this is a major productivity jump because old local varieties produced traditionally are yielding in the region of 4–5 tons per ha. DATCO is looking to have access to capital for expansion of its operations, namely into Zambézia.

42. **Opportunities to upgrade the cassava VC include** (a) financing an Autonomous Mobile Processing Unit platform in Zambézia. One of DATCO's platforms in Inhambane is 30 percent owned by the local community. These platforms are multi-functional structures; when the Autonomous Mobile Processing Unit leaves the site, they can remain active for the handling of other crops and products (groundnuts, beans, fertilizer, and stem material) and sometimes even temporarily host small telecom shops; and (b) financing of the stem material multiplication and distribution to cassava.

43. **Honey. Import demand for honey at the world level has been growing and now reaches close to 600,000 tons, valued at over US$2.1 million annually.** Mozambique has good natural conditions to produce honey but production is in its infancy and the domestic market is largely undeveloped. The country is estimated to have produced 545 tons of honey in 2013 (FAO 2015) and imported 61 tons, worth US$140,000 from Portugal (61 percent), South Africa (28 percent) and Pakistan (8 percent), in value terms. The biggest barrier to the expansion of the industry is the lack of a quality product and proper packaging and labelling. Until beekeepers are able to produce a consistently high quality product, gaining access to better markets will not be possible. Informal groups clustered at the district level can jointly own and share beekeeping equipment and supplies, process honey collectively, and sell under a common brand. The official national certification standard for honey in Mozambique is not being enforced, which is an advantage for small-scale producers who do not have the technology and equipment to produce an internationally certified grade of honey. Consumer awareness about the use of honey needs to be promoted. Honey is not a part of the culture in Mozambique and the population is largely unaware of the benefits of incorporating honey into the diet. The export market for **beeswax** also has potential in addition to honey. Beeswax, which is used in cosmetics and candles, needs to be heated, but this does not influence its price in high-end markets.

44. **Opportunities to upgrade the honey VC include the following:** Mecubure district has an association producing honey inside the forest reserve with financing from the NGO Olipa. Annual production is currently between 100 and 150 liters. The prices obtained from the sale of honey are US$3 (MZN 150) per half-a-liter jar (at the factory) and US$5 (MZN 250) for the same quantity sold at promotional fairs where the district is invited to participate. Further work could be done with this association to understand the opportunities and constraints for upgrading, that is, growing international demand for honey; untapped domestic market; lack of domestic competition that can produce quality honey—lots of room for entrepreneurs; healthy market for secondary honey-related and value-added products; potential to develop livelihood in gender-focused direction; quality control standards not enforced; lack of organized beekeeping unions and associations; underdeveloped markets and poor distribution channels; lack of consumer awareness about the benefits and uses of honey; low levels of production; lack of know-how and equipment; and high cost of production.

45. **Table A6.6 summarizes preliminary findings of the assessment on non-timber forest products commissioned by the GoM.** In Zambézia, visited districts included Alto Molocue, Gilé, Ile, and Gurué, all in the targeted project area. In Nampula, visited districts included Malema, Ribaué, Rapale, Meconta, and Monapo. While Meconta and Monapo are not in the project area, much information found there is deemed relevant for the two other districts targeted by the Project in the province.

Table A6.6. Non-timber Forest Products with Significant Potential in the Project Area - Preliminary Assessment

Province	Local/Common Name	Scientific Name	Abundance	Current Use	Opportunities for VC Upgrade
ZAMBÉZIA	Mushrooms	*Termitomyces schemperi (Namua)*	Available in all visited districts	Relish	Training on quality and packaging for higher-value supermarkets and restaurants in Mocuba and Quelimane. VC requires development with regard to hygiene, handling, swift transport, and access to markets
	Mutchulo/tubi	*Pharinari curatefolia*	Abundant in all visited districts	Sold fresh, fermented into a traditional beer	Potential for the seed as well for cosmetic oil from the kernel. Valorization will offer good commercial opportunities
	Lemon grass	*Cymbopogon citratus*	Planted in almost every household	Protection against land erosion. Tea consumed at household level	Potential to process and package this tea to sell in Zambézia and other provinces, even exporting. Potential to extract oil for application in cosmetics and mosquito repellants
	Tambarinho	*Tamarindus Indica*	Abundant in Gilé, Alto Molocue, and Gurué	Consumed fresh. Mixed with water and sugar, then eaten. Mixed with water and sugar, then packaged/frozen	Potential for application in baby porridges and fortification of other foods. Production of juices like in the case of baobab
	Honey	—	Available in Gilé (association currently producing identified); also available in Molocue and Gurué, but commercialized in small quantities	Personal consumption. Treatment for various ailments	Potential to expand current production with focus on quality control. Opportunity for certification as organic/fair trade. Further valorization through improved quality of beeswax for local and international consumption possible
	Mahepe/Custard Apple	*Annona senegalensis*	Abundant in all visited districts	Consumed fresh	Sold at markets at a good price. Potential to improve handling and storage conditions for sale to higher markets. Essential oils from leaf and fruit have considerable interest. Valorization through essential oil processing offers potential
NAMPULA	Huvillo/Mushroom	*Termitomyces schemperi*	Abundant in all visited districts during rainy season	Consumed fresh and dried out	Commercialized along the road and in the Sunday market in Nampula. Quantities are enough to ship to other provinces—requires training in product preservation to ensure supply in dry season. VC requires development with regard to hygiene, handling,

Province	Local/Common Name	Scientific Name	Abundance	Current Use	Opportunities for VC Upgrade
					swift transport, and access to markets
	Baobab	*Adansonia digitata*	Abundant in all visited districts	Mainly consumed at household level	Cosmetic oil production. Significant potential of valorization through branding, geographic indicator labeling, and organic and fair trade certification are also possible
	Mithali/Bamboo	—	Mostly found in Meconta, Ribaué, and Malema.	Used in construction and artifact production (baskets, matte, and so on)	Commercialized in Nampula City and shipped to other provinces from Nacala Harbor. Inventory in the potential areas and a sustainable harvesting plan in place
	Ethere/Wild Date Palm	*Phenix reclinata*	Occurs in abundance in Ribaué, Malema, and Monapo	Used in construction and artifact production (baskets, matte, beds, chairs, and so on)	Commercialized in the local markets and in Nampula dominical market. Natural wax covering leaves is of potential commercial interest and could benefit from value addition. Yield likely to be low, price likely to be very high
	Wepa/Tamarindus	*Tamarindus indica*	Abundant in Meconta, Ribaué, Malema, and Monapo	Fruit: consumed fresh and processed into pastes (jams)	At the moment, no commercial value
	Oiele/Hairy Bean	*Mucuna pruriens*	Abundant in Meconta and Monapo	Domestic consumption (as curries, baked, and so on)	Mostly used for consumption in the household. Commercialized in the local markets but very low amounts. Very difficult to harvest

Annex 7: Economic and Financial Analysis

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

A. Background

1. **This Annex contains the EFA of the Project.** The PDO is to integrate rural households into sustainable agriculture and forest-based value chains in the Project Area and, in the event of an Eligible Crisis or Emergency, to provide immediate and effective response to said Eligible Crisis or Emergency.

2. **Using an integrated landscape approach, project interventions recognize the critical links between different elements of a landscape, from productive agricultural areas to forests, watersheds, and protected areas.** By targeting inefficiencies in the agriculture sector, the Project's VC approach promotes rural income generation by integrating households into competitive agriculture and forest-based VCs with significant market-driven potential. Inefficiencies in the agriculture sector include limited access to improved technologies/inputs, extension services, key rural infrastructure (that is, irrigation, storage, processing, and rural feeder roads), markets and finance, registered land rights, and natural resources (that is, soil and water). There is also limited public and private sector knowledge in all these areas and limited capacity for effective collective action.

3. **The team conducted this analysis for both Project 1 alone (US$40 million, referred to as Scenario 1), and for Project 1 and Project 2 combined (US$80 million, referred to as Scenario 2), both results are presented below. The table below shows the Project components and associated costs for Project 1 and Project 1 and 2 combined**:

Project Components	IDA Grant/Credit Financing - Project 1	Project 2	Total Project 1 and 2 Cost
Component 1: Agriculture and Forest-Based Value Chain Development	**21.0**	**36.0**	**57.0**
Provision of training and TA to SECFs & key rural MSME Agribusinesses	6.0	3.0	9.0
Agribusiness finance to VC actors	10.0	10.0	20.0
Improving rural infrastructure	5.0	23.0	28.0
Component 2: Securing Land Tenure Rights and Increasing Natural Resources Resilience	**14.0**	**2.0**	**16.0**
Securing Land Tenure Rights	7.0	0.0	7.0
Strengthening land administration services	2.0	1.0	3.0
Strengthening capacity on integrated landscape management	1.0	0.0	1.0
Restoration of natural habitats critical for the VCs in the landscape	4.0	1.0	5.0
Component 3: Project Coordination and Management	**5.0**	**2.0**	**7.0**
Component 4: Contingency Emergency Response	**0.0**	**0.0**	**0.0**
Total Cost	**40.0**	**40.0**	**80.0**
Total Financing Required	**40.0**	**40.0**	**80.0**

B. Rationale for Public Provision and Financing

4. **Improving key rural feeder roads, securing land tenure rights, and strengthening natural resources resilience as well as public sector capacity building are all typical public goods where private sector entities are unable to capture sufficient benefits to justify their investment.** In many cases, investments in productive activities are private goods for which there is no rationale for public sector financing. Public sector investments are justified in the case of provision of public goods and nonmonetary benefits, dealing with market failures, spillovers to nonprogram areas, environmental externalities, redistribution of wealth, and social and political concerns.

5. **With limited publicly provided extension services available, the Project can help build a public good with spillover effects beyond the project area. Directly targeted beneficiaries have low income levels but show potential for elevating the scale of production and incomes.** By building capacity among SECFs and key MSMEs—two key target groups—the Project enables them to incorporate smallholder farmers who otherwise will be excluded from commercially competitive VCs. This has the potential of addressing the limited public sector extension services with spillover effects beyond the project area.

6. **To enable farmers to invest in enhanced technologies, increasing access to finance in the agriculture sector has the potential to also address an existing market failure.** Farmers have limited access to enhanced agricultural technologies because of lack of availability and inability to obtain commercial investment loans. The current limited access to finance is in part because of commercial financial institutions' lack of familiarity with agriculture and the resulting perception of high risk. Providing MGs and PCGs can, in the long term, increase familiarity on both the supply side (financial institutions) and the demand side (SECFs and MSMEs) of the financial sector.

7. **By restoring degraded lands and promoting the adoption of CSA practices among smallholders, the Project will generate significant positive environmental externalities.** These positive externalities include carbon sequestration from the restored areas as well as from the improved land-use practices (for example, agroforestry, reduced tillage, and vegetative cover) and reduced carbon emissions from forest cover loss. Restoration of critical natural areas is expected to increase water flow stability and reduce erosion to downstream water users. Restoration can also help create biological corridors, which serve as habitats for globally important biodiversity and over time can increase tourism potential.

C. World Bank Value Added

8. **The Project is a flagship project for the new CPF for Mozambique (2016–2021).**[45] Bank financing in support of the Project will add comparative value given the Bank's position to use cross-sectoral collaboration between the Agriculture Global Practice, the Environment and Natural Resources Global Practice, the Water Global Practice, and the Transport and ICT Global Practice.

[45] Under preparation. Scheduled for Board presentation in 3rd quarter FY16.

9. **The Project is strongly linked with other ongoing or planned Bank projects.** The Bank's Involvement also enables building on related projects in the region, including: APPSA; AgDPO 1, 2, and 3[46]; Mozambique's Spatial Development Planning Technical Assistance Project; Mozambique's Integrated Growth Poles Project; Let's Work – Mozambique; PROIRRI; MOZBIO; Forest Investment Project (MOZFIP); Mozambique's REDD+ Readiness Project; and the ZERP. See further discussion of higher-level objectives in the main text of the PAD.

D. Methodology

10. **A cash flow model is used to assess the ex ante efficiency of the project investment.** Annual cash flows are estimated as the difference between without-project and with-project net benefits for direct beneficiaries. All project indicators are considered necessary to obtain the target impact; therefore, the entire investment cost is included in this analysis.

11. **Efficiency and other cost-benefit indicators.** The cost-benefit analysis is based on crop- and farm-level assumptions on yields, input requirements, and prices and costs in constant 2016 currency amounts for without- and with-project scenarios and a typology of farm households.[47] The ENPV is calculated using the Bank-recommended discount rate of 5 percent.[48] In addition to sensitivity analyses of this discount rate, the break-even rate is also calculated, that is, the economic IRR (EIRR). Other indicators include impact on income for the representative farm households and estimated change in farm-level employment. Using data collected by the project team, the methodology goes further than the total project results to enable analyses at different levels of aggregation:

(a) At the base of the model are data on per ha gross margin for priority crops and forestry.[49] As discussed in Annex 6, these VCs were identified as having particular investment potential in Mozambique, when considering growth potential, scale/impact potential, and leadership potential.

(b) Representative farms are defined with regard to farm size and combinations of different crops and forestry and major types of technology. This enables an analysis of estimated impact on incremental farm household income.

12. **Quantified net benefits captured in the EFA model. In Scenario 1 (Project 1),** Component 1 targets productivity and competitiveness for 100 targeted SECFs that are assumed to reach 200 smallholder farmers each.[50] This results in targeting 20,000 smallholder

[46] Under preparation.
[47] The foreign exchange rate used is US$1 = MZN 50.
[48] World Bank. 2015. Technical Note on Discounting Costs and Benefits in Economic Analysis of World Bank Projects. Washington, DC.
[49] Available data for each priority crop were collected by team members from CEPAGRI during field trips to both Zambézia and Nampula provinces. Data on yields, prices, and costs were used to estimate per ha gross margins. This data collection also helped establish investment revenue and cost data, for example, for post-harvest facilities. Assumptions for timber production are based on project team members' experience from small-scale forestry (1–10 ha) in Mozambique.
[50] Based on several cross-country assessments, including Mozambique, there have been successful experiences in VC projects in mobilizing progressive smallholders to become successful commercial farmers who access improved

beneficiaries, of which 15,000 are currently expected to be subsistence farmers and about 5,000 already have some experience in commercial agriculture. In **Scenario 2**, 200 SECFs are targeted, reaching 40,000 farmers, of whom 30,000 are expected to subsistence farmers and 10,000 are expected to have some experience in commercial agriculture. The project team's assumptions about the impact of the Project interventions on cropping pattern, yield, and costs include assessing the effect on incremental net income by improving both productivity and resilience of natural resources (that is, soil and water). To determine the with-project assumptions, the project team took into account the baseline situation and improved access to knowledge of better farming practices, improved seeds, fertilizer, technology (mechanization and irrigation), markets, finance, and registered land rights. Net benefits captured in the EFA model also include those generated by improved post-harvest infrastructure (for example, on-farm cassava processing facilities for which farmers choose to obtain commercial investment loans). While some benefits from improved rural feeder roads are captured indirectly through measures of farm productivity, most other net benefits from feeder roads are not captured in the EFA because of lack of data. Because improved rural feeder roads are key to achieving other assumed benefits, the cost of this component is included in the EFA while the impact is discussed qualitatively. In addition to these benefits captured by direct beneficiaries, benefits are estimated from improved carbon balance because of project interventions. Project investments for land administration (Component 2) and project management (Component 3) are necessary to achieve the net benefits captured in other components and are therefore included in the EFA.

13. **Cumulative target values and farmer adoption rates.** Investment costs are allocated across the initial years according to the cumulative target values for targeting beneficiaries as laid out in the Results Framework (10 percent, 20 percent, 40 percent, 25 percent, and 5 percent in years 1–5, respectively). As also shown in the indicative Results Framework, (for both scenarios) farmers' adoption of improved agricultural technology promoted by the Projects follows a progression of 10 percent per year for five years. As such, the maximum adoption rate is assumed to be 50 percent in the base case (see Annex 2). This is in line with experiences from other projects, but sensitivity analyses are conducted as other projects show adoption rates ranging from 70 percent to 80 percent.[51]

14. **Conversion factors for economic analysis.** An economic analysis is concerned with value addition to the GDP and therefore ignores all transfer payments such as taxes, subsidies, grants, loans, interest, and principal payment paid to or received from beneficiaries. Financial prices and costs are therefore converted to economic prices using adjustment factors. In line with the adjustment factors used in the PROIRRI project EFA,[52] the shadow cost of labor is 80 percent of the rate for unskilled labor. Because of duties and fees, a conversion factor of 1.11 is applied to the price of maize, while all other crops are valued at the prevailing farm gate prices.

---

technologies, finance, and markets and in enabling smallholders to intensify their production and participate in the VC. Annex 10 provides further details of these experiences and lessons that are applied to the Project.

[51] Examples include 74 percent adoption rate in the Uganda-National Agricultural Advisory Services Project (NAADS) and 70–80 percent adoption rate in the IFAD Rwanda Project for Rural Income through Exports (PRICE). In addition, project experiences show that women farmers have a lower adoption rate than men, hence reducing the weighted average adoption rate for the Project. In the Pro-poor Value Chain Project in the Maputo and Limpopo corridors (PROSUL) EFA, an 80 percent adoption rate was assumed in the project area.

[52] Mozambique: PROIRRI – Sustainable Irrigation Development Project. Project Appraisal Document. Washington, DC: World Bank. February 18, 2011.

To exclude taxes and duties and price contingencies, project investment costs are adjusted by a factor of 0.9. As such, the economic value of total project investment cost included in this EFA is (i) in Scenario 1, US$44.55 million (0.9 multiplied by US$40.0 million project budget and US$9.5 million beneficiary contribution from commercial loans); and (ii) in Scenario 2, US$89.1 million (0.9 multiplied by US$80.0 million project budget and US$19.0 million beneficiary contribution from commercial loans).

15. **The Project's impact on GHG emissions is estimated using the Ex Ante Carbon-balance Tool (EX-ACT).** The economic value of the Project's impact on the carbon balance is estimated from avoided deforestation, afforestation, reforestation, and adopting conservation agriculture practices (see Annex 13). This improved carbon balance is multiplied by the assumed economic value of US$30 per tCO_2eq, while in the financial analysis, the value is set to be US$5 per tCO_2eq.[53]

16. **Sensitivity analyses identify key assumptions that should be the focus of risk management efforts.** Three different approaches are used: (a) switching values, when a change in an assumption leads to a break-even ENPV, are calculated for most assumptions; (b) elasticities are calculated for key assumptions to show how much a 1 percent change in an assumption changes total ENPV; and (c) specific scenarios are analyzed to further highlight key risk factors (for example, no change in cropping pattern, changes in farmer adoption rates of improved technologies, increased investment costs, and project implementation delay).

E. Assumptions and Results

17. **In Scenario 1 (Project 1), the economic NPV (ENPV) is US$191 million (MZN 9.5 billion) discounted at 5 percent over a 50-year period with an economic IRR of 30 percent and a financial IRR (FIRR) of 20 percent.**

18. **For Scenario 2, in the current 50-year analysis using a discount rate of 5 percent, the Project yields an ENPV of US$208.0 million (MZN 10.4 billion) and has a benefit cost ratio of 3.0. The EIRR is 21 percent and the FIRR is 12 percent** (see further discussion in tables A7.7–A7.9).

19. Sensitivity analyses indicate that the Project's estimated economic efficiency is robust to changes in key assumptions (see further discussion in tables A7.10–A7.12). Before analyzing the overall project efficiency results, the underlying assumptions are discussed starting with a financial analysis of farm-level target beneficiaries. Note that the value of improved carbon balance is not included in the financial analysis at the farm-level because payments for carbon credits are not expected to be distributed directly to farmers during the Project.

[53] Current Bank guidelines suggest a social cost of carbon of US$30 per tCO_2eq. To ensure that the EFA provides a clear basis for the Government's investment decision, a more conservative value of US$5 per tCO_2eq is chosen for the financial analysis. This is in line with the FCPF Carbon Fund and the current value in global carbon markets such as the EU Emissions Trading System. The global carbon market price is an indication of developed countries' willingness to pay for carbon reductions.

Financial Analysis

20. **Project interventions increase crop yields and gross margins while also reducing the share of production that is consumed at home on smallholder farms.** Tables A7.1 and A7.2 show the expected changes in average gross margins on different crops and farms (excluding post-harvest net benefits and value of improved carbon balance). Revenue increases are expected mainly from increased yields per ha and in some cases increased prices because of improved quality and access to different markets. In general, to achieve higher yields, farmers incur increased costs of labor, fertilizer, chemicals, tools, mechanization, and irrigation. Farmers using medium technology (for example, quality seeds, fertilizers, chemicals, mechanization, and irrigation) are expected to see higher increases in gross margins per ha—of between 35 percent and 124 percent (Table A7.2). Gross margins are lower on smallholder farms, which are typically without fertilizer use, irrigation, and mechanization. In this analysis, it is assumed that project interventions will help smallholder farmers increase productivity to the level where more market-oriented farmers are currently. This can be seen by comparing with-project assumptions in Table A7.1 to without-project assumptions in Table A7.2. As part of the with-project assumptions made by the project team, the table also shows how the project targets increased commercialization such that the share of production that is consumed at home is reduced. This is particularly the case on smallholder farms.

21. **Increased crop productivity is expected to enable farmers to bring idle land into production and switch to higher-value and irrigated crops.** Depending on the cropping pattern used on different farms, the estimated improvement to farm-level income varies. Table A7.3 shows the assumed cropping pattern without- and with-project for four representative farms.[54] SECFs and market-oriented farmers currently use a large share of their farm area for maize and bean production, and project interventions are expected to induce a switch to higher value and irrigated crops such as vegetables and maize seed. The project team has also noted that farmers in the project area have land that is currently unproductive because of lack of funds. It is assumed that—with the project interventions—farmers will be able to reduce their idle areas and therefore increase farm productivity. This is also the case for farmers who may use currently idle land to produce timber. With project interventions, smallholder farmers can also afford to bring idle land into production for staple crops such as maize. In total, the unproductive area is assumed to be more than halved because of project interventions.

22. **The combination of improved yields, technology, irrigation, and change in cropping pattern has the potential to improve farm income significantly by as much as a 27 percent increase on a smallholder farm and 164 percent and 208 percent increase on market-oriented and SECF farms, respectively (in Scenario 2).** Table A7.4 only includes farm-level income (that is, post-harvest value added is analyzed). Targeted smallholders may see a 27 percent increase in income because of the Project. This translates to US$67 per farm per year or US$13 per household member per year (assuming an average of five members per farm household). This is 7 percent of the national poverty line of about US$183 per person per year.[55]

[54] In reality, cropping patterns are driven by demand and supply. However, the EFA model is deterministic and does not include a dynamic adjustment of cropping patterns between years and different farmers. The assumptions are based on the project team's best judgement.

[55] The Mozambique Poverty Line is about US$0.5 per person per day. International Monetary Fund. 2011. Republic of Mozambique: Poverty Reduction Strategy Paper. Washington, DC. June 2011.

Market-oriented farmers and SECFs may capture upward of a 164 percent increase in farm income with between US$2,050 and US$2,453 per farm per year, or US$410–US$491 per person per day—over twice the national poverty line.

23. **Providing investment grants and assistance in negotiating loan terms are necessary to enable farmers to make on-farm infrastructure investments.** It is expected that the Project will enable some SECFs and market-oriented farmers to invest in on-farm equipment to achieve the projected increases in income. For example, vegetable production with the assumed gross margins detailed above may require that some farmers invest in irrigation equipment. Table A7.5 summarizes the financial analysis of such an investment by an SECF. When considering a cost of US$14,000 per farm with a 30 percent grant from the Project for a three-year commercial loan with a 20 percent interest rate, the farmer can achieve an annual net operating profit from year 5 of US$3,066. The benefit cost ratio of the investment is 1.5 with a 20-year FIRR of 21 percent. In other words, this representative farmer needs at least a 30 percent grant to make the investment feasible given the 20 percent loan interest rate. These investment opportunities and access to finance should be closely monitored during the Project because providing even a small MG and assistance in negotiating better loan terms determines whether the farmers can commit to the investment.

24. Table A7.6 shows the financial analysis of another potential small investment in the project area: a cassava processing facility. In the example, a market-oriented farmer takes out a commercial loan for US$50,000 to establish a facility that processes 2,500 tons of cassava roots each year and produces 625 tons cassava chips. The gross margin is about US$5 per ton of processed roots.[56] The farmer's annual net operating profit when combining both crop production and the processing facility from year 5 is more than US$9,200. Investment seems profitable when comparing the commercial loan rate of 20 percent with an overall FIRR of 27 percent. PCGs, MGs, and assistance in negotiating loan terms could enable farmers to make profitable investments such as these.

25. **Investment in community storage facilities managed by SECFs can reduce current value losses and provide a better opportunity to negotiate higher prices.** Sufficient and verified data were not available to quantify other on-farm and off-farm investment scenarios at the time this EFA was prepared. However, the project team finds that the situation in the project area calls for investments in both on-farm and community storage facilities. For example, farmers who are able to store their harvested maize crops for 3–4 months can obtain upward of 5–10 percent higher prices than the farm gate price used in the current analysis. In addition, farmers in the project area indicate that they are experiencing value losses because of poor storage conditions. Investment opportunities range from seed storage to community storage facilities. On-farm seed storage between seasons can cost US$1,000 per ton of seeds. An on-farm 10 ton metal silo for storing produce can cost US$4,000. Another option is a community storage facility with 50 ton capacity at the investment cost of US$3,500 (wood sidings with zinc roof). It is the project team's opinion that, if funding (grants and/or loans) is made available, up to 30 percent of the SECFs could invest in and manage such facilities and serve the surrounding

[56] Adapted from an example in the EFA of the Pro-poor Value Chain Project in the Maputo and Limpopo corridors (PROSUL).

community. A 50 ton storage facility provides sufficient economies of scale and a better opportunity to negotiate higher prices for many farmers.

Economic Analysis

26. As explained earlier, prices and costs used in the financial analysis are adjusted to value the economic impact of the Project. Farm-level net benefits are aggregated to represent: (i) in Scenario 1, 20,100 targeted farmers, and 5 cassava processing plants are included as a partial estimate of the possible investments made by project beneficiaries; and (ii) in Scenario 2, 40,200 targeted farmers, and 10 cassava processing plants are included as a partial estimate of the possible investments made by project beneficiaries.[57] The economic net benefits also include a valuation of the Project's impact on the carbon balance. Investment costs include the project budget, beneficiary contributions, and annual recurring costs after the Project is complete.

27. **In Scenario 1 (Project 1), the economic NPV (ENPV) is US$191 million (MZN 9.5 billion) discounted at 5 percent over a 50-year period with an economic IRR of 30 percent and a financial IRR (FIRR) of 20 percent.** The undiscounted annual average net benefit from the Project is US$13 million, which is 0.1 percent of the country's GDP, and 0.5 percent of the agriculture share of GDP. Of the benefits, 89 percent come from farm-level improvements, 9 percent from the economic value of improved carbon balance, and 1 percent from the post-harvest processing facilities.

28. **In Scenario 2, the ENPV is US$208.0 million (MZN 10.4 billion) discounted at 5 percent over a 50-year period. This generates a benefit cost ratio of 3.0 and an EIRR of 21 percent with a payback period of 8 years. The FIRR is 12 percent.** The undiscounted annual average net benefit from the Project is US$15.0 million, which is 0.1 percent of the country's GDP, and 0.6 percent of the agriculture share of GDP.[58] Of the benefits, 68 percent come from farm-level improvements, 31 percent come from the economic value of improved carbon balance, and 1 percent from the post-harvest processing facilities. The annual cash flows are shown in table A7.8 and illustrated in the associated chart. Over a 20-year period, the ENPV is US$102.0 million (MZN 5.1 billion). Table A7.8 also shows that the Financial NPV (FNPV) over a 50-year period is US$107.0 million (MZN 5.3 billion) with a FIRR of 12 percent and a payback period of 12 years.

29. **Estimates indicate that the Project has minor impact on employment from hired farm labor. A bigger impact may be possible from employment in infrastructure construction and maintenance (that is, irrigation and roads) and also in new post-harvest**

[57] These 10 facilities costed at US$50,000 each cover up to US$500,000 of the estimated US$19.0 million beneficiary contributions that may be obtained through commercial loans during the Project. Note that the project investments are demand-driven and cassava processing is only an example. One facility per 10 districts is assumed to be feasible when considering the distance of transporting produce from farm to facility. At a capacity of 2,500 tons per year, 10 facilities could process 25,000 tons cassava per year, which is about 1 percent of the 2014 cassava production in 2014 in Zambézia and Nampula (Mozambique agricultural statistics. Anuário de Estatísticas Agrárias 2012–2014, Table 28).

[58] According to the World Development Indicators database (accessed March 5, 2016), Mozambique's GDP in current local currency unit in 2014 was MZN 535,535 million (US$10,711 million). Agriculture constitutes 25.2 percent of total GDP. Note that, the agricultural production's share of total GDP is often underestimated because of the informal nature of the sector.

facilities and management of natural forests. It has not been possible to estimate the total impact on employment. There are not sufficient data, before project implementation, to explore the likely impact on employment in infrastructure construction and maintenance, post-harvest facilities, or management of natural forests. On the other hand, the assumed gross margins for different crops include an estimate of the number of days per ha per year required from hired labor at farm level. Accumulating up the incremental change in farm-level hired labor because of project interventions illustrates the potential impact on employment of unskilled labor in the area. Labor hired during timber harvest is excluded because this is considered skilled labor paid at a higher rate than the assumed shadow price of farm labor of US$1.6 per day. Calculations show an estimated average change in hired farm labor of 844,555 days per year. This is equivalent to 3,248 full-time person-years, or 6,497 part-time person years. This increase in farm labor constitutes 0.2 percent of the 1.72 million rural population in the project area.

30. **The project interventions (in Scenario 2) are expected to have a net benefit on GHG emissions to the amount of 9.5 million tCO_2eq over 50 years, which constitutes a discounted value of US$97.0 million (see Table A7.7).** GHG emission calculations using the EX-ACT are done for a 5-year project and a total 50-year time frame (see Annex 13). The assumptions include 10 percent avoided deforestation, afforestation of 1,200 ha on previously degraded land, and established forest plantations on 1,600 ha. It also assumes use of sustainable land-use management practices, namely, improved agronomic practices, nutrient management, zero tillage, water management, and manure application. The impact of inputs and investments is also included (construction of irrigation and rural feeder roads, and use of gasoline, fertilizer, and agro-chemicals). Table A7.9, with the associated chart, shows that 37 percent of the mitigation potential is achieved from avoided deforestation (3.5 million tCO_2eq of the total 9.5 million) and another 24 percent and 23 percent from afforestation and perennial agriculture, respectively. Annex 13 also includes sensitivity analysis of these estimates.

31. **Switching values.** A switching values analysis is reported in Table A7.10 (using the data for Scenario 2), where each assumption is changed until the ENPV turns zero (that is, a break-even analysis). Crop prices have the largest impact on the Project, but the base case estimate remains robust. For example, all crop prices would have to drop by 51 percent to bring the ENPV to zero. Table A7.10 shows that the project net benefits are most sensitive to yields and prices of potatoes and onions. This indicates the importance of supporting farmers in vegetable VCs. While the returns are sensitive to the assumed adoption rate in year 5, it would have to fall from 50 percent to only 1 percent before the ENPV becomes zero.[59]

32. **Elasticities.** The large and unlikely changes required to turn the ENPV to zero in the switching values analysis does not reveal how sensitive results are at the margin. Instead, table A7.11 shows the elasticities of key assumptions. A 1 percent increase in the adoption rate can lead to a 4.3 percent increase in the ENPV. A similar impact is observed when all crop prices increase (decrease) by 1 percent. The 1 percent change in vegetable yields and prices can lead to a 1.3 percent change in project return. A similar impact is observed from a 1 percent change in the potato yield. A 1 percent increase in the discount rate reduces the estimated ENPV by 1.2

[59] Because the project's impact on the carbon balance is calculated in the separate EX-ACT, it was only possible to run a limited sensitivity analysis inside the EFA model. In the sensitivity analyses presented in this PAD, the carbon balance estimates only change when adoption rates are changed, or when analyzing project delays.

percent. For illustration purposes, Table A7.11 also shows that the results are not very sensitive to changes in project investment costs and the economic value of CO_2eq.

33. Some risk factors cannot be estimated directly in a switching values or elasticity analysis. To analyze the impact on project returns from selected assumptions, some specific scenarios are calculated. Table A7.12 summarizes the impact of key risk factors.

34. **Change in cropping pattern and increased area of production.** An important part of the assumptions is the farmers' ability and willingness to adjust their cropping patterns in favor of more profitable crops and by bringing currently idle land into production. Analyses indicate that much of the project's net benefits do not materialize if the inefficiencies in the sector continue to prevent the farmer from switching cropping pattern and increasing production. Table A7.12 shows that the ENPV could fall by 63 percent with an EIRR of 11 percent, in Scenario 2. On the other hand, the FIRR falls to only 3 percent.

35. **Because benefits from improved carbon balance constitutes over 30 percent of the project benefits (in Scenario 2), the results are sensitive to the assumed value of CO_2eq.** If the assumed value drops from US$30 to US$5 per tCO_2eq, the ENPV falls by 39 percent and the EIRR falls from 21 to 14 percent. If one excludes the entire benefit from improved carbon balance, the ENPV falls by 47 percent and the Project's EIRR and FIRR become 13 and 11 percent, respectively. While it indicates a downside risk, this is still a reasonable return for an investment when Bank guidelines recommend comparing to a 5 percent discount rate.

36. **Adoption rate. In scenario 2,** if it is assumed that only 30 percent of the target farmers adopt improved technologies by the end of the Project, the EIRR falls to 17 percent and the ENPV falls by 39 percent. Close monitoring and support for target farmers as well as commercial financial institutions should help increase the adoption rate. This also includes ensuring that beneficiaries are successful at applying for commercial loans and implementing their investments. Substantial benefits can be captured by increasing the final adoption rate, for example to 60 percent with an 18 percent increase in the ENPV and an EIRR of 23 percent.

37. **A general fall in crop prices** of 5 percent can lead to a 20 percent fall in ENPV. This again emphasizes the value of improving farmers' ability to negotiate higher prices and also consider the potential impact of a general fall in prices outside the control of the Project.

38. **Project delay and cost increases.** A one-year delay in project implementation reduces the ENPV by 5 percent and the EIRR falls from 21 percent to 18 percent. While not always avoidable, project delays can be minimized with close monitoring and by ensuring implementation does not lose momentum. A 10 percent increase in total investment costs has much the same level of impact as a one-year delay in project implementation. To stay on budget and on schedule, the Project relies on the institutional capacity for implementing its many interlinked components.

39. Overall, the project returns are substantial even when considering key risk factors. In addition, significant additional benefits can be expected from post-harvest infrastructure investments and improved rural feeder roads, which have not been included in this quantitative

analysis. The potential impact on economic net benefits from these and other sources are discussed in the next section.

F. Net Benefits Not Quantified in EFA Model

40. The main expected net benefits that could not be quantified because of lack of data include more post-harvest storage and processing facilities; rural feeder roads; value of reduced erosion both on-farm and through downstream sedimentation; timber- and agro-forestry; nutrition, domestic, and commercial values from natural forests; and valuation of biodiversity corridors and tourism.

41. **More analysis is needed to identify profitable investment opportunities in both on-farm and off-farm post-harvest facilities in the project area. The shortage or excess capacity of such facilities should also be investigated further.** The impact from investing in on-farm and off-farm post-harvest facilities is estimated based on one example of cassava processing. As discussed above, there is a need for improved storage facilities in the project area. Investment in community storage facilities that are managed by SECFs can reduce current yield losses and provide a better opportunity to negotiate higher prices. If supported post-harvest facilities have the capacity to store/process more than the incremental increased production, additional benefits can be expected. Given that there appears to be little current post-harvest capacity in the area, project support is not expected to create excess capacity in the sector. However, this should be confirmed with further data collection on current/planned capacity versus projected production levels in the project and surrounding areas.

42. **Benefits from project investment to improve rural feeder roads are expected to have substantial impact in the project area.** The road quality of nonprimary roads remains a main concern in Mozambique. The Project will therefore improve physical linkages between production areas and markets, contributing to increased production and marketing and lower transaction costs, leading to enhanced market access among producers for VC expansion. As recognized in the Bank-financed Rwanda Feeder Roads Development Project, the sustainability of feeder roads hinges on the existence and effective implementation of strategies and long-term plans. The Rwanda project used multi-criteria analysis and the Road Economic Decision Model to prioritize roads and compare investment alternatives. Results indicate that all the proposed roads have an EIRR of over 12 percent and NPV above zero—suggesting the investments are economically viable. There are many diverse benefits to local communities from improved rural feeder roads. In line with analyses in the Rwanda project, more data are needed to value the net impact of road investments based on issues such as

(a) the Rural Accessibility Index (that is, population living within 2 km distance of all-season road);

(b) current traffic volume and forecast for the proposed roads (measured with regard to Annual Average Daily Traffic);

(c) road designs to accommodate a high number of pedestrians;

(d) routine maintenance and repair costs of slide protection and drainage structure;

(e) reduced cost of vehicle maintenance for current and future users;

(f) avoided value losses during transport;

(g) reduced number of accidents versus increased traffic;

(h) cost savings from reduced transportation costs for beneficiaries in the area;

(i) increased employment opportunities both during construction and afterward through maintenance and also improved commuting opportunities;

(j) impact on migration in and out of the area;

(k) improved access to water and social services (health and education) that currently require longer travel time; and

(l) both potential negative and positive environmental impacts.

43. **Reduced soil erosion through the Project can contribute to reduced sedimentation in rivers and downstream reservoirs, which leads to cost savings for downstream irrigation and water user associations.** The landscape approach of the Project merges the complementary concern for agricultural productivity and NRM. As noted before, the ability of direct beneficiaries to capture the estimated net benefits of the Project relies on improved technology and management practices that are in line with CSA principles of mitigation, enhanced productivity, and adaptation/resilience. While benefits are captured in the EFA model through net benefits to investments from the use of climate-smart technologies, such as improved seed varieties and more efficient fertilizer products, some wider benefits (for example, positive externalities) are not quantified. Increased use of on-farm conservation techniques, such as agroforestry, contour farming, mulching, and reduced tillage, not only improves soil fertility and yields for the farmer, but also decreases the negative impact of soil erosion on people living downstream. The issue is that a high level of sediment load increases the costs of maintaining irrigation systems downstream from the eroding areas. Further data collection from affected and target irrigation and water user associations is necessary to be able to estimate this value of reduced erosion. These data should include cost of removing sediment loads from reservoirs and the potential sediment load reduction, because of project intervention, in tons per ha per year.[60]

44. **In the without-project situation, yield loss caused by soil erosion and nutrient depletion over the years can be substantial.** While the concept is not captured in the current EFA, research in Rwanda and Kenya has quantified soil losses from erosion of up to 14 tons of soil per ha per year or measured as annual yield decline of up to 4 percent.[61] Under such

[60] In the literature, cost of removing sediment loads is estimated to be US$2.50 per ton (used in the Madagascar Irrigation and Watershed Management Project) and US$8–25 per ton (used in the Kenya Agricultural Productivity and Sustainable Land Management Project). Afforestation activity in the Kenya APSLM project estimated reduced sediment loads to be approximately 1.8 tons per ha per year; while 0.45 ton per ha per year was used in the Madagascar Irrigation and Watershed Management Project in Madagascar.

[61] A run-off experiment conducted in Busogo and Musanze Districts of Rwanda in 2004, which involved different crops (wheat, maize, soybean, peas, and potato), planted on a 12 percent slope, revealed soil losses ranging from 2.2 to 13.7 tons per ha per year. Studies carried out to quantify the impact of soil erosion on maize grain yield on

conditions and if project investments can reduce soil erosion, this has considerable impact on on-farm yields. Further research is needed to determine what the equivalent situation will be in the Mozambique project area. Accordingly, the Project's baseline survey and terminal evaluation will aim to generate the needed data for such an assessment.

45. **As the Project develops, more data should be collected on the presence and potential of agro-forestry in the project area.** The information should consider how the Project will target these producers based on the limitations they face when trying to increase productivity and reach commercial markets while also managing their natural resources for long-term sustainability.

46. **The Project is expected to have a positive impact on nutrition inside the project area with likely spillover to other geographical areas.** By promoting nutrition-sensitive agriculture (Component 1), the Project can improve household-level food and nutrition security. Changes come from increased crop productivity (yields), crop rotations, food diversification, and more nutritious crops (especially legumes). Currently, data are not available for the expected value of improved nutrition. While the national and provincial household surveys can help provide a baseline for food security in the project area, more data are needed to quantify gaps in the nutrition and quantity of consumed food. In addition, the dietary impacts need to be identified and linked to changes in agricultural production because of interventions in the project area as well as in neighboring markets. The baseline and terminal evaluations will aim to generate the needed data to derive some of these empirical relationships arising from the Project.

47. **The ability of farmers to obtain title to their land is assumed to be necessary to capture benefits quantified elsewhere in the EFA model.** There is little incentive, beyond ensuring immediate food security, for a farmer to invest in the long-term sustainability of farm resources if the right to own the land is unclear. The direct value of strengthening the land titling system and issuing DUATs and CDCs is only quantified indirectly in the EFA model. To capture the estimated net benefits, it is therefore assumed that targeted beneficiaries need registered land ownership rights as collateral to be able to obtain extra funds to purchase improved seeds/fertilizer and change their production practices. More data and analyses are necessary to further investigate the impact of land titling. This could include issues related to the impact on value of land in the project area and beneficiaries' ability to obtain investment loans with land as collateral and the opportunity to sell and buy land in a functional land market.

48. **The Project pilots domestic and commercial values in restored natural habitats.** The focus of part of Component 2 is to protect and restore natural resources and land that the VCs depend upon—particularly soil and water. As such, net benefits captured in the on-farm analysis above require that these protection and restoration efforts be adequately supported. While these net financial benefits are quantified together with the estimated economic benefit of improved carbon balance, it has not been possible to quantify other benefits because of lack of data. Natural regeneration and active enrichment of areas includes planting exotic and natural species

---

Kenyan hillsides have estimated yield losses ranging from 1.3 to 5.2 percent per cm of soil lost (equivalent to annual decline in yields ranging from 2.5 to 3.8 percent). Esdras, N., and U. Francois. 2005. Memoir on the 'Effect of Common Crops on Soil and Water Losses at 12 percent Slope in Ruhengeri Region of Rwanda, A Case Study of ISAE Farm, Cited in RSSP2 Project Appraisal Document. Nkonya, E., et al. 2007. "Economic and Financial Analysis of the Agricultural Productivity and Sustainable Land Management Project, Kenya," Cited in RSSP2 PAD.

that have domestic as well as commercial uses/values (firewood, timber, and non-timber forest products), which communities will have some access to. The Project is going to generate much-needed knowledge about land restoration in Mozambique, which is a public good. The restoration and commercial use of natural species holds significant potential, as evidenced in the Brazilian experience with Brazilian mahogany and *paricá* in the Amazon.

49. **Value of biodiversity corridors and benefits to tourism require different valuation methods.** The value of important biodiversity hotspots and critical areas is not quantified in the current EFA model. Some specific areas are legally protected whereas others are heavily threated with encroachments from agriculture, unsustainable firewood collection, and high-value timber collection. Project interventions plan to finance zoning of critical areas and development of management plans that include existing and viable opportunities for VCD (agriculture, tourism, and forest-based production). Such critical areas can also provide biological corridors for biodiversity. To quantify the Project's incremental impact on these areas, more data are needed when the specific areas have been selected and community-driven plans have been drawn up. These data should identify the current baseline for land use and value creation in the critical areas, while the management plan should identify the values that will be created with regard to household use and agriculture and forest-based production. The value of biodiversity corridors and impact of tourism could be quantified through approaches such as travel-cost methods and willingness-to-pay surveys and other contingent valuation methods that can incorporate both use and non-use values of natural resources.[62]

50. **Benefits of institutional strengthening and capacity building are captured indirectly.** As noted before, the value of capacity building among direct beneficiaries is captured in the EFA model. Project-funded capacity building and institutional development at central, provincial, and district levels have direct value in that they increase the skill level in public sector institutions and enable them to work more efficiently in providing essential and enhanced public good services. These institutional benefits are not quantified in the EFA, but are seen as critical to ensure that the other benefits can be realized when it comes to agricultural and forest-based VCD, land-titling and administration, and increased natural resource resilience.

51. **In light of an ENPV of US$191.0 million and an EIRR of 30 percent (Scenario 1) and the additional potential net benefits that could not be quantified, the project investment is expected to yield significant returns even when considering key risk factors.**

[62] Freeman, A.M. 2003. The Measurement of Environmental and Resource Values: Theory and Methods. 2nd Ed. Washington, DC: Resources for the Future.

Table A7.1. Crop Gross Margins Without and With Project - Smallholder Farmers - Financial Analysis

Description	Unit	Maize		Sesame		Soya		Beans		Cassava	
		WO/P	W/P	WO/P	W/P	WO/P	W/P	WO/P	W/P	WO/P	W/P
Yield	kg/ha	1,100	1,500	600	800	1,100	1,500	862	1,122	7,500	10,000
Increase	**% of WO/P**	—	**36**	—	**33**	—	**36**	—	**30**	—	**33**
Revenue	US$/ha	220	300	360	480	330	450	361	470	225	300
Costs	US$/ha	129	191	106	167	134	194	85	145	146	211
Gross margin	US$/ha	92	109	254	313	197	256	275	325	79	90
Increase	**% of WO/P**	—	**19**	—	**23**	—	**30**	—	**18**	—	**13**
Home consumption	% of yield	55	33	0	0	0	0	49	16	67	20

Note: WO/P = Without Project (Baseline); W/P = With Project. Annual average allowing for a five-year linear increase; Revenue includes value of home consumption. Costs exclude farmer's own labor; Beans is a weighted average of Pigeon Pea + Maize, Low and Cow Pea, Low; Assumes that project interventions help lift smallholder farmers from low-technology production system to the medium-technology system used by current market-oriented farmers (See WO/P columns in Table 6.2); Exchange rate: US$1= MZN 50; Excludes post-harvest and net impact on carbon balance.

Table A7.2. Crop Gross Margins Without and With Project – Market-oriented Farmers - Financial Analysis

Description	Unit	Maize		Sesame		Soya		Vegetables		Beans		Cassava		Seed Maize		Timber
		WO/P	W/P	WO/P	W/P	WO/P	W/P	WO/P	W/P	WO/P	W/P	WO/P	W/P	WO/P	W/P	W/P
Yield	kg/ha	1,500	2,500	800	1,000	1,500	2,000	15,143	19,389	1,122	1,493	10,000	13,000	1,500	2,000	35
Increase	**% WO/P**	—	**67**	—	**25**	—	**33**	—	**28**	—	**33**	—	**30**	—	**33**	—
Revenue	US$/ha	300	600	480	660	450	640	3,743	5,111	470	695	300	520	1,050	1,600	882
Costs	US$/ha	191	356	167	177	194	294	2,520	3,004	145	199	211	391	871	1,334	441
Gross margin	US$/ha	109	244	313	483	256	346	1,223	2,106	325	496	90	130	179	266	441
Increase	**% WO/P**	—	**124**	—	**54**	—	**35**	—	**72**	—	**53**	—	**45**	—	**49**	—
Home consumption	% of Yield	33	20	0	0	0	0	5	4	16	12	20	23	7	5	0

Note: WO/P = Without Project (Baseline) medium technology; W/P = With Project medium technology. Annual average allowing for a five-year linear increase; Revenue includes value of home consumption. Costs exclude farmer's own labor; Vegetables is a weighted average of Onion and Potato; Beans is a weighted average of Pigeon Pea + Maize and Cow Pea. Irrigated crops include vegetables and seed maize; Eucalyptus timber gross margin is annualized based on an eight-year rotation length. This timber is planted on currently idle land (that is, no WO/P gross margin); Exchange rate: US$1= MZN 50; Excludes post-harvest and net impact on carbon balance.

Table A7.3. Cropping Pattern without Project and with Project on Representative Farms and Land Area Included in Analysis, by Crop

Share of Farm Area	Farm A		Farm B		Farm C		Farm D		Total Targeted Area in Analysis		
	SECF Cropping		Smallholder Cropping		Market-oriented Cropping		Market-oriented Timber				
Farm Size	**5.0 ha**		**1.5 ha**		**5.0 ha**		**2.0 ha**		**ha**	**ha**	**% Change**
Crop and Project	**WO/P**	**W/P**	**WO/P**	**W/P**	**WO/P**	**W/P**	**WO/P**	**W/P**	**WO/P**	**W/P**	
Maize, Low	—	—	27%	30%	—	—	—	—	12,000	13,500	13
Sesame, Low	—	—	13%	13%	—	—	—	—	6,000	6,000	0
Soya, Low	—	—	13%	17%	—	—	—	—	6,000	7,500	25
Beans, Low	—	—	27%	27%	—	—	—	—	12,000	12,000	0
Cassava, Low	—	—	13%	13%	—	—	—	—	6,000	6,000	0
Maize, Medium	20%	25%	—	—	18%	25%	—	—	8,840	12,250	39
Sesame, Medium	6%	2%	—	—	5%	2%	—	—	2,460	980	-60
Soya, Medium	6%	2%	—	—	5%	2%	—	—	2,460	980	-60
Onion, Medium	3%	8%	—	—	7%	14%	—	—	3,390	6,800	101
Potato, Medium	3%	12%	—	—	6%	12%	—	—	2,910	5,880	102
Beans, Medium	10%	8%	—	—	9%	7%	—	—	4,420	3,440	-22
Cassava, Medium	5%	4%	—	—	5%	4%	—	—	2,450	1,960	-20
Seed Maize	7%	20%	—	—	5%	14%	—	—	2,470	6,920	180
Unproductive	40%	19%	7%	—	40%	20%	—	—	22,600	9,790	-57
Timber Eucalyptus (8 year)	—	—	—	—	—	—	—	100%	—	800	—
Unproductive	—	—	—	—	—	—	100%	–	800	—	—
Total	100%	100%	100%	100%	100%	100%	100%	100%	94,800	94,800	0

Note: WO/P = Without Project (Baseline); W/P = With Project; Assumes that project interventions help lift smallholder farmers from low-technology production system to the medium-technology system used by current market-oriented farmers (See W/P columns in Table 6.1 and WO/P columns in Table 6.2); Beans is a weighted average of Pigeon Pea + Maize and Cow Pea. Onion, potato, and seed maize are irrigated crops; Assumes farms targeted by project: 200 SECFs, 30,000 smallholders, and 9,600 market-oriented cropping farmers and 400 market-oriented timber producers.

Table A7.4a. Representative Farm Models, Gross Margins - Financial Analysis (Scenario 1)

Crop		Farm A	Farm B	Farm C	Farm D
		SECF Cropping	Smallholder Cropping	Market Oriented Cropping	Market Oriented Timber
		5.0 ha	1.5 ha	5.0 ha	2.0 ha
Average Annual Gross Margin, WO/P	Avg. USD/ha/year	227	168	321	0
Average Annual Gross Margin, W/P		674	213	847	441
Change due to Project		447	45	525	441
% change due to Project		**197%**	**27%**	**163%**	**ncv**
Average Annual Gross Margin, WO/P	Avg. USD/farm/year	1,136	253	1,607	0
Average Annual Gross Margin, W/P		3,371	320	4,233	883
Change due to Project		2,235	67	2,625	883
Average Annual Gross Margin, WO/P	Avg. USD/household member/year	227	51	321	-
Average Annual Gross Margin, W/P		674	64	847	177
Change due to Project		447	13	525	177

Note: WO/P = Without Project (Baseline); W/P = With Project; ncv = No Calculable Value. Exchange rate: US$1= MZN 50; Assumes that project interventions help lift smallholder farmers from low-technology production system to the medium-technology system used by current market-oriented farmers (See W/P columns in Table 6.1 and WO/P columns in Table 6.2). Excludes post-harvest and net impact on carbon balance; Average number of household members per farm: 5.

Table A7.4b. Representative Farm Models, Gross Margins - Financial Analysis (Scenario 2)

Crop		Farm A	Farm B	Farm C	Farm D
		SECF Cropping	Smallholder Cropping	Market-oriented Cropping	Market-oriented Timber
		5.0 ha	1.5 ha	5.0 ha	2.0 ha
Average annual gross margin, WO/P	Avg. US$/ha/year	197	168	300	—
Average annual gross margin, W/P		607	213	791	441
Change due to Project		410	45	491	441
% Change due to Project		**208**	**27**	**164**	**ncv**
Average annual gross margin, WO/P	Avg. US$/farm/year	985	253	1,500	0
Average annual gross margin, W/P		3,035	320	3,953	883
Change due to Project		2,050	67	2,453	883
Average annual gross margin, WO/P	Avg. US$/household member/year	197	51	300	—
Average annual gross margin, W/P		607	64	791	177
Change due to Project		410	13	491	177

Note: WO/P = Without Project (Baseline); W/P = With Project; ncv = No Calculable Value. Exchange rate: US$1= MZN 50; Assumes that project interventions help lift smallholder farmers from low-technology production system to the medium-technology system used by current market-oriented farmers (See W/P columns in Table 6.1 and WO/P columns in Table 6.2). Excludes post-harvest and net impact on carbon balance; Average number of household members per farm: 5.

Table A7.5a. Net Operating Income and Investment Analysis, On-farm Irrigation - Financial Analysis (US$) (Scenario 1)

Description USD	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Annual Revenue - Crops W/P	5,607	5,954	6,300	6,646	6,992	6,992	6,992
Annual Post-Harvest Cash Flow - Crops W/P	0	0	0	0	0	0	0
Annual Operating Costs - Crops W/P	-2,878	-3,055	-3,233	-3,410	-3,588	-3,588	-3,588
Annual Operating Profit before Tax, Interest, Depreciation - Crops W/P	2,729	2,898	3,067	3,236	3,404	3,404	3,404
Interest on Working Capital - Crops W/P	-138	-147	-155	-164	0	0	0
Interest on Long Term Investment - Crops W/P	-2,240	-1,625	-886	0	0	0	0
Depreciation W/P	0	0	0	0	0	0	0
Net Operating Profit before Tax - Crops W/P	351	1,127	2,026	3,072	3,404	3,404	3,404
Tax W/P	0	0	0	0	0	0	0
Net Operating Profit after Tax - Crops W/P	**351**	**1,127**	**2,026**	**3,072**	**3,404**	**3,404**	**3,404**
On-farm investment W/P	-11,200	0	0	0	0	0	0
Annual Cash Flow (before financing and tax) - Crops W/P	-8,609	2,752	2,912	3,072	3,404	3,404	3,404
Annual Cash Flow (before financing and tax) - Crops WO/P	1,136	1,136	1,136	1,136	1,136	1,136	1,136
Incremental Annual Cash Flow (before financing and tax) - Crops	**-9,744**	**1,616**	**1,776**	**1,936**	**2,269**	**2,269**	**2,269**
FNPV per farm (@20%, 20 Year)	**USD 137**	**FIRR= 20%**		**FBCR= 1.9**			

Note: WO/P = Without Project (Baseline); W/P = With Project. FBCR = Financial Benefit Cost Ratio. Exchange rate: US$1 = MZN 50; On-farm Irrigation Investment (grant). Terms: US$14,000 loan with 30 percent grant over three years at 20 percent interest rate. Working capital is 24 percent of operating costs. Farmer pays no income tax; Excludes post-harvest and net impact on carbon balance.

Table A7.5b. Net Operating Income and Investment Analysis, On-farm Irrigation - Financial Analysis (US$) (Scenario 2)

Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Annual revenue - Crops W/P	6,408	6,801	7,193	7,586	7,978	7,978	7,978
Annual post-harvest cash flow - Crops W/P	0	0	0	0	0	0	0
Annual operating costs - Crops W/P	-3,947	-4,189	-4,430	-4,671	-4,912	-4,912	-4,912
Annual operating profit before tax, interest, and depreciation - Crops W/P	**2,461**	**2,612**	**2,763**	**2,914**	**3,066**	**3,066**	**3,066**
Interest on working capital - Crops W/P	-189	-201	-213	-224	0	0	0
Interest on long-term investment - Crops W/P	-1,960	-1,422	-775	0	0	0	0
Depreciation W/P	0	0	0	0	0	0	0
Net operating profit before tax - Crops W/P	**311**	**989**	**1,775**	**2,690**	**3,066**	**3,066**	**3,066**
Tax W/P	0	0	0	0	0	0	0
Net operating profit after tax - Crops W/P	**311**	**989**	**1,775**	**2,690**	**3,066**	**3,066**	**3,066**
On-farm investment W/P	-9,800	0	0	0	0	0	0
Annual cash flow (before financing and tax) - Crops W/P	-7,529	2,411	2,551	2,690	3,066	3,066	3,066
Annual cash flow (before financing and tax) - Crops WO/P	985	985	985	985	985	985	985
Incremental annual cash flow (before financing and tax) - Crops	**-8,514**	**1,426**	**1,565**	**1,705**	**2,080**	**2,080**	**2,080**
FNPV per farm (@20%, 20 year)	**US$368**	**FIRR = 21%**		**FBCR = 1.5**			

Note: WO/P = Without Project (Baseline); W/P = With Project. FBCR = Financial Benefit Cost Ratio. Exchange rate: US$1 = MZN 50; On-farm Irrigation Investment (grant). Terms: US$14,000 loan with 30 percent grant over three years at 20 percent interest rate. Working capital is 24 percent of operating costs. Farmer pays no income tax; Excludes post-harvest and net impact on carbon balance.

Table A7.6a. Net Operating Income and Investment Analysis, Cassava Processing - Financial Analysis (US$) (Scenario 1)

Description USD	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Annual Revenue - Crops W/P	6,935	7,353	7,771	8,190	8,608	8,608	8,608
Annual Post-Harvest Cash Flow - Crops W/P	2,702	5,404	8,106	10,807	13,509	13,509	13,509
Annual Operating Costs - Crops W/P	-3,492	-3,702	-3,913	-4,123	-4,334	-4,334	-4,334
Annual Operating Profit before Tax, Interest, Depreciation - Crops W/P	6,145	9,055	11,964	14,874	17,784	17,784	17,784
Interest on Working Capital - Crops W/P	-168	-178	-188	-198	0	0	0
Interest on Long Term Investment - Crops W/P	-10,000	-7,253	-3,956	0	0	0	0
Depreciation W/P	-5,000	-4,500	-4,050	-3,645	-3,281	-2,952	-2,657
Net Operating Profit before Tax - Crops W/P	-9,023	-2,876	3,770	11,031	14,503	14,831	15,126
Tax W/P	0	0	-1,320	-3,861	-5,076	-5,191	-5,294
Net Operating Profit after Tax - Crops W/P	**-9,023**	**-2,876**	**2,451**	**7,170**	**9,427**	**9,640**	**9,832**
On-farm investment W/P	-50,000	0	0	0	0	0	0
Annual Cash Flow (before financing and tax) - Crops W/P	-44,023	8,877	11,776	14,676	17,784	17,784	17,784
Annual Cash Flow (before financing and tax) - Crops WO/P	1,607	1,607	1,607	1,607	1,607	1,607	1,607
Incremental Annual Cash Flow (before financing and tax) - Crops	**-45,630**	**7,269**	**10,169**	**13,069**	**16,176**	**16,176**	**16,176**
FNPV per farm (@20%, 20 Year)	**USD 16,106**	**FIRR= 28%**		**FBCR= 6.4**			

Note: WO/P = Without Project (Baseline); W/P = With Project. FBCR = Financial Benefit Cost Ratio. Exchange rate: US$1 = MZN 50; On-farm Cassava Small-Processing Plant (no grant). Terms: US$50,000 loan over three years at 20 percent interest rate. Working capital is 24 percent of operating costs. Capital is depreciated at 10 percent declining balance. Farmer tax rate is 35 percent; Includes crop production and excludes net impact on carbon balance.

Exchange rate: 1 USD = MZN 50

Table A7.6b. Net Operating Income and Investment Analysis, Cassava Processing - Financial Analysis (US$) (Scenario 2)

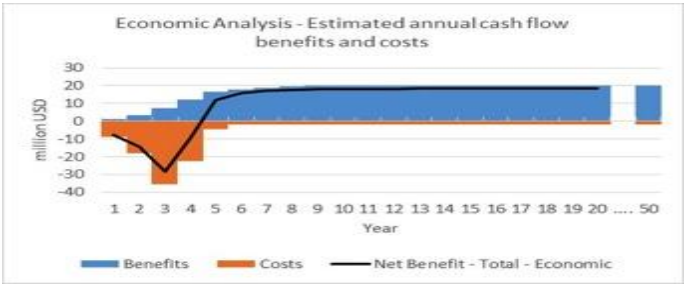
Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Annual revenue - Crops W/P	7,268	7,707	8,146	8,585	9,023	9,023	9,023
Annual post-harvest cash flow - Crops W/P	2,702	5,404	8,106	10,807	13,509	13,509	13,509
Annual operating costs - Crops W/P	-4,051	-4,296	-4,541	-4,786	-5,032	-5,032	-5,032
Annual operating profit before tax, interest, and depreciation - Crops W/P	**5,919**	**8,815**	**11,710**	**14,606**	**17,501**	**17,501**	**17,501**
Interest on working capital - Crops W/P	-194	-206	-218	-230	0	0	0
Interest on long-term investment - Crops W/P	-10,000	-7,253	-3,956	0	0	0	0
Depreciation W/P	-5,000	-4,500	-4,050	-3,645	-3,281	-2,952	-2,657
Net operating profit before tax - Crops W/P	**-9,275**	**-3,144**	**3,486**	**10,731**	**14,220**	**14,549**	**14,844**
Tax W/P	0	0	-1,220	-3,756	-4,977	-5,092	-5,195
Net operating profit after tax - Crops W/P	**-9,275**	**-3,144**	**2,266**	**6,975**	**9,243**	**9,457**	**9,648**

Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
On-farm investment W/P	-50,000	0	0	0	0	0	0
Annual cash flow (before financing and tax) - Crops W/P	-44,275	8,609	11,492	14,376	17,501	17,501	17,501
Annual cash flow (before financing and tax) - Crops WO/P	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Incremental annual cash flow (before financing and tax) - Crops	**-45,775**	**7,109**	**9,992**	**12,876**	**16,001**	**16,001**	**16,001**
FNPV per farm (@20%, 20 year)	**US$15,279**	**FIRR = 27%**		**FBCR = 5.2**			

Note: WO/P = Without Project (Baseline); W/P = With Project. FBCR = Financial Benefit Cost Ratio. Exchange rate: US$1 = MZN 50; On-farm Cassava Small-Processing Plant (no grant). Terms: US$50,000 loan over three years at 20 percent interest rate. Working capital is 24 percent of operating costs. Capital is depreciated at 10 percent declining balance. Farmer tax rate is 35 percent; Includes crop production and excludes net impact on carbon balance.

Table A7.7a, Economic Analysis - Key Efficiency Indicators (Scenario 1)

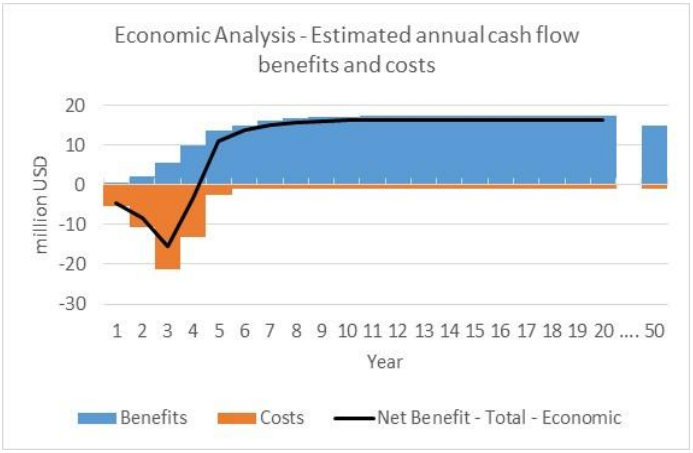
million USD	Undiscounted	NPV (50 Years)	NPV (20 Years)
Net Benefits Farm Level	687	223	137
Net Benefits Post-Harvest	8	3	2
Carbon Balance	44	26	26
Project Investment Costs	-53	-46	-46
Recurring Costs	-48	-15	-9
Total and ENPV	**637**	**191**	**110**
Benefit Cost Ratio		**4.1**	**3.0**
Economic IRR		**30%**	**30%**
Payback Period		**7 years**	



Note: Recurring costs annually after Project investment years = 2 percent of investment costs; 5 percent discount rate. Exchange rate: US$1 = MZN 50; Total 50-year Carbon Balance from EX-ACT model = -9.471 million tCO_2eq. Economic and Financial value of CO_2eq = US$30 per tonne and US$5 per tonne.

Table A7.7b, Economic Analysis - Key Efficiency Indicators (Scenario 1)

US$, millions	Economic Analysis			Financial Analysis
	Undiscounted	ENPV (50 Years)	ENPV (20 Years)	FNPV (50 Years)
Net benefits farm level	647	210	129	202
Net benefits post-harvest	8	3	2	2
Carbon balance	284	97	63	16
Project investment costs	-89	-77	-77	-86
Recurring costs	-80	-25	-14	-28
Total and ENPV	**770**	**208**	**102**	**107**
Benefit cost ratio	—	**3.0**	**2.1**	**1.9**
EIRR	—	**21.1%**	**20.2%**	**12.3%**
Payback period	—	**8 years**	—	**12 years**



Note: Recurring costs annually after Project investment years = 2 percent of investment costs; 5 percent discount rate. Exchange rate: US$1 = MZN 50; Total 50-year Carbon Balance from EX-ACT model = -9.471 million tCO_2eq. Economic and Financial value of CO_2eq = US$30 per tonne and US$5 per tonne.

Table A7.8a. Economic Analysis - Estimated Annual Cash Flow Benefits and Costs (Scenario 1)

Year	Total W/P less WO/P - Farm Level	Total W/P less WO/P - Post-Harvest	Total - Avoided Deforestation	Total - Capital Investment Costs	Total - Recurring Costs	Benefits	Costs	Net Benefit - Total - Economic
1	0.2	0.0	0.5	-5.3	0.0	0.7	-5.3	-4.6
2	1.1	0.1	1.0	-10.6	0.0	2.2	-10.6	-8.4
3	4.1	0.1	1.5	-21.2	0.0	5.7	-21.2	-15.6
4	7.8	0.1	1.9	-13.3	0.0	9.9	-13.3	-3.4
5	11.1	0.2	2.4	-2.7	0.0	13.6	-2.7	11.0
6	12.3	0.2	2.4	0.0	-1.1	14.9	-1.1	13.9
7	13.5	0.2	2.4	0.0	-1.1	16.1	-1.1	15.0
8	14.3	0.2	2.4	0.0	-1.1	16.9	-1.1	15.8
9	14.6	0.2	2.4	0.0	-1.1	17.2	-1.1	16.1
10	14.6	0.2	2.4	0.0	-1.1	17.2	-1.1	16.1
11	14.7	0.2	2.4	0.0	-1.1	17.3	-1.1	16.2
12	14.8	0.2	2.4	0.0	-1.1	17.4	-1.1	16.3
13	14.8	0.2	2.4	0.0	-1.1	17.4	-1.1	16.4
14	14.8	0.2	2.4	0.0	-1.1	17.4	-1.1	16.4
15	14.8	0.2	2.4	0.0	-1.1	17.4	-1.1	16.4
------ *(some years removed for presentation purposes)*								
50	14.8	0.2	0.0	0.0	-1.1	15.0	-1.1	13.9
Total	686.7	7.8	43.7	-53.1	-47.8	7.8	7.8	637.3
Total (discounted)	222.8	2.7	25.9	-46.0	-14.8	251.3	-60.8	190.5
						ENPV	million USD	190.5
						EBCR	ratio	4.1
						EIRR	%	30%
						Payback period		7 years

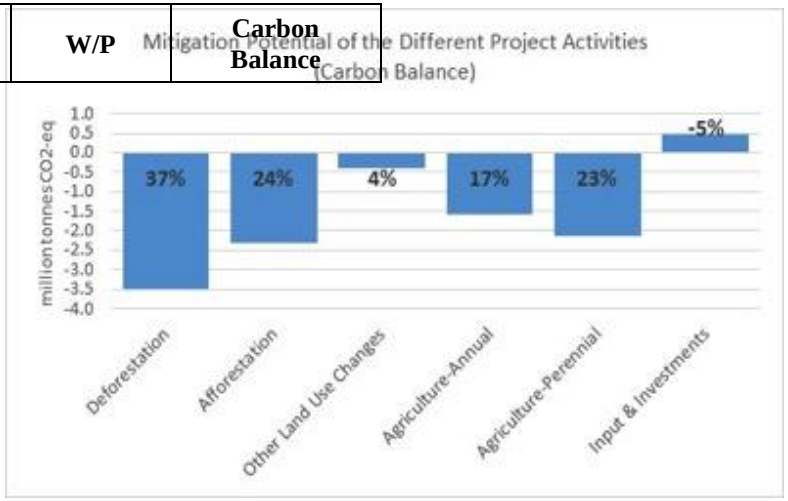
Table A7.8b. Economic Analysis - Estimated Annual Cash Flow Benefits and Costs (Scenario 2)

US$, millions Year	Total W/P less WO/P - Farm Level	Total W/P less WO/P - Post-harvest	Total - Avoided Deforestation	Total - Capital Investment Costs	Total - Recurring Costs	Benefits	Costs	Net Benefit - Total - Economic
1	0.2	0.0	1.2	-8.9	0.0	1.4	-8.9	-7.5
2	1.1	0.1	2.4	-17.8	0.0	3.5	-17.8	-14.3
3	3.8	0.1	3.6	-35.6	0.0	7.5	-35.6	-28.1
4	7.3	0.1	4.7	-22.3	0.0	12.2	-22.3	-10.1
5	10.4	0.2	5.9	-4.5	0.0	16.5	-4.5	12.0
6	11.6	0.2	5.9	0.0	-1.8	17.7	-1.8	15.9
7	12.7	0.2	5.9	0.0	-1.8	18.8	-1.8	17.0
8	13.4	0.2	5.9	0.0	-1.8	19.5	-1.8	17.7
9	13.7	0.2	5.9	0.0	-1.8	19.8	-1.8	18.0
10	13.8	0.2	5.9	0.0	-1.8	19.9	-1.8	18.1
11	13.8	0.2	5.9	0.0	-1.8	19.9	-1.8	18.1
12	13.9	0.2	5.9	0.0	-1.8	20.0	-1.8	18.2
13	14.0	0.2	5.9	0.0	-1.8	20.1	-1.8	18.3
------ *(Years 14 to 49 removed for presentation purposes)*								
50	14.0	0.2	5.9	0.0	-1.8	20.1	-1.8	18.3
Total	647.3	7.8	284.1	-89.1	-80.2	7.8	7.8	769.9
Total (discounted)	210.0	2.7	97.3	-77.3	-24.8	310.0	-102.1	207.9
						ENPV	US$, millions	207.9
						EBCR	ratio	3.0
						EIRR	%	21.1%
						Payback period		8 years

Note: EBCR = Economic benefit cost ratio.

Table A7.9. Economic Analysis - GHG Mitigation Potential (Carbon Balance)

Components of the project	WO/P	W/P	Carbon Balance



Components of the project	WO/P	W/P	Carbon Balance
Land-use changes			
Deforestation	34,823,125	31,340,920	-3,482,205
Afforestation	0	-2,299,594	-2,299,594
Other land-use changes	0	-413,493	-413,493
Agriculture			
Annual	0	-1,574,723	-1,574,723
Perennial	2,630,248	479,187	-2,151,061
Input and investments	1,078,886	1,528,839	449,953
Total, tCO_2eq	38,532,259	29,061,136	-9,471,123
tCO_2eq/ha	13.0	10.0	-3.0
tCO_2eq/ha/year	0.3	0.2	-0.1

Note: WO/P = Without Project (Baseline); W/P = With Project; Calculations from from EX-ACT model (5-year project, 45-year capitalization, tropical area of Africa with low activity soils as defined by IPCC, and assumptions about deforestation, afforestation, land-use changes, and project investment activities).

Table A7.5. Sensitivity Analysis of Economic Efficiency - Switching Values

Rank	Assumptions	Unit	Base Case Assumption	Switching Value	% Change from Base Case
1	Price conversion - Other crop prices	ratio	1.0	0.5	51
2	Onion, medium - W/P - Total production	kg/ha/year	13,000	3,337	74
3	Onion, medium - W/P - Farm gate price	MZN/kg	20	5	76
4	Potato, medium - W/P - Total production	kg/ha/year	23,000	5,301	77
5	Potato, medium - W/P - Farm gate price	MZN/kg	11	1	90
6	Maximum adoption rate	% of developed area	50	1	98
7	Onion, medium - WO/P - Farm gate price	MZN/kg	20	59	194
8	Price conversion - Project investment costs	ratio	1	3	204
9	Onion, medium - WO/P - Total production	kg/ha/year	10,000	32,399	224
10	Potato, medium - W/P - Seeds in years with (re)planting	kg or plants /ha/year	2,000	6,568	228

Note: WO/P = Without Project (Baseline); W/P = With Project. Exchange rate: US$1 = MZN 50; Switching value is the assumption value that causes the ENPV to turn zero (Break-even point); 'Medium' refers to assumptions for market-oriented farmers using medium technology.

Table A7.6. Sensitivity Analysis of Economic Efficiency - Elasticities

Assumptions	Unit	Base Case Assumption	NPV Elasticity (%)
Maximum adoption rate	% of developed area	50	4.3
All W/P farm gate prices	MZN/kg	miscellaneous	4.0
Onion, medium, W/P, farm gate price (Financial)	MZN/kg	20.0	1.3
Potato, medium, W/P, total production	kg/ha/year	23,000	1.1
Discount rate	% per year	5	-1.2
Project investment costs	US$, millions	89.1	-0.5
Economic CO_2eq value	US$/t$CO_2$eq	30.0	0.5

Note: WO/P = Without Project (Baseline); W/P = With Project. Exchange rate: US$1 = MZN 50; Elasticity is measured as the percentage change in Base Case ENPV with a 1 percent change in one assumption at a time.

Table A7.7a. Sensitivity Analysis of Economic Efficiency – Scenarios (Scenario 1)

Case	ENPV – 50 Years		Benefit Cost Ratio – 50 Years	EIRR
	million USD	% change		
Base Case	**190.5**	**0%**	**4.1**	**30%**
No change in cropping pattern to higher margin crops. No increased production from currently idle land.	52.7	-72%	1.9	13%
Adoption rate in Year 5 falls from 50% to 30%	105.8	-44%	2.7	22%
All W/P Farm gate prices fall by 5%	150.3	-21%	3.5	25%
Project Delay: Adoption starts in Year 2	181.1	-5%	4.0	26%
20% increase in project investment costs	178.3	-6%	3.4	25%
Adoption rate in Year 5 increases from 50% to 70%	267.2	40%	5.4	34%

Table A7.8b. Sensitivity Analysis of Economic Efficiency – Scenarios (Scenario 2)

Case	ENPV - 50 Years		Benefit Cost Ratio - 50 Years	EIRR (%)	FIRR (%)
	US$, millions	% change			
Base Case	**207.9**	**0**	**3.0**	**21.1**	**12.3**
No change in cropping pattern to higher margin crops. No increased production from currently idle land.	76.0	-63	1.7	11.2	3.3
No economic value of improvement to carbon balance	110.6	-47	2.1	13.2	11.2
Economic value of improvement to carbon balance US$5 per tCO_2eq	126.8	-39	2.2	14.4	11.4
Adoption rate in year 5 falls from 50% to 30%	126.8	-39	2.2	16.5	7.3
All W/P Farm gate prices fall by 5%	166.0	-20	2.6	18.0	9.6
Project Delay: Adoption starts in Year 2	195.8	-6	2.9	18.4	11.4
10% increase in project investment costs	197.7	-5	2.8	19.0	11.0
Adoption rate in Year 5 increases from 50% to 60%	245.2	18	3.4	22.5	14.1

Note: WO/P = Without Project (Baseline); W/P = With Project. Exchange rate: US$1 = MZN 50; 5 percent discount rate.

Annex 8: Relevant Government Programs and Links with Ongoing Bank Group Operations

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

MITADER 'Estrela' Program	Bank Group Financed Operations									MASA Strategic Program (PEDSA)
	MOZBIO	MOZFIP	REDD+ Readiness	IFC - Portucel	Landscape	Growth Poles	PROIRRI	APPSA	AgDPO Series	
Pillar 1: Knowledge and technology transfer (foundation for productivity and competitiveness)	Provision of equipment, TA, and training to MITADER, with focus on ANAC	Promotion and knowledge transfer on CSA, and sustainable supply chains	Training on activities aimed at reducing deforestation (for example, fire management; CSA, and SFM)	Transfer of forestry knowledge through employment; agriculture extension is being supported in surrounding communities.	Support to agriculture - and forest-based VCs, including through provision of training and inputs	Support to building skills and vocational training though expanding access to finance to investors in these activities in identified growth poles	Support to increased agricultural production and farm productivity through investments in irrigation	Support to technology generation and dissemination in agriculture and to knowledge sharing in southern African countries	Improving agricultural technology focused on seed, fertilizer, and irrigation subsectors	**Pillar 1**: Increased agricultural production, productivity, and competitiveness
Pillars 2, 3, 4: Improved infrastructure (energy, water, and rural roads)	CA-enabling construction works (for example, housing, roads, and others), rehabilitation and maintenance	Support to sustainable pilot initiatives, including infrastructure along the VC	n.a.	Development of roads, bridges, communications infrastructure, and other types of infrastructure (for example, schools and clinics)	Investment in specific/spot infrastructure with unlocking potential (for example, feed roads and small irrigation schemes)	Targeted investments in identified growth poles addressing existing critical gaps (for example, in water supply and road access)	Investment in irrigation and drainage infrastructure and in enabling infrastructure (for example, road connectors)	Investment in a new rice research facility in central Mozambique to support the country's national rice program	Improving management of irrigation infrastructure	**Pillar 2**: Improved infrastructures and services for markets and marketing

MITADER 'Estrela' Program	Bank Group Financed Operations									MASA Strategic Program (PEDSA)
	MOZBIO	**MOZFIP**	**REDD+ Readiness**	**IFC - Portucel**	**Landscape**	**Growth Poles**	**PROIRRI**	**APPSA**	**AgDPO Series**	
Pillars 2, 3, 4: Increased access to services (energy, finance, water for human consumption, and economic activities) **Complementary Actions:** *Terra Segura*; *Floresta em Pé*	Support to enabling conditions for sustainable NRM, livelihoods and forest management around CAs	Sustainable use of forest resources, biomass energy production (for example, sustainable charcoal), and conservation agriculture	Enabling conditions for the sustainable use of land and forests (that is, support to multi-stakeholder dialogue and coordination platforms and support to the national MRV system)	Transformation of degraded landscapes into productive and sustainable mosaics of forestry blocks, out-grower tree production, houses, agricultural fields, and well-managed natural forests	Restoration of ecosystems, promotion of integrated landscape management (for example, spatial planning and multi-stakeholder coordination platforms), and broad LTR	Expansion of access to finance to out-grower schemes, skills and vocational training, and business linkages between MSMEs and large enterprises through the Innovation and Demonstration Catalytic Fund	Support to the participatory planning of irrigation schemes and use of water for irrigation	Support to technology and knowledge dissemination aimed at enhancing productivity premised on the sustainable use of land and water resources	Enhancing access to productive assets and financial services	**Pillar 3**: Sustainable use of land, water, forest, and wildlife resources

Annex 9: Description of the Nampula - Zambézia Landscape

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

1. **The landscape targeted by this first project of the SoP covers an area of 63,397 km^2 and a total population of 2.48 million inhabitants of which 70 percent are rural and 57 percent are below the poverty line.**[63] This landscape has fertile soils as well as medium to high altitude, leading to good rainy seasons and high agriculture and forestry potential. In contrast, it also represents one of the most vulnerable areas to erosion in the country (MICOA 2007), and has experienced high deforestation rates.[64] This landscape is extremely important from a water management perspective, being the source of major rivers for the central and northern regions of the country, including the Licungo, Lurio, and Molocue Rivers, which regularly flood and cause major damage.[65] The landscape is also home to key biodiversity hotspots, including the GNR, the MFR, and Mounts Namuli and Inago. The landscape encompasses 323,665 rural households, which mostly use traditional, low-productivity agriculture practices. However, it is also home to ongoing private investments in agriculture and forest-based VCs and constitutes one of the most rapidly expanding commercial agriculture areas in Mozambique. Maps for the targeted landscape can be found in Annex 14.

2. **Demographic information and poverty trends. The targeted area represents a jurisdictional landscape—that is, a landscape whose boundaries are defined by administrative limits (of the 10 targeted districts).** Districts comprising the Project's landscape (see Table A9.1) account for about 32 percent of Nampula and Zambézia's total population and about 35 percent of both provinces' areas put together. Population per district varies from 83,000 (Lalaua) to 364,000 (Gurué), while population density varies from 18.2 people per km^2 (Lalaua) to 68.5 people per km^2 (Rapale).[66] While poverty rates dropped in most of Mozambique's provinces between 2003 and 2008, they increased in Zambézia along with three other provinces in the country (Sofala, Manica, and Gaza**)**. In Nampula, where 22 percent of the country's poor reside, poverty remained practically unchanged during the same period. By 2009, almost three quarters of Zambézia's population lived in extreme poverty. Zambézia and Nampula alone accounted for almost half of Mozambique's poor (48 percent) in the same year, up from 42 percent in 2003. Poverty trends in these two provinces have been driving the decline in the responsiveness of poverty reduction to growth in Mozambique; if the growth elasticity of poverty reduction were calculated without these two provinces, poverty reduction will be much more responsive to economic growth at the national level, -1.18, which is much higher than the Sub-Saharan African average of -0.7. Households in Nampula and Zambézia are also relatively

[63] Within the project landscape, the poverty incidence in the five Zambézia districts is 63 percent and in the five Nampula districts is 49 percent.

[64] Annual deforestation rates in seven districts in Zambézia, partially covered by this landscape, add up to 0.86 percent over the period of 2000 to 2013, against a national average of 0.58 percent.

[65] For instance, in January 2015, floods in the Licungo river basin led to at least 85 deaths, displacement of about 28,000 people, and more than 100,000 people affected, with long-term negative impacts in the region's economy and infrastructure.

[66] It is worth noting that Nampula and Zambézia provinces together account for almost half of the farm holdings in the country. The majority of the population within those 10 districts is engaged in agriculture, constituting about 408,456 small and medium farms, with only about 20 large farms (see Table 8.1). According to provincial averages estimated in INE's last Agriculture and Livestock Census (2010), about 75 percent of these farm holdings have male heads.

more isolated than in other parts of the country, which contributed to explain why income derived from farm activities was estimated to be three times lower compared with the rest of the country (SCD 2015). While the poverty incidence in the landscape's 10 districts is about 57 percent, there are disparities between the provinces—the poverty incidence in the five Zambézia districts is 63 percent, while the poverty incidence in the five Nampula districts is 49 percent.

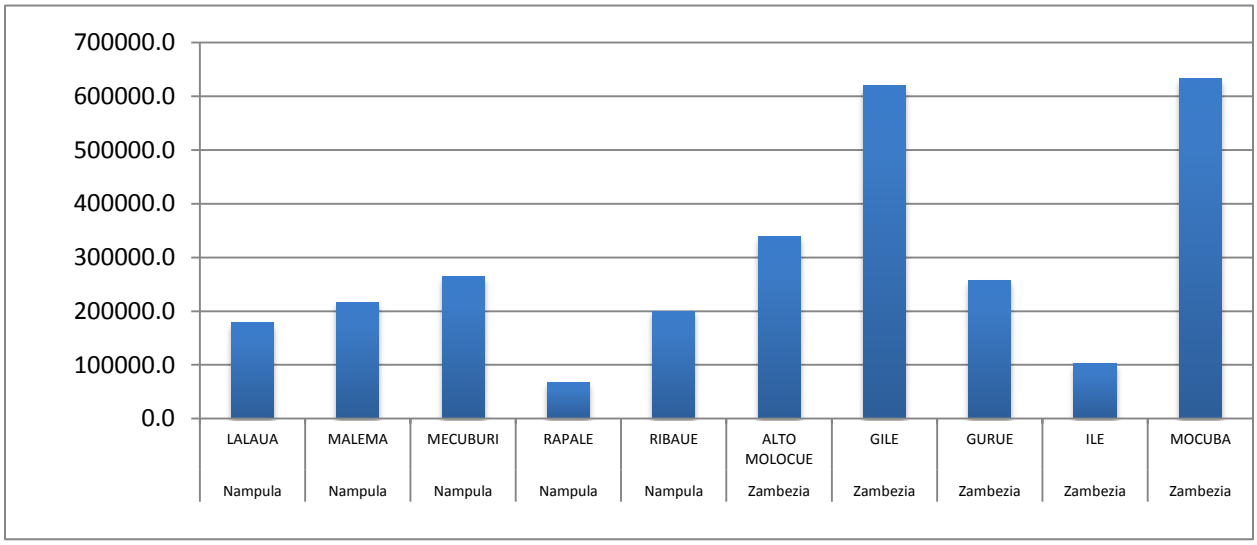
3. **Physical and geographic characteristics. The landscape is characterized by humid mesothermal and subhumid climates. Mean annual temperatures vary according to topographic regions.** In Zambézia, mean temperatures vary between 26°C in Quelimane and 18°C in the highlands of Namuli, in Gurué. Annual rainfall oscillates from 1,000 to 1,200 mm in the coastal region and 800 to 1,000 mm in mid Zambézia to 1,200 mm in the province's highlands, more particularly in Gurué. Temperatures and rainfall averages also vary in Nampula. Average temperatures range from 26–28°C in the east to 23–24°C in the west of the province. While the rainfall is normally around 656–901 mm in most parts of the province, it reaches up to 1,160–1,390 mm in the southern tips of Malema and Ribaué (National Meteorology Institute 2007).

4. **Natural resources—water, soil, and forests. Three among the thirteen major water basins[67] of the country are located in the landscape—Lúrio, Ligonha, and Licungo**. The 10 other water basins found in the landscape include Mecubúri, Monapo, Mongincual, Monotomo, Meluli, Molócue, Mulela, Nipiode, Raraga, and Mungueze. There is significant untapped potential for sustainable irrigation development in the region. Studies conducted in the late 1990s by the Agricultural Research Institute of Mozambique (*Instituto de Investigação Agrária de Moçambique*) (for example, Folmer et al. 1998) indicate high levels of nutrient depletion and decrease in soil fertility driven by existing cropping systems, particularly in maize and cassava plantations, in Nampula and Zambézia. The landscape coincides also with areas of elevated erosion hazard, based on factors such as slope, soil erodibility, soil erosivity, and land cover. There are about 2.9 million ha of forest area within the landscape (2014), which is equivalent to about 45 percent of the landscape's total area. However, about 43 percent of the total forest area in the landscape is located in only two districts—Mocuba and Gilé—and around 68 percent in the Zambézia districts. Miombo dryland forests is the predominant type of forest cover in the area, supplying significant quantities of timber and biomass energy. With regard to the latter, while firewood collection is intrinsically linked to 'slash and burn' agriculture in the region, most of charcoal production is done outside of agricultural fields (between 80 percent and 92 percent in northern Zambézia, depending on the district).[68]

Figure A9.1. Total Forest Area in the Targeted Landscape (2014)

[67] Mozambique's most important water basins are Maputo, Umbeluzi, Incomati, Limpopo, Save, Buzi, Pungoé, Zambeze, Licungo, Ligonha, Lúrio, Messalo, and Rovuma.

[68] A study commissioned by MITADER (EtcTerra 2015) encompassing seven districts in Zambézia—Gilé, Ile, Pebane, Alto Molocue, Mangaja da Costa, Mulevala, and Mocubela—has enabled uncovering interesting and relevant dynamics related to the charcoal production and VC in the region. For instance, in each district, the radius of the supply basin is about 22 km on average, with about 487 people working as charcoal producers (though it reaches 930 in Alto Molócue), which is equivalent to about 1,866 ha per year of deforestation and forest degradation (reaching 4,382 ha per year in Alto Molócue).



5. **Threats to the landscape. This landscape is currently undergoing high forest cover loss.** From 2000 to 2014, the area lost 2.9 million ha of forests, representing an annual deforestation rate of 0.64 percent. This is well above the national average of 0.58 percent. The causes of deforestation are primarily small-scale slash and burn agriculture, followed by charcoal production and sale in the nearby (and sometime further) urban centers and illegal timber extraction (Mercier et al. 2015).[69] While commercial agriculture is not considered a significant driver of deforestation today, it could become so if growth corridors envisaged by the Government are developed without adequate spatial and land-use planning. In addition, although data is limited, erosion is assumed to be a significant issue, given that the landscape encompasses some of the most vulnerable areas to erosion in the country. Uncontrolled wild fires are also a constant threat to the landscape, contributing to both deforestation and erosion. Associated to that is the degradation of waterways, especially as riparian forests are systematically removed to make way for agriculture lands.

6. **Biodiversity. The area ecompasses several biodiversity hotspots having protection status, such as the GNR, managed by ANAC, and the MFR, under the responsibility of National Directorate of Forests in MITADER.** Established in 1932 in an area of about 2,861 km^2 in the districts of Gilé and Pebane, the GNR offers exceptional biodiversity and hosts various critically endangered species, as well as granitic inselberg habitats of significant interest. The GNR area was heavily damaged during the civil war period and now faces high pressures on its natural resources (that is, timber extraction and poaching). However, it still serves as a major barrier to deforestation—while deforestation in its surrounding area averaged 0.28 percent between 2005 and 2013, within the reserve, it has averaged 0.01 percent during the same period. The MFR is the largest of 13 forest reserves established in the late 1950s with the aim of producing timber in Mozambique. Originally spanning 2,300 km^2, the MFR is situated in northern Nampula, in the district of the same name—Mecuburi. While it houses typical

[69] Mercier et. al. (2015) focus on seven districts in Zambézia, three of which coincide with districts comprising the project's landscape—Alto Molocue, Gilé, and Ile. Key drivers described are based on modeling conducted by Winrock (2015) coupled with ground truthing and additional research undertaken by the authors. For this reason, it is not an issue to assume the same key drivers for the landscape.

woodlands, it is famous for the occurrence of elephants and for a high variety of non-timber forest products. MFR is facing significant pressures from shifting and subsistence agriculture, particularly in its northern tip, and is now heavily degraded. The landscape also contains other biodiversity hotspots, though currently with no protection status, such as Mounts Namuli and Inago. Recent expeditions (2007 and 2014) to Mount Namuli, situated in Gurué District, have revealed a significant number of species—plants, birds, reptiles, and insects—that exist nowhere else in the world. The area is known to be very scenic, with the potential for the development of ecotourism. Threats to Namuli's conservation include human settlements, agriculture, and fires, all leading to significant deforestation in the area. The same is true for Inago, situated approximately 50 km northeast of the Namuli massif in northern Mozambique, near the town of Malema. While uncovering recent species of fauna (notable chameleons and butterflies), the most recent expeditions (2008–2009) in the area also found it to be highly disturbed, with the remaining areas of moist forest badly degraded.

7. **Key investments. The landscape comprises districts in the two so-called Growth Poles prioritized by the GoM and defined in Ministry of Economy and Finance (*Ministério da Economia e Finanças*, MEF)'s Integrated Investments Program (2014–2017) for infrastructure development—the Nacala Corridor (including all project districts except for Mocuba) and the Zambeze Valley (including Mocuba).** Key large-scale investments in the region include the recently finalized construction of a new section and rehabilitation of old sections of the railway connecting the hinterland coalfields in Moatize (Tête province) to a port in Nacala (passing through Malema, Ribáue, Gurué, Laláua, Rapale, and others), as well as investments in eucalyptus plantations. Companies undertaking sizable investment in plantation forestry in the landscape include Green Resources and Portucel. Within the scope of its Lurio plantation, Green Resources envisages developing 126,000 ha of eucalyptus, wrapped around the existing railroad and a new tarmac road 200–300 km inland from the deep-water port of Nacala. Portucel is expected to invest about US$2.3 billion and promote over 200,000 ha of plantations to establish a transformative pulp and paper industry in Mozambique, with plantations in the Ile District, along with other districts in Zambézia and Manica outside the targeted landscape. Portucel's first Project investment has received about US$32.0 million from IFC, including advisory services focused on their community development program.

8. **Anchor agricultural enterprises. The landscape also stages significant investments in the agriculture-based VCs targeted by the Project.** For instance, within the scope of soya/poultry VCs, important examples are Rei do Agro, Rei do Frango, African Century/Frango King, and Novos Horizontes. Rei do Agro is a Gurué-based commercial soybean, maize, and sugar bean producer, owning about 2,500 ha of land. Rei do Frango is running an out-grower scheme with 60 farmers, producing soybean on around 300 ha of land, with expansion potential. African Century and its daughter company, Frango King, are present in both Gurué and Rapale. In Gurué, they manage a soya out-grower scheme in Lioma with around 800 smallholders, whose output provides for their poultry production based in Nampula, with the remainder being sold in the market. Novos Horizontes is another Nampula-based vertically integrated poultry company—including a breeder unit, a hatchery, feed processing, and an abattoir—which currently operates an out-grower arrangement with about 190 out-growers. While still in its first steps, it is also worth citing Odebrecht's US$65 million vertically integrated poultry project, expected to encompass 6,000 ha in Mocuba and Lugela Districts in Zambézia. Within the scope of the pigeon pea VC, ETG acts as a key anchor, owning and operating two pigeon pea

processing plants in Gurué, with capacity to process about 35,000 tons into oil. These and the other VCs offer significant space for further integration of smallholders and promotion of rural development.

9. **Agriculture and forestry support programs will achieve the 'biggest bang for their buck' in the northern and central regions, particularly in Nampula and Zambézia Provinces.** The analyses of agriculture and forestry suitability have confirmed the large scope for improving rural households' livelihoods in the northern and central regions where both agriculture and forestry suitability and poverty levels are the highest, particularly in Nampula and Zambézia, where population density is also the highest (Mozambique SCD, January 2016). IFPRI has also assessed the central and northern regions as having the best conditions for crop productivity but points out that agricultural yields have declined sharply in these regions during the period 2002–2008 (citing population growth as having forced farmers to cultivate more marginal and less productive lands). The central region is regarded by the International Food Policy Research Institute (IFPRI) as the best-performing region with regard to yield growth and as showing great potential for the continued growth of agricultural productivity and trade.[70]

[70] Dobbins International. Strategic Spatial Development Planning for Mozambique: Chapter for World Bank Mozambique Systematic Country Diagnostic. August 2015.

Table A9.1. Project Landscape - Demographic and Other Information

Province	District	Total Area (km^2)	Total Population	Rural Population	Rural Population (%)	Poverty Incidence (%)	Forest Area (1,000 ha)	Small and Medium Farms	Large Farms	
									Number	Cultivated Area (ha)
Zambézia	Alto Molócue	6,375	332,775	232,728	69.9	60.33	168.6	59,324	2	107
	Gilé	9,042	188,726	171,091	90.6	66.50	505.3	36,284	—	—
	Gurué	5,664	363,959	153,904	42.2	59.81	86.3	53,988	6	5,529
	Ile	5,622	318,383	293,054	92.0	67.34	166.2	62,737	1	226
	Mocuba	8,803	355,299	133,199	37.5	61.86	620.8	50,016	8	895
Nampula	Malema	6,082	185,839	119,221	64.2	47.18	267.6	35,424	—	—
	Ribáue	6,292	228,411	151,653	66.4	55.28	162.0	37,960	1	4
	Rapale	3,698	253,294	225,729	89.1	42.50	48.6	54,428	2	24
	Lalaua	4,562	83,231	75,360	90.5	47.66	142.0	15,258	—	—
	Mecubúri	7,257	175,846	159,488	90.7	50.11	177.0	37,201	—	—
TOTAL		63,397	2,485,763	1,715,427	69.0	57.43[71]	2,344.4	442,620	20	6,785

Table A9.2. Area Limits for the Classification of Small, Medium, and Large Farm Holdings, *Inquérito Agrícola Integrado*

	Small	Medium	Large
Nonirrigated	Area < 10 ha	10 ha <= Area <= 50 ha	Area > 50 ha
Irrigated	Area < 5 ha	5 ha <= Area <= 25 ha	Area> 25 ha

[71] The poverty incidence in the five Zambézia districts is 63 percent. The poverty incidence in the five Nampula districts is 49 percent.

Annex 10: Private Sector Led Smallholder Farmer Support Model

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

1. **Smallholder farmers represent a majority of the world's farmers and a majority of the world's poor.** Low agricultural productivity is often a key cause of their poverty. While the application of knowledge from TA/extension and improved inputs such as fertilizer, agrochemicals, and seeds and use of mechanization services can increase both agricultural yields and farmer income, reduce post-harvest losses, and decrease cost of production, improved knowledge application and input and services access by smallholder farmers remains low.

2. **The increasing awareness of limitations of Government extension systems and traditional NGO approaches to agricultural extension provision in resource-constrained, developing countries has led many institutions to seek new, cost-effective, and scalable models for engagement with smallholders.** As subsequently discussed, these new approaches have a market orientation and focus on private sector delivery in common. Moreover, they often rely on the identification and support to entrepreneurial individuals with grassroots-level networks that enable business-based delivery of inputs, technical advice, and VCD supporting services.

3. **Over the last decade, to address the lack of access to appropriate knowledge, inputs, and services, implementation of market systems approaches to increase smallholder farmer access to and adoption of knowledge, commercial inputs, and mechanization have included** input suppliers, SECFs (village-based micro-entrepreneurs), lenders, farmer collectives, and buyers. There have been various levels of success with each approach; however, one model has stood out in its capacity to achieve results at a large scale, the SECF approach. Many variations of this general model have been tested globally in recent years, including in Mozambique.

4. The SECF approach is a private sector driven model successfully piloted since 2005 in Cambodia, Zambia, Ghana, Tanzania, and Ethiopia (supported by USAID, Netherlands/Agency for the Development of Zambezi Valley, Ford Foundation, DFID, and SIDA) and is currently being expanded to Burkina Faso, Nepal, and Bangladesh. A network of over 2,000 SECFs has been established worldwide. This network of SECFs provides demonstration plots, TA and extension, inputs, mechanization services, and linkages to markets for over 265,000 smallholder producers. An evaluation of the SECF model in Tanzania and Ghana showed that adoption of improved production technology by smallholders was between 60 percent and 84 percent, crops yields rose between 50 percent and 300 percent, and incomes increased between 8 percent and 91 percent.

5. **The private sector agent model involves supporting the SECF network to provide specific training, extension, demonstration/models, and transfer of technology to rural households (smallholder farmers); provide access to quality and improved inputs; and provide other services like mechanization, when needed.** The model is based on the identification of lead farmers with entrepreneurial drive, who are supported to develop business linkages with 80–250 rural households. Training and extension services to smallholders are delivered through SECFs as part of their business model. The SECF-based model enables covering a wider number of smallholders and promotes sustainability after the Project's

implementation period because of its private sector driven nature (profit-making incentive for both the smallholder and SECF). SECFs are supported through an SP, usually donor financed, to prepare viable and bankable business plans that define the VCs, services, equipment needs, and rural household network they will service and a resource envelope needed to establish their business.

6. **Since 2009, the SECF model has been piloted in Mozambique with funding from the Bill and Melinda Gates Foundation, Dutch Embassy, Ford Foundation, SIDA, and DFID.** A network of 315 SECFs is currently functioning in the provinces of Zambézia, Nampula, Manica, Sofala, Niassa, Inhambane, and Maputo. Three main SPs that have established and supported this network of SECFs in Mozambique are the iDE[72] (FBAs), CLUSA (lead farmers), and TechnoServe (SCF). Both the global and Mozambique experience of each SP is briefly described below.

7. **The iDE first implemented its EF engagement model in Cambodia, where it developed a micro-franchise for delivering technical advice and high-quality agricultural inputs to poor farmers through their FBAs.[73]** Around 130 FBAs currently serve nearly 15,000 farm households in Cambodia, supporting them in the generation of an average additional income of US$260 after the first year, which represents a 30–40 percent increase.[74] The iDE trains FBAs to analyze individual farm enterprises to identify opportunities and match them with products and services in the FBA toolkit, which includes a range of products and advice to farmers on reducing risk, improving productivity, and increasing income with improved seeds, fertilizer, irrigation equipment, pest control, and market information, among others. While FBAs bear significant risk given that products often have to be sold to small-scale farmers on credit—normally repaid at harvest—their deep knowledge of the context contributes to risk mitigation. Additionally, this system creates a structure of incentives for FBAs to match needs and support in the best way possible, as the agents' income is generated on the basis of farmer success. According to the iDE's experience, independent male and female FBAs trained by the

[72] The organization iDE "began operations in Mozambique in January 2010 with the goal of improving the income and livelihood opportunities of the rural poor. It has grown substantially in recent years, with a 2014 budget of US$1,373,713. The iDE Mozambique uses an integrated VCD approach to implement agricultural development initiatives that increase productivity and income for smallholder farmers. The iDE Mozambique works with multiple partners including the Bill and Melinda Gates Foundation, the SIDA, the Ford Foundation, the European Commission, Alliance for a Green Revolution in Africa, Agency for the Development of Zambezi Valley, USAID/AgriFUTURO, Nando's Chicken, Sociedade Algodoeira do Niassa, and AGRODEC" (iDE 2015).

[73] The iDE's FBA model won the World Bank Development Marketplace Award in 2008. Two years later, the organization was awarded the inaugural Nestle Prize in Creating Shared Value, as recognition of the innovative approach of the FBA program. According to the iDE, as of November 2015, while 260 FBAs have been trained in Mozambique, 130 may be considered operational. Operational means that they have been trained, they are doing business (services, trading, and sales), and their number of customers, types of services, income generated, and other information are tracked by the organization.

[74] According to the iDE, "[s]urveys indicate that half of the FBA clients are from the poorest third of the population and that both male and female farmer's benefit from FBA services. Additionally, FBAs themselves earn on average US$640 per year from their business and increased income from their own farms (…). Since its initial development and success in Cambodia, the iDE has begun replicating the FBA approach in other countries, tailoring it to the local context. With funding from RLG International, for instance, the iDE Zambia is training 200 FBAs who will serve 16,000 farmers. The iDE programs in Burkina Faso, Ghana, Ethiopia, Mozambique, Nepal, and Bangladesh are working with existing extension models to explore how elements of the FBA approach can be integrated or enhanced" (iDE, n.d.).

organization can each support between 80 and 120 farmers. Key to success in the implementation of the model is its adaptation to local conditions, as described in Table A10.1.

Table A10.1. Considerations and Variations within the iDE's FBA model[75]

Core Elements	Local Conditions	Variable Elements
• FBAs as independent, commission-based agents • Bundle technical advice with high-quality agricultural inputs to create a profitable enterprise • Small-scale entrepreneurs with business and agricultural experience • Mobile promoters who encourage farmers to grow market-oriented crops • Sell a range of good-quality products and services at a profit • Provide technical advice during visits throughout the growing season • Facilitating access to market for farmers' products	• Smallholder constraints • Existing level of farm technology • Availability of extension services, quality inputs, and microcredit • Access to output markets • Small enterprise enabling environment • Entrepreneurial culture • Capacity of existing enterprises in the VC • Limitations on the iDE's activities as an NGO • Role of men and women in farming, marketing, and business • Number of potential farmer clients and distribution • State of infrastructure	• Full-time job or side job • Commission on sales versus margin on products bought and sold • Payment from output markets • Range of products/services offered by FBAs • Operate on the input and/or output side of the small farm • Ownership of supporting entity • Scope of supporting entity's role • Provide in-kind credit with payment due at harvest

8. **The National Cooperative Business Association (CLUSA) has been implementing another approach and variation on SECF engagement with smallholders in Mozambique**, characterized by a mix of farmer field schools, plot demonstrations, and farmer-to-farmer extension activities. At the community-level, extension activities are implemented by so-called lead farmers.[76] The lead farmers are selected by CLUSA based on their willingness to participate, basic numeracy and literacy skills, an aptitude to adopt new technologies, as well as being geographically located to allow easy access through neighboring farmers and technicians. A track record of progressive thinking is allegedly also as a parameter for the selection of lead farmers. In some of its projects, CLUSA has been supporting community-based SPs in parallel, which play a role similar to the iDE's FBA, providing technical advice, agricultural inputs, and services and facilitating access to market for farmers' production output when appropriate.

9. **Where possible, CLUSA's identified lead farmers should also be EFs,[77] a designation the organization grants to individuals who** (a) manage 10 ha or more over two consecutive seasons; (b) are willing to adopt new production, business, and marketing practices; (c) demonstrate potential to double their current average yields; (d) pay back loans in full and on time; and (e) present leadership skills. The latter is key, given that they are expected to mentor

[75] FBA Capability Statement (iDE, n.d.)

[76] Under the Norway-funded Promotion of Conservation Agriculture Project (PROMAC), CLUSA has, as of December 2014, "engaged and trained 1,201 Lead Farmers, of whom 857 or 71 percent are women; [and] trained 17,895 extensionists, members of SDAEs, lead and small farmers on organic compost production and safe use of inorganic fertilizer, horticulture and fruit trees production under CA, demonstration plot management, conservation agriculture principles and practices and agroforestry, agribusiness, marketing and post-harvest management, and basic animal traction training, animal husbandry and animal health care (…)" in Zambézia, Manica, and Tete (CLUSA, n.d.).

[77] Presentation made by CLUSA on USAID's AgriFUTURO program

50–75 farmers over the course of five years and act as a resource for inputs, technology, and business knowledge within the community. CLUSA also facilitates the relationships between producers and partners, including (a) financial institutions—to provide timely finance with management terms; (b) Government—to provide land permits to producers, as well as technical and market information; and (c) buyers—to absorb production output and ensure its quality.[78] CLUSA has total 1,060 lead farmers/EFs in operation in Mozambique.

10. **TechnoServe's SECF model supports EFs to develop their businesses while providing services and technological support to neighboring smallholders according to their needs.** They also play an aggregation role, buying produce from these smallholder farmers and on-selling to large commercial farmers or other end buyers. According to TechnoServe, a farmer that can graduate to become an SCF under the organization's model is able to support anywhere from 70 to 300 smallholder farmers, by enabling access to both agricultural production services and output markets.[79] Under a program aimed at increasing the number of commercial farmers, TechnoServe is also proposing to help them invest in productive technologies through capex match-grants. The package for supporting the soya VC involves the requirement of a US$8,000 upfront cash investment by the SCF to enable access to a US$40,000 MG and US$32,000 bank loan, aimed at enabling investments in technologies for activities such as land preparation, planting, cultivation, transport, harvesting, and post-harvest processing. In that sense, the MG reduces the risk and cost of capital of the commercial loan.

11. **The private sector network-based extension models described have achieved important results in Mozambique and elsewhere.** The Project will adapt them in its coverage area for priority VCs identified, reaching a scale that may enable improving the cost-benefit ratio. It will focus on SECFs. The model will have some built-in flexibility, so that it enables matching needs and support for determinate locations. This is similarly applicable for the VCs contemplated. While the prioritization generates focus on commodities with higher potential to mitigate market-related risks for farmers and the SECFs (change agents), these business-oriented entrepreneurs should also capture emerging opportunities by supporting farmers in the production of other commodities with market potential in their areas of work.

12. **Implementation arrangement.** This model will require contracting SPs who will undertake the following key activities, among others: (a) identify SECFs to be supported; (b) provide training to SECFs identified in best practices related to agronomy, CSA, business development and management, risk mitigation, and marketing; (c) provide support to the development of VCD business plans that enable access to finance from the Innovation and Demonstration Catalytic Fund and other commercial finance institutions; (d) establish enabling linkages with key financial institutions supporting agriculture in the project area and provide

[78] In CLUSA's year-one review of USAID's AgriFUTURO, the average farmer had a credit line of MZN 125,000 provided by institutions such as *Banco Terra*, with an average utilization of 73 percent. Seventeen out of twenty farmers paid back their loans in full, earning on average US$3,600 after debt and interest.

[79] TehcnoServe has applied this model under the Bill and Melinda Gates Foundation funded Soy Value Chain Development Programme in Mozambique and Zambia from 2009 to 2014 and has achieved the following key results, among others: "[b]y the close of the 2013/14 season, small-scale soybean production in Mozambique increased threefold: from MZN 11,865 to MZN 49,975; and soy farmers' incremental revenue exceeded target profit levels at US$365 per participating farmer; increased by ~US$190 per annum[;] (…) **[**and] 30,514 farmers were linked to 13 agribusiness companies in Mozambique and Zambia, producing 50,709.95 MT of soybeans during the 2012/2013 season valued at more than US$25 million" (TechnoServe 2015).

advice related to mutually beneficial arrangements; (e) facilitate linkages between SECFs and output buyers and markets; (f) identify and provide advice on opportunities related to increased value addition or impact generation; (g) monitor SECFs against key performance indicators agreed, including those related to the Project's Results Framework.

13. **The GoM has recently designed models for the delivery of integrated industry support to districts' main towns, as a way to catalyze sector development in prioritized locations.** MASA is calling these support centers Agriculture Service Centers (ASCs). Based on PEDSA's overall development framework, these service centers envisage promoting (a) yield increases; (b) expansion in cultivated areas; (c) improvements in the quality and efficiency of agrarian operations; and (d) generating jobs, particularly for youth. Specific objectives of the service centers include (a) providing mechanization services, as well as enable repairing agricultural machinery; (b) providing TA to producers; (c) supporting producers in the elaboration of business plan and out-growing arrangements; (d) providing improved seeds and other agricultural inputs; and (e) facilitating access to finance, as well as links among producers, traders, and processors.[80] These ASCs require an investment of US$500,000 plus, have at least eight tractors and equipment, and will focus on farming a 200 ha plus nucleus plot to be able to make sufficient profit to cover the cost associated with the ASC.

14. **According to existing Government plans, the ASCs could assume several types of privately managed institutional configuration**, receiving needs-based public support. Selected districts in the project area include Malema and Ribaué in Zambézia, which also envisage contributing to agricultural development in Mecuburi and Rapale.[81]

15. **The ASCs will complement the work carried out by the SECFs.** While the centers will be limited in their grassroots outreach, they could prove to be an important and reliable one-stop-shop for more developed commercial farmers or SECFs to secure inputs.

[80] *Source: Plano Operacional para a Implantação de Centros de Serviços* (MASA 2013).
[81] Currently, no district in Zambézia covered by the Project is expected to receive an ASC from MASA. Districts in Zambézia include Maganja da Costa, Mopeia, Nocoadala, and Namacurra.

Annex 11: Land Policy and Administration in Mozambique

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

1. **This annex details the institutional and legal context of the land sector in Mozambique as of January 2016.** It includes (a) the policy, legal, and institutional framework and status of land rights in Mozambique; (b) risks arising in respect to the definition of land-use rights and mitigation of a presentation of the various ways for acquiring land for agricultural investment; (c) land conveyance, expropriation, compulsory acquisitions, and resettlements; (d) perspectives of the land sector in Mozambique and implications for the Project; and (e) LTR in Mozambique and the project area.

The Policy, Legal, and Institutional Framework and Status of Land Rights in Mozambique

2. **The National Land Policy for Mozambique, which entered into force in 1995, is premised on the land belonging to the state.** The recognition given to the legitimacy of customary land management systems and to rights acquired through informal and customary occupation is a key element of the policy, later incorporated into the Land Law (Law 19/1997). The law introduces what may be called long-term leaseholds, known as Land Use and Benefit Right (*Direitos de Uso e Aproveitamento da Terra*, DUATs), which can be acquired by occupation according to customary norms and practices, 'good faith' occupation (uncontested occupation over a period of 10 years), or the award of discretionary concessions by the state.

3. **This legal framework contains innovative approaches to securing land rights**, including, among others, (a) establishing a single land tenure right, the DUAT, which is an exclusive, inheritable, and transmittable (subject to state approval) right and applies to both newly requested and customary land occupation and use; (b) recognizing DUATs obtained through customary and good faith land occupation (thus formalizing customary rights through the operation of the law); (c) providing investors secure rights through a renewable 50-year state land lease;[82] (d) requiring new DUAT applicants to engage in consultations with local people to determine if the land requested is occupied and, if so, establish the conditions for the investor to take over the referred land; and (d) formalizing the participation of local people in land resource management and NRM (as in the consultation process above).

4. **Article 12 of the Land Law sets out three ways in which a DUAT may be acquired:** (a) by customary occupation—that is, occupation of land by individuals or local communities, in accordance with customary norms and practices, as long as these do not contradict the constitution; (b) by 10 years of 'good faith' occupation—the uncontested occupation and use of land by individual national persons; and (c) by award—the authorization of an application submitted by a natural or corporate person. Only nationals can gain DUATs by occupation (options 1 and 2), and the third option is open to national and foreigners who wish to invest in Mozambique.

5. **The 'land delimitation' process plays a key role within the legal framework of Mozambique's land management system.** The vast majority of people in rural areas have use rights acquired through their local customary structures, and the law allows these structures—

[82] Also attributed as a DUAT, but awarded with specific conditions attached

'local communities'—to hold a collective DUAT over the area within which they have jurisdiction. Delimitation identifies these structures and the areas they occupy and manage; at subcommunity level, hundreds of households enjoy customary rights that are also legally DUATs acquired by occupation and managed by their local 'norms and practices.' The key implication of this reality is that most of the land in Mozambique is covered by community-held and managed collective DUATs.

6. **The delimitation process is defined in the Technical Annex of the Land Law as a flexible and participatory mechanism through which local communities[83] confirm their right to occupy and use land.** Delimitation can be applied to traditional units based on clans or chieftainships, extended families, or simply a group of neighbors[84] and achieves two key legal and practical objectives: (a) it proves the existence of the DUAT by occupation and (b) it establishes the spatial characteristics of that right, including its limits and the presence of public and customary rights-of-way or of any other interests over the land in question. A map of the community DUAT with any other information (for example, rights-of-way) is subsequently registered in the cadastral atlas, and a CDC is issued in the name of the community.

7. **The majority of the acquired rights in Mozambique are not identified on the cadastral atlas maps, for the simple reason that they have not been registered.** These rights are protected by law, and mechanisms aimed at guaranteeing that they are not allocated to others without the consent of the existing holders are part of the legal framework—for instance, the community consultations subsequently described. This is the case both with community lands, the vast majority of which have not yet been delimited, and with individual plots occupied by good faith occupants.

Risks Arising in Respect to the Definition of Land-Use Rights and Mitigation

8. **The limited land rights registration contributes to conflicts over land rights, which are increasingly common in Mozambique.** The incompleteness and inaccuracies in the cadastral register, combined with even more limited legal registration of rural land parcels in the *Registo Predial*,[85] generate situations in which parties have been awarded rights to overlapping parcels of land, thus resulting in conflicts. Moreover, there is a risk that the planned infrastructure investments affects the value of and demand for land in certain areas, pressuring

[83] The legal concept of the 'local community' is defined in the Land Law, by incorporating a range of different land uses and 'groups of families and individuals who collectively safeguard their common interests'. Through the delimitation process, communities define themselves and the areas of land over which they claim a collective DUAT and management rights. This self-definition approach using low-cost fit-for-purpose methods is well suited to a country like Mozambique, where numerous cultural and geographical contexts determine land occupation and use. Hence, a 'local community' in the north might look very different and be of a quite different size, compared with one in more densely populated areas (such as close to Maputo or coastal areas).

[84] In light of resource scarcity, the first Community Land Conference (2010) encouraged delimitation efforts to be focused on areas with social and economic importance within the community, without losing sight of other objectives and reasons for the delimitation, including demand from communities or the existence of conflicts over land and other natural resources.

[85] Overseen by the Ministry of Justice, the *Registo Predial* (Real Property Registry) guarantees the land-use rights by making them public, and protecting the land rights holders against claims by third parties. Although this registration is available, it is not compulsory under the regulations. In the case of DUATs acquired through occupation, the lack of either cadastral title or property registration does not affect, in theory, the enforceability of the land-use right.

the weak land administration system and leading to further conflicts and overlapping rights. DINAT neither reports on conflicts systematically, nor disaggregates data according to any relevant typology. DINAT's annual reports often point to several causes of conflicts, including poor dissemination of the legislation to local communities, weak community consultation processes, disputes over boundaries between communities and investors (both foreign and national), and 'nonrigorous delimitation of areas.' The lack of transparency regarding land holdings, land availability, and investment plans makes it difficult to ensure public accountability.

9. **Consultations and negotiation processes with communities and rural dwellers are mandatory and should mitigate key risks related to the definition of land-use rights. However, there are still gaps in the legislation.** The Land Law (article 13(3) and article 24(1)(c)) and the Land Law Regulations provide the legal basis for the mandatory consultations. According to these, the 'local community,' which is the holder of the DUAT, should be consulted by anyone who is seeking a new DUAT by authorization. If the land is occupied, the consultation is to determine 'the conditions of partnership' through which the holder (community) gives up their right (to the investor). Many contend that Decree 43/2010 seeking to detail the consultation process has instead caused more ambiguity by shifting the focus of the consultation to the statutory Consultative Councils established by Decree 11/2005 (Regulations to the Law on Local Organs of the State). The result is a mixing of private citizen/public consultations and a weakening of the right held by those who occupy the land in question to authorize any changes to the constitution, nature, or holding of their (land) rights. A further amendment to the consultation process was introduced through Ministerial Diploma 158/2011, creating a two-stage system of consultations, spread over a maximum period of 30 days, which involves (a) a first meeting aimed at providing information to the community and interested parties and (b) a second meeting aimed at receiving feedback from their consideration of the application. Having at least two meetings is a positive move, but the diploma does nothing to address the ambiguities regarding the role of consultative councils instituted in the earlier decree. Many conflicts then result when local people contest the occupation of their land by a new DUAT holder who has been approved by the 'community authority' and consultative council. For this reason, the Project emphasizes securing community land rights (as well as individual farmer groups land rights) as the foundation for efficient and inclusive VCD and NRM. The Project views LTR not as a technical process, but instead as a process of community mobilization and capacity strengthening.

Land Conveyance, Expropriation, Compulsory Acquisitions, and Resettlements

10. **While the transfer of 'bare' DUATs between third parties is prohibited, such transactions occur on a widespread basis in Mozambique.** This is done in two ways that use aspects of the law to facilitate the *de facto* sale of land. The first involves the sale of 'improvements' on the land, which can be held as private property; the DUAT is then transferred to the buyer of the improvement (although this is subject to the public land agency approval). The second involves the transacting to shares in companies that hold DUATs over parcels of land. Where a company holds the land title, transmitting some or all of the company's shares effectively transfers control over the land held by the company.

11. **There is also a thriving informal 'DUAT market.' Informal (acquired) DUATs are often exchanged, through either sale or lease agreements, between the holders.** Where associations have been awarded a general DUAT over a collective area, members of the associations frequently then transfer specific plots within this area, and the associations verify the occupation and allocation to the new members. This has taken place mainly in rapidly urbanizing areas, under the purview of local authorities.

12. **In theory, failure to comply with the criteria relating to demarcation of the land and fulfillment of the development plan,[86] which are legally required, means that the title should be revoked.** However, revoking of the title generally does not occur, for reasons ranging from lack of political will to capacity constraints with regard to monitoring and enforcement. The Government is currently transferring the mandate over enforcement to the newly created National Agency for the Control of Environmental Quality (*Agência Nacional para o Controlo da Qualidade Ambiental*) housed in MITADER—which will lead to a clear separation between DUAT/CDC awarding and enforcement. Results from the latest national land-use audit (2009–2015) conducted by DINAT are presented in Table A11.1.

Table A11.1. Results of Land Use Audit 2009–2015

	DUAT Fully used		DUAT Partially used		DUAT Not used		DUAT Redimensioning		DUAT Cancellation	
Province	No	Area (ha)	No	Area (ha)	No	Area (ha)	No	Area (ha)	No	Area (ha)
Maputo	351.00	59,970.79	454.00	72,663.57	166.00	23,586.76	-	-	24.00	1,579.00
Gaza	397.00	215,282.14	277.00	418,296.16	351.00	80,188.25	16.00	10.00	67.00	94,870.00
Inhambane	115.00	96,023.99	80.00	22,999.38	206.00	63,818.51	168.00	43,370.28	36.00	777.75
Sofala	542.00	322,174.85	62.00	43,453.96	289.00	287,993.55	29.00	15,783.00	-	-
Manica	564.00	190,337.92	125.00	77,940.98	236.00	156,536.54	22.00	5,720.40	1.00	27.00
Tete	134.00	2,123.13	177.00	28,741.81	70.00	9,924.53	43.00	2,980.93	14.00	3,063.00
Zambézia	840.00	172,471.51	299.00	199,245.88	313.00	279,605.86	12.00	3,331.27	22.00	11,033.00
Nampula	316.00	113,928.07	156.00	50,940.92	93.00	25,359.86	122.00	45,719.67	23.00	3,497.98
Cabo Delgado	196.00	38,894.21	115.00	18,795.84	121.00	52,251.65	41.00	4,222.05	7.00	965.33
Niassa	142.00	131,206.08	53.00	89,964.72	73.00	34,064.58	21.00	9,522.63	3.00	607.00
Total	**3,597.00**	**1,342,412.69**	**1,798.00**	**1,023,043.22**	**1,918.00**	**1,013,330.09**	**474.00**	**130,660.23**	**197.00**	**116,420.06**

13. **As per Article 82(2) of the Constitution of Mozambique, "[e]xpropriation may take place only for reasons of public necessity, utility, or interest, as defined in the terms of the law, and subject to payment of fair compensation."** According to legislation in force, there should be no compensation paid for land itself, as it belongs to the state, but rather for any built structures, trees, or crops farmed. Compensation for cultivated land usually involves compensating the loss from standing crops, although the Territorial Planning Law does introduce the concept of loss of future use and how this should be included when compensation is contemplated.

14. **Resettlement and compensation in cases of compulsory acquisition are discussed in Ministerial Diploma 181/2010 and Decree 31/2012.** Ministerial Diploma 181/2010 deals with

[86] The development plan is basically a document from the land holders that specifies how they will use the land. Neither the investment proposals nor the development plans are made publicly available.

resettlement in the context of compulsory land acquisition as part of territorial planning processes. It includes payment of compensation on the basis of established tables of property values and depreciation over time. The loss of rural lands is only compensated against the basic principle that the land itself cannot be compensated; only standing crops and trees are accorded any value. Compensation values are calculated using a formula that includes references to the development stage of annual crops. Decree 31/2012 further provides safeguards for people displaced and resettled by economic activities and development projects, though significant gaps exist. For instance, the decree provides for the 'consideration' of environmental characteristics such as soil fertility, but it fails to establish clear standards for the type and quality of replacement land, access to water supply, timing of moves to avoid disruptions to farming cycles, and TA for those who adapt or change their livelihoods.

Perspectives of the Land Sector in Mozambique and Implications for the Project

15. **Land in Mozambique has always been subject to political control as well as being recognized as the subsistence base for the majority of the population**. With the shift to a market economy in the early 1990s, the insistence on maintaining the principle of state ownership had to be reconciled with the need to stimulate new private investment in land, requiring some kind of secure and exclusive privately held land right. The answer to this challenge is the DUAT—a kind of long-term state leasehold, offering investors and local people the security of tenure they need to be able to take long-term investment decisions.

16. **The 1997 Land Law achieved the integration of customary rights of land occupation and management within a single, unified law, by recognizing customary occupation as one way of acquiring the DUAT, as well as providing for new, private sector interests to acquire DUATs through requests to the state.** Mandatory negotiated access to land that is already occupied opened the way for local people to engage with investors and secure real benefits in return for giving up or sharing the land rights. The 1997 law has worked relatively well; local rights are taken into account and investors do carry out community consultations as part of the process of getting a new DUAT.

17. **However, it is also clear that the law has not achieved its full potential for promoting equitable and sustainable development.** There are not many successful community-investor partnerships, and available evidence shows that consultations are mostly cosmetic in real terms, with communities being obliged to give up their land for projects deemed to be in the national interest. With high rates of economic growth in recent years, surging demand for land has placed communities at even greater risk of 'land capture' by more powerful interests, often with state backing.

18. **Nevertheless, millions of ha of land remain unused. This land is often in areas where communities have extensive DUATs acquired by customary occupation, but even in concession areas, investors have failed to use more than 5–10 percent of the land they are allocated.** Some see the law and local rights concerns as a constraint on investment. Rather than the law being the problem, there is wide recognition that public land administration does not have the capacity and training to fully exploit the available legal mechanisms and operates in isolation from wider development and investment programs. Not only can new DUAT

applications take years, but also opportunities for investors and communities to work together are not followed up and land remains unused.

19. **With most rural land still occupied by communities and smallholders with customarily acquired DUATs, the challenge is to find a way to bring investors in without prejudicing local livelihoods and, where possible, in ways that can generate active and mutually productive relationships between the two sides.** The win-win scenario of investors securing land, then running projects from which communities also benefit in real, poverty-alleviating ways, is an option that needs to be explored with more force, commitment, and direction from both government and cooperation partners.

20. **The Project offers an excellent opportunity to do this. By starting from the premise that local rights exist over investment land, it treats communities as active stakeholders in new development initiatives; the Project then creates the conditions for local people and investors to work together within new economic enterprises and VCs.** By integrating community land-use plans into this picture and enhancing local management of land and natural resources, the Project also addresses important environmental sustainability issues. **Activities like DUAT titling and community delimitation do not take place in isolation, but are instead part of an integrated rural development vision that joins local people and investors together as partners and cobeneficiaries of the investment process.**

Land Tenure Regularization in Mozambique and in the Project Area

21. **LTR activities in Mozambique have been occurring in sporadic, demand-driven fashion, resulting in elevated costs and limited impact.** Although the regulatory instruments for identifying and registering DUATs acquired by occupation—whether customary or 'good faith'—have been available since early 2001, there has been no systematic, publicly supported program of community delimitation and LTR. Almost all of the delimitation work done so far has been carried out by NGOs with bilateral direct assistance. The most recent, the multi-donor iTC, worked in several provinces and included the objective of matching LTR for communities and smallholders with new economic opportunities including investor partnerships. The current total for delimitated communities is only about 450, out of a possible 10,000 communities across the country.

22. **In principle, the collectively held DUAT of each community offers significant protection to the many hundreds of smallholders who live within it and is therefore a cost-effective, 'all-at-once' way of securing local rights.** The Land Law also allows for individuals or subcommunity groups such as extended families or associations to take out a DUAT title in their own name. This process—'*desmembramento*' in the law—allows the individual right holder to leave community jurisdiction and register their DUAT in the public archives. As 'titling,' it requires high-cost site work, high-precision surveying, and placing meter-high cement markers around the plot in question. Legally, all LTR resulting in new DUAT titles should also include this process of 'demarcation,' but it is clear that this cost has not been included in recent Millennium Challenge Account (MCA)-supported LTR work in the northern provinces (which focuses only on the rights adjudication and issuing of title documents).

23. **The average cost of a community delimitation in Mozambique is estimated at around US$8,000.** This compares with systematic registration in Tanzania at an average cost of about US$500 per community, although the procedures followed are quite different. The Mozambican process includes prefield work community awareness sessions; creating and strengthening CBOs; an extensive participatory diagnosis and mapping of land use, occupation, and land management structures; and the preparation of formal topographical maps that are then registered in the public archives. The iTC program has also added a community land-use plan to the process, and it is this plan that could form the platform for NRM and investment plans in the Project.

24. **The process of delimitation does more than safeguard local rights; it prepares communities (and their internal management structures) to engage with outside interests such as incoming investors and other business (VC) opportunities.** While data is limited, there are good examples in Mozambique of the positive effects of community delimitation. As documented by KPMG and the Natural Resources Institute,[87] the iTC-led delimitation of the community of Darue, located in the district of Sussundenga in Manica Province, contributed to reducing conflicts with illegal timber harvesters and neighboring communities, as well as between *regulos* responsible for Darue, who constantly fought over the traditional management of areas within the community, particularly with regard to the area where the local primary school is established. The delimitation process also enabled the development of the Darue Community Development Plan (*Agenda Comunitária de Darue*), which resulted in the construction of three new school classrooms and the establishment of a partnership between the community and the organization Centro Terra Viva for the development of cultural tourism in the area, among other initiatives. Other frequently cited examples related to community-investor partnerships supported by the process of community delimitation include the Ndzou camp in Manica—an eco-tourism investment partnership between the Mpunga community in the district of Sussundenga established with financial support from the Bank—and the Mozambique Honey Company and its supply network, constituted partly by community honey producers associations with secured community business premises (Mole, Monteiro and Quan, n.d.).

25. **There is no doubt that LTR activities in Mozambique could be made more cost-effective, if conducted in a systematic fashion, whether for collective, community-held DUATs or for individual land parcels.** Experience with individual plot LTR in countries such as Rwanda, Namibia, Madagascar, Tanzania, and Ethiopia has lowered the average cost of US$50 per parcel to about US$10–20 through the use of aerial orthophoto maps and rectified satellite imagery. LTR work for individual plots in Mozambique has been restricted mainly to peri-urban areas where households live on fixed plots that are easily identifiable from aerial and satellite imagery. Not counting the demarcation process, the costs are under US$50 per titled plot. Titling plots in rural areas is more complex, however, as they often shift over time as people move from exhausted fields to new areas (where they also have customarily acquired DUATs). Other communal rights—grazing, forest use, and water—are also important for households and may be overlooked in a conventional plot-by-plot LTR process. To capture the overall bundle of rights of any one household is therefore likely to involve some kind of delimitation style of approach, with correspondingly higher costs. Nevertheless, it is clear that systematic LTR could

[87] *Estudo de caso - Comunidade de Dárue, Sussundenga – Manica.* 2009.

be achieved in Mozambique though the use of similar technologies and low-cost options based on a fit-for-purpose methodology.

26. **As in other parts of the country, the Project area has a limited number of DUATs allocated in response to requests for new land rights (both to individuals and associations). A number of community-held DUATs have also been delimited** (see Table A11.2). The relatively high number of delimited communities reflects the fact that NGO-supported projects have been active in these provinces for many years, followed more recently by more delimitations supported by the iTC program. This offers a good platform for developing the strategic vision of the Project which seeks to integrate local rights into a wider NRM and investment process.

Table A11.2. Number of DUATs and CDCs - Project Landscape

		Individual DUATs	DUATS of Associations	CDCs
Zambézia	Gurué	899	13	20
	Alto Molocue	182	6	32
	Mocuba	157	2	6
	Ile	20	5	7
	Gilé	20	3	10
Subtotal		**1,278**	**29**	**75**
Nampula	Rapale	377	0	6
	Ribaué	148	7	14
	Mecuburi	92	0	23
	Lalaua	44	0	20
	Malema	198	4	18
Subtotal		**859**	**11**	**81**
Landscape Total		**2,137**	**40**	**156**

Source: DINAT (February 2016).

Annex 12: Matching Grant/Partial Credit Guarantee and Index Insurance Scheme

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

A. Context

1. **The objective of the MG scheme and PCG fund for the Project is to improve the ability of SECFs and MSME agribusinesses to access markets through market-oriented investments.** Investments supported by the MG scheme and/or PCG fund will have a catalytic role, demonstrating the incremental returns that can be achieved through access to TA (know how), technology, inputs, and markets. The MG and PCG will facilitate access to commercial financing and address financial access constraints of SECFs, agro-dealers, and local traders/aggregators and other MSME agribusinesses in agriculture and forestry VCD.

2. **The current market failures that are preventing smallholder farmers, SECFs, and MSME agribusinesses from accessing financial markets require a set of interventions that combine an approach to enhance productivity and on-farm production, as well as increase access to finance for inputs, equipment, and working capital.** This approach, as designed under the Project, combines traditional MGs with a guarantee scheme that facilitates SECFs and MSME agribusinesses to engage with the formal financial market.

3. **Therefore, the MG scheme and PCG fund will support linkages among smallholder farmers, SECFs, MSME agribusinesses, and large firms (anchor enterprises) through targeted investments including** (a) acquisition of assets, such as equipment, tractors, micro irrigation, storage units, and processing facilities, that can enable SECFs and MSME agribusinesses to provide services to smallholder farmers (for example, hiring out a tractor or renting storage space); improve productivity and processing and generate additional income; and have acceptable collateral for banks; and (b) provision of working capital for SECFs and MSME agribusinesses (through bank's access to the PCG) to enable the financing of additional and improved inputs and operating costs of machinery and other assets.

4. **The MG scheme will be demand-driven. Allocations will be made through a competitive selection process based on demonstrated evidence of benefits to smallholders, SECFs, and MSME agribusinesses based on business linkages.** Two types of business linkages will be supported under this activity: (a) linking smallholders to agribusiness VCs through SECF investments and (b) supporting MSME agribusinesses to expand their participation in key agribusiness and forest VCs.

5. **Under the first business linkage, a key focus of the MG scheme is to catalyze the business model where SECFs will provide key extension, input, and mechanization services to individual smallholder farmers to support their access to existing or new markets.** The MG investments are expected to increase the number of smallholder producers who are able to enter and participate actively in agriculture and forest VCs supported by the Project.

6. **The PCG will also be demand-driven and will focus on reducing the risk of non-traditional clients (SECFs and MSME agribusinesses) to banks thereby providing an enabling environment for these institutions to lend.** Lending facilitated by the PCG will aim to support the same group of beneficiaries as the MG although not necessarily the same farmers

or the same business entities (agribusinesses). PCGs can be used to support (a) longer-term credit for asset acquisition and (b) working capital needed to enable the utilization of the assets acquired and more general working capital needs of SECFs and agribusinesses, whether beneficiaries of the MG or not. Demand for the PCG may well be for working capital (not covered under the MG) and for other financing needs of SECFs and agribusinesses, even beyond those related to the acquisition of assets.

7. **A second type of business linkage is supporting MSME agribusinesses to expand their participation in key agribusiness and forest VCs.** The MG and PCG will support investment proposals, where agribusiness firms develop business plan proposals for the production, processing, and commercialization of high-quality farm products. Examples of activities that could be supported relate to acquisition of infrastructure, equipment, processing facilities, warehouses, irrigation systems, cold storage facilities and input stocks, services, and outgrower schemes. These investments will be financed by local banks, MGs, and own contribution. In the event that banks determine that they need guarantees to provide financing, participating banks in the PCG fund can apply for such guarantees.

8. **A major concern of banks extending agribusiness financing to farmers in Mozambique is the potential for losses because of severe weather events.** Severe droughts and floods can have a serious impact of destroying crop production and significantly limiting the capacity of many smallholder farmers to repay their credit. The Project will have a subactivity that will restart and expand a pilot operation financed under the GIIF with the objective of protecting agricultural investments that are subject to weather risks. Initially, the Project will support weather index insurance in the cotton VC, which is the focus of the pilot program. During project implementation, it is envisaged that based on demonstration and additional feasibility work, the introduction of index insurance to other crops in Mozambique over time could be introduced in collaboration with the overall Disaster Risk Finance Program at the macro/government level that is under consideration.

B. MG Scheme (Project 1 US$7.0 million; Project 2 US$7.0 million)

9. **MGs will partly finance investments by SECFs and MSME agribusinesses for longer-term asset acquisition, such as equipment, tractors, micro irrigation, greenhouses, and storage units.** These assets will enable SECFs and MSME agribusinesses to strengthen the linkages with the many smallholder farmers in their VC/location and increase their own productivity and production. Based on a demand assessment carried out during project preparation, the examples of MG beneficiaries include the following: (a) network of 100 SECFs to be identified within the first 12 months of the implementation of the Project and (b) 25 MSME agribusinesses, including input suppliers, buyers, processors, cooperatives. Agribusiness funding will be made eligible for business plan proposals submitted by SECFs; private agribusiness firms that are legally registered in Mozambique; and cooperatives and associations that are also legally registered in Mozambique. The grant will also generate a collateral for banks.

10. **MGs will be provided through two windows:**

(a) *Small grant window*, for projects between US$5,000 and US$100,000: 50 percent grant; 40 percent loan (by commercial banks or from their own resources); and 10

percent own contribution (minimum), with an expected average project size of US$80,000

(b) *Medium to large grant window*, for projects above US$100,001 and up to US$1 million: the additional funding above US$100,000 and up to US$1 million will benefit from a 20 percent MG, and the rest is own contribution and/or loans. Expected average project size for MSME agribusiness: US$200,000.

11. With an expected 100 SECFs and 25 MSME agribusiness beneficiaries, the MG scheme comes to approximately US$6.5 million.[88] The MG fund includes a reserve of US$.5 million. The total under the MG scheme is US$7.0million.

12. **One concern of providing grants to private agribusiness enterprises is that they crowd out other lenders of capital, thus hindering the development of the financial sector lending to the agricultural sector.** There are a number of factors that limit these distortionary effects in the current context in Mozambique. First, each MG proposal is expected to have a commercial loan or own contribution as part of the financing package. The loan will be a condition on the MG and vice versa, if applicable. Second, there is limited investment and lending to the agriculture sector in Mozambique that has a term longer than one year. Therefore, the medium term nature of each MG, with its associated commercial loan (if needed), is intended to expand the average length of agriculture sector investments and loans in the country. Third, investments financed by MGs are targeted and focused on promoting specific agribusiness investments for which commercial limited financing has been available in the past. Last, because public funds are being used, all investment proposals will be cleared by an Investment Committee. The use of funds will be carefully monitored during implementation, and financial reporting will reflect actual expenditures incurred by the funded projects.

13. **The MG scheme will be implemented by a dedicated MGU comprising the UGFI staff recruited competitively and on individual contracts.** The MGU will be headed by a qualified MG manager with international expertise, who will report to the UGFI project coordinator. The unit will also include two grant advisors, and a locally recruited financial and administrative officer. Depending on the volume of demand under the MG scheme, the MGU may hire additional resources or consultants as needed. Recruitment and selection of the MGU staff will be done competitively. The Bank will provide its prior review and no objection of the TOR, short-list, and proposed candidates.

14. **The VCSP, contracted under Component 1, will work with SECFs/MSME applicants on their business plan development and grant applications.** Applications will be reviewed by the MGU and approved by an Investment Committee, which will be established to provide oversight of the MG scheme and PCG fund.

15. **The Investment Committee will consist of five members to include a representative from the FSP, the MG manager, the UGFI, an independent agricultural finance expert,**

[88] For 200 SECFs, average project size of US$80,000 with a 50 percent grant, results in total grant value for SECFs of US$8.0 million. For 50 MSME agribusinesses, the first US$100,000 of project size receives a 50 percent grant and the additional over US$100,000 receives 20 percent (average project size is US$200,000) resulting in total grant value for MSME agribusinesses of US$3.5 million.

and a business community representative. All proposed members on the Investment Committee will be subject to prior review and no objection by the Bank. The committee will strive to achieve gender balance. The VCSP will participate as an observer on the committee. The first 10 grants will be submitted for the Bank's prior no objection as well as those above threshold approvals (project size greater than US$500,000). The committee will be guided by the Project's objectives and agreed selection criteria and will be responsible to review and approve the quarterly reports. The additional details on the Investment Committee will be further defined in the PIM, the MG scheme manual and PCG fund manual.

16. **The MG proposals will be evaluated in line with the following process.** Through initial expressions of interest by SECFs and MSME agribusinesses, the VCSP[89] will provide preliminary support and TA for the preparation of business plans/proposals. Once finalized, the grant proposal will be presented to the MGU. The MGU will confirm that the eligibility criteria have been met (see criteria listed below) and ensure completeness of the documentation before submission to the Investment Committee. The committee will review and either approve or reject the proposal. Should the project be approved and require securing additional financing and the project meets all other eligibility criteria, a conditional approval by the Investment Committee may be issued (which will be conditional on obtaining the required financing). Once evidence of the approval for the additional financing is obtained from a bank, the MGU could process the MG. The selection process by the MGU and committee will include validation of the feasibility analyses, financial appraisal, and validation of the financial and economic rate of return for the investment.

Criteria for Business Plan Proposal Submissions

17. **The following criteria have been defined to guide the selection of proposals, which will operate on a competitive basis:**[90]

(a) The investment must have received support by the VCSP in preparing the business plan proposal.

(b) Track record of agribusiness firms. The agribusiness investment must be implemented by a firm with experienced management, financial strength, and a convincing business concept. The firm needs to be registered in Mozambique

(c) Benefits of investment to smallholders and MSMEs agribusiness. Proposals will be required to show the benefits that smallholders and MSMEs will receive by the investment.

18. Additional criteria for selection of proposals will be further elaborated in the Operational Manual. These will cover (a) technical and financial viability; (b) operational sustainability; (c) additionality; (d) geographical scope; (e) environmental safeguards; and (f) social safeguards. Criteria for SECFs/MSMEs will require that they already have legal registration in Mozambique with operation for at least one year. This will be confirmed by the MGU.

[89] The VCSP will have a demonstrated strong track record in business development services.

[90] These criteria have emerged from discussions with stakeholders (private sector, international organizations, and the Government) during project preparation and a review of similar Bank projects across a number of regions.

Indicative Investments Eligible

- Mechanization equipment, tools, and machinery
- Inputs including seeds, fertilizers, other vegetative material, and agriculture inputs
- Farm infrastructure such as minor irrigation works, water harvesting structures, storage facilities/warehouses, cold storage, and greenhouses
- Soil conservation measures such as terracing, land leveling, and watershed treatments
- Seeds for seed production
- Agro-processing facilities

Investments Not Eligible

- Regular operating expenses not directly associated with the scheme
- Salaries of public employees
- Land acquisition
- Large civil works such as the construction of new buildings that are not productive assets
- Retroactive payments for expenditures before the date on which the MG agreement is signed
- Financial participation in a firm's equity

19. **Where applicable, such as in the case of agricultural vehicles or machinery, the VCSP will prequalify suppliers of these types of assets that will be financed under the MG scheme.** The supplier list will be reviewed by the MGU and approved by the committee. This will ensure quality control and that the appropriate asset is being purchased. A simplified procurement manual for the MG scheme will be developed that will be guided by the Bank Procurement Guidelines and follow established market practices, which will include the required forms and templates. The VCSP will be in charge of the procurement process for the assets requiring approval from the MGU. The VCSP will continue to work with these suppliers to ensure proper maintenance and that the needed after-sales service and spare parts are being provided.

20. **The MGU will be responsible for performing due diligence on the use of the funds, and the UGFI will process the withdrawal applications on behalf of the unit.** Disbursement applications for the use of Bank funds will be channeled through the UGFI, and the MG fund will be deposited in a special dedicated project account for the scheme. Disbursements will be made in tranches based on approved investments. Actual expenditures of the grants will be

reported in addition to the disbursed funds to ensure that subsequent tranches are released for disbursement. The MGU will prepare quarterly financial statements based on the actual use of the funds and actual expenditures and submit them to the UGFI, which will report these in the Project's quarterly reports. A disbursement manual will be prepared for the MG scheme that will guide the disbursement process of grants and will include all the forms and templates required.

21. **The VCSP will collect baseline data and will monitor the impact of the program on the SECFs and MSME agribusinesses.** As such, the VCSP data will feed into the Project's overall M&E system, which will provide regular updates based on the Project's Results Framework. An impact assessment will also take place at project conclusion to inform the effectiveness of these initiatives in future operations.

C. PCG Fund (Project 1 US$2.5 million equivelant; Project 2 US$2.5 million)

22. **The PCG will take into consideration the recently published Bank Group principles on designing PCG schemes, issued in December 2014, and cover the governance, management, administration, sustainability, and monitoring of PCG**.[91] Although these principles are primarily for independent legal government entities set up to offer CGSs, the following principles are relevant for the type of credit guarantee designed for the Project:

(a) The CGS should have adequate funding to achieve its policy objectives (Principle #2).

(b) The CGS should have sound management, internal controls, and risk management systems (Principles #6, #7 and #8).

(c) The CGS should adopt clearly defined and transparent eligibility and qualification criteria for lenders and credit instruments, also reflecting the trade-offs between outreach, additionality, and financial sustainability (Principles #9 and #10).

(d) The guarantee issued should be partial thus providing incentives for lenders to assess risks prudentially and correctly (Principle #11).

(e) The CGS should adopt a transparent and consistent risk-based pricing policy to ensure that the guarantee scheme is financially sustainable (Principle #12).

(f) The claim management process should be efficient, clearly documented, and transparent, providing incentives for loan loss recovery (Principle #13),

(g) The CGS should be subject to financial reporting (Principle #14),

(h) The performance of CGS, in particularly its outreach, additionality, and financial sustainability, should be periodically evaluated (Principle #16).

[91] The Principles can be accessed at http://documents.worldbank.org/curated/en/2015/12/25665897/task-force-design-implementation-evaluation-public-credit-guarantee-schemes-small-medium-enterprises-principles-public-credit-guarantee-schemes-MSMEs

23. **The PCG will be administered by a financial institution (FSP) that can demonstrate prior experience with administering these types of schemes and meets requirements related to governance, solvency, liquidity, management and accounting systems, and commitment to project goals.** A selection process will be undertaken to contract the FSP. The financial institution selected will not be eligible to benefit from guarantees given the inherent conflict of interest.

24. **In line with international good practice, the PCG will be managed by a competitively selected private FSP on a performance-based contract.** The FSP will be expected to have a permanent presence in the Zambezi and/or Nampula Province and will report to the project coordinator and Project Steering Committee. The FSP will be responsible for (a) technical, economic, and financial appraisal of proposals; (b) identification and resolution of potential conflict of interest issues and fiduciary risks in the contractual agreements with SECFs and MSMEs; (c) submission of recommendations for guarantee to the Investment Committee; and (d) data collection with M&E and drawing lessons for future investments.

25. **The PCG will be governed in accordance with applicable Bank policies and the recently issued Principles for Public CGSs for MSMEs.** For PFIs wishing to benefit from the guarantee coverage, a prequalification process will be undertaken. Financial institution eligibility criteria will be transparent and open to all institutions that have an interest to lend to the beneficiaries of the Project (SECFs, MSME agribusinesses, and formal producer organizations). The eligibility criteria will be based on meeting or exceeding the current prudential requirements on capital adequacy, solvency, liquidity, portfolio quality (nonperforming loan), as well as credit policies, and existence of safeguard policies and robust corporate governance standards. Prior experiences in lending to agricultural sector, farmers (including SECFs), producer organizations, and agribusinesses will also be heavily considered during the selection process, as will prior experience with participation in similar schemes in Mozambique. Those institutions that do not meet the criteria at the inception of the Project, but are nevertheless interested in participating, will be allowed to reapply. Furthermore, loan eligibility criteria will be developed to ensure that the loans are for productive purposes within the scope of the Project. Nevertheless, the ultimate beneficiaries of the Project are the SECFs and MSME agribusinesses, and the type of financial institutions that the PCG is directed through is an intermediary (financial institution). It is expected that up to 4–5 PFIs will be selected initially, though there is no limit being set, and more institutions can be included as the PCG is rolled out, based on meeting the eligibility criteria.

26. **The sustainability of the PCG will be sought to be maintained through an appropriate structuring of the fees and efficient management of the guarantee reserve funded investment portfolio.** The risk sharing fees, which will be used for covering the costs and operating expenses of the PCG, together with the investment income from the portfolio investments, are projected over time to cover the costs of the PCG and enable it to function as a sustainable facility beyond the project period.

PCG Size[92]

- **SECFs.** 100 SECFs with an average loan of US$60,000 at 50 percent PCG will translate into US$3.0 million guarantee coverage.

- **Agribusiness MSMEs.** 25 MSME agribusinesses with an average loan size of US$200,000 at 50 percent PCG will translate into US$2.5 million guarantees for MSME agribusiness.

27. **Assuming a leverage ratio for the guarantee of 1 to 2.5 (for example, US$1 million of funds for US$2.5 million of outstanding guarantees) issuing total PCGs of US$5.5 million will require US$2.2 million of funds to back these guarantees.** A 1 to 2.5 multiplier ratio for this is conservative compared to international standards including developing country contexts (where ratios of 1 to 5 or 1 to 10 are feasible) but will be prudent to start with this given the pilot nature of the program.[93] Based on project experience at MTR, the leverage will be reviewed and may be increased. Effective risk management will be essential to minimize fund losses and attain a higher leverage. Based on project implementation, the ratio will be reviewed at MTR. In addition to the guarantee fund capitalization, the Project will cover the first three years of administrative costs (until project MTR) of the PCG and selected training with participating banks on how guarantees will be used within their systems. For the guarantee fund capitalization, there is a need of US$2.2 million to back the guarantees issued (at 1 to 2.5 leverage) plus US$0.6 million for the first three years' administration costs of the fund and dedicated TA on the administration of guarantees. At MTR, the Project will review the progress with the PCG sustainability and fees generated with the aim of having the full costs of the PCG administration covered from the PCG fees.

28. **Coverage of the PCG will be partial according to the Bank Group Principles and to reduce moral hazard and entice banks to do a proper credit risk assessment and loan monitoring.** The PCG will cover 50 percent of the loan amount. The proposed maximum loan size eligible for the PCG will be US$1 million.[94] Maximum loan duration covered by the PCG will be for eight years.

29. **The PCG will operate on an individual loan basis and pricing will be designed to minimize market distortions.** Loan applicants who are SECFs and registered agribusinesses (whether benefiting or not from an MG under the Project) will be eligible for consideration under the PCG scheme. This will not only help in reducing default risk but also in ensuring that the PCG adheres to the project target group. Pricing will also be risk-based but assessing default risk for SECFs and MSME agribusinesses and recoveries conditional on default in Mozambique may be challenging given that such data and information may not be widely available, or detailed

[92] Although these are the same numbers (200 SECFs and 50 agribusinesses) as for the MG, the individual SECF/MSMEs may not be the same SECFs and agribusinesses as those receiving the MG although there may be an overlap, and even for the same client, the purpose of the loan may not be linked to the asset acquired under the MG.

[93] The ongoing scheme on similar type of beneficiaries as the current Project is using a 1 to 2.86 leverage, basically having the financial capacity to cover loan losses up to 35 percent.

[94] This is consistent with the financing needs of projects subject to the MG component. The upper limit for such projects is US$1.0 million, which corresponds to US$230,000 of MG and US$100,000 of own contributions, which means that such a project will need US$670,000 in bank finance.

models do not yet exist. The PCG will operate on an individual loan level rather than a portfolio level. The Project will work with PFIs during project implementation to develop pricing and recovery models as to minimize market distortions.

30. **Pricing will consider the risks of such loans to be covered by the PCG and should also cover the administrative costs of the PCG.** Although as mentioned above it is challenging, because of limited data and new types of clients (for example, SECFs and MSME agribusinesses), to come up with exact risk-based pricing, an effort will be made for the pricing to best reflect risks and costs, something that will ensure that the PCG will not create market distortions. A currently administered PCG scheme in Mozambique, with similar beneficiaries and for similar coverage, charges 1 percent per annum for the loan guarantee with 0.5 percent initial commitment fee paid by the banks (if they wanted to reserve at the beginning a certain allocation from the guarantee fund).

31. **The cost of the guarantee will be provided in the PCG Fund Operational Manual, but it is expected to be between 1 percent per annum to a maximum 2 percent of the value of the loan.**[95] The PCG will have an efficient and timely claim management process that balances the need for prompt disbursement and at the same time provide incentives for loan loss recovery. Recoveries will be subject to equal sharing of the proceeds between the bank and the financial entity that administers the guarantee. Details on triggering of payments to banks by the PCG, administration of claims, and recovery will be provided in the PCG Fund Operational Manual. It is more common and highly advisable to have guarantee schemes that have rules that allow payment of claims before legal procedures are fully exhausted. Typically, banks need to show efforts that they have contacted the borrower that defaulted (written notification), they have transferred the file from the business unit to the collection unit, they have increased provisions, and they have reported the defaulted client to the credit registry, and it may also be the case that the banks have initiated legal procedures (just initiated, such as filing court papers). Significant provisioning (at least 50 percent) of the loans should have occurred before a claim is submitted for processing. It is therefore expected that claims may be submitted between 90 and 180 days from when a loan becomes overdue (the exact timeline will depend on the time for the individual bank to undertake the needed steps before claim submission). In the case of a catastrophic climate event that effects the Project's districts, the PCG will work closely with the PFIs to identify solutions to dealing with the impact of such a systemic event on the borrowers. Information collected through the index insurance scheme will be helpful in such an instance for an informed decision-making process to take place.

32. **It should be noted that an Implementation Completion and Results Report on a previous PCG scheme for MSME lending in Sri Lanka concluded that one of the reasons the PCG was not utilized was because of the very slow claim settlement process and difficulties to trigger the guarantee.**[96] In addition, borrower MSMEs were not willing to pay for the cost of the guarantee (100 basis points) to back their loans in exchange for a lower-quality/value collateral.

[95] Based on a review of CGSs in the Middle East and North Africa that also includes comparators from Asia, Latin America and the Caribbean, and Europe, most guarantee fees clustered around 1 percent to 1.5 percent (on a per year basis of the loan amount guaranteed).

[96] Banks needed to provide evidence that they had fully exhausted all legal procedures.

33. **The PCG funds can be invested in highly liquid and safe assets as to generate some income that will contribute to the cost of administering the guarantee and also enable some modest growth of the PCG funds.** The PCG will have an asset allocation policy as part of its Operational Manual. The revenue of the PCG will be the guarantee fee/premium plus the investment income, while the expenses will be the administrative costs and the guarantee payouts. The PCG will have the objective to be financially sustainable over time. To protect against currency fluctuation, the PCG fund will be placed in a foreign currency dedicated account throughout the life of the Project.

34. **The central bank will be approached to explore whether and how capital relief can be formulated for the PCG scheme.** In jurisdictions that follow the Basel II rules, guarantees are treated as credit protection and may decrease the risk weight applicable to the covered exposures. Thus, the value of risk-weighted assets used in calculating the capital adequacy ratio can also change. The regulatory treatment of PCGs is an important issue for financial institutions; in particular, the regulatory capital relief obtained for the use of guarantees can be an important incentive for financial institutions to use the PCG.

35. **The FSP will hold training sessions for loan officers, risk officers, and management to enhance their ability to lend to SECFs and MSME agribusinesses**. The Project, through the VCSP, will also work on business development services for SECFs and MSME agribusinesses, including the preparation of business plans and projections for projects seeking loans from PFIs. Such preparations will be needed for the banks to consider such projects for financing and use of the PCG. In other words, the VCSP will help identify and prepare clients (SECFs and MSME agribusinesses) to present bankable projects to banks that can access the PCG.

36. **TA provided by the FSP will be focused on helping the financial entity to administer the guarantees and the banks (the PFIs) that use it on the specific aspects of accessing and using the guarantee.** Of particular importance is the awareness raising and working with the local branches and field offices of these PFIs to prepare them. Some PFIs may also need some further targeted capacity building on credit risk management for farmers and MSME agribusinesses. Up to 10 percent of the initial value of the PCG (but not exceeding US$600,000) can be used to pay for such upfront capacity building. This Figure (US$600,000) also covers the first three years' administrative costs of the PCG until the MTR.

37. **Project funds for the PCG will be disbursed in tranches in the name of the Project managed by the UGFI.** The disbursement will follow direct transfers to a segregated operation account at the Central Bank using the reimbursement disbursement method. The account will have two subaccounts, that is, one for fees paid by participating banks and one for interest earned. The initial tranche will be 25 percent of the PCG funds needed for the guarantee, US$1.1 million or equivalent. Subsequent disbursements will be calculated based on PCG utilization. Project funds for the weather-based insurance premium will be disbursed annually once the insurance company presents evidence of premium billing and payment of concessioners' share of the premium for the year based on the reimbursement disbursement method through an account hosted at *Banco de Moçambique*. All money flows related to the guarantees are managed within this account managed by the UGFI without any involvement of the FSP when it comes to handling these guarantee funds.

38. **The UGFI has the authorization to sign and issue the PCG instruments on behalf of the Government[97] based on positive recommendation for the issuance of the guarantee by the FSP and approval by the Investment Committee within 10 working days from receiving the positive recommendation to issue the guarantee.** The PCG also processes claims (based on checking and positive recommendation of the FSP) and pays claims directly to the PFI that made the claim no later than 10 working days from receiving the positive recommendation from the FSP. PFIs pay the fees for the guarantee directly into the account that has the guarantee funds.

39. **The FSP will be chosen through a competitive process and have experience and track record in administering PCG schemes either in Mozambique or in the broader southern Africa region.** The FSP will:

(a) accept the applications for PCG from the eligible PFIs that participate in the PCG scheme;

(b) assess the eligibility of the client and project/loan type that can benefit from the PCG (the eligibility criteria will be specified at the PCG Operations Manual);

(c) assess the riskiness of the clients and loans based on the risk parameters framework of the PCG (to be specified in the PCG Operations Manual);

(d) conduct its own due diligence on the client/loan to verify conditions as stated by the PFI in its application for the PCG (this may also involve a visit to the client);

(e) send its recommendation (positive only) to the Investment Committee and once approved by the committee, the UGFI will process and issue the partial guarantee (from receiving the application with the guarantee from the PFI to sending the recommendation should not take more than 10 working days);

(f) in case of claims, verify the claims submitted by the PFIs and also conduct its own due diligence to establish the conditions for loan failure;

(g) upon verification and validation of the claim, and within 10 working days, send the recommendation to the UGFI to pay the claim from the special account that holds the funds; and

(h) issue quarterly report on the usage of guarantees, fees collected, and claim payments. An annual financial review will also be conducted every year.

40. The first 10 guarantees to be issued will be subject to prior approval from the Bank. Further, all repeat guarantees (that is, new guarantees to the same borrower) and above threshold guarantees (more than US$250,000) will be subject to prior review by the Bank.

41. **The PCG will have an M&E framework that will include baseline information.** The PCG needs to support the expansion of bank lending to new activities and new clients or expand credit limits or credit maturities to existing clients. In other words, in the context of the activities

[97] The Government is the guarantor of every loan covered by the guarantee scheme.

promoted by the Project, the banks need to broaden their agri-lending business to new clients and activities and deepen it when it comes to existing clients.

D. Weather-based Index Insurance Scheme (Project 1 IDA US$0.5 million equivelant and Project 2 US$0.5 million)

42. **The objective of this activity is to increase weather-based index insurance coverage from 43,000 cotton growers to 102,000 within the five years of the Project.** Given the significant weather risks that could impact production and create the inability of farmers to repay loans and/or input financing, there is the need to scale up the initial pilot program under the GIIF that took place between 2011 and 2013, focusing on cotton and involving the Cotton Institute, Hollard and EMOSE (insurance companies), and two cotton companies—Olam and Sanam (out of 14 cotton concessionaires)—and was supported by the insurance regulator. Cotton was chosen as the crop to conduct this pilot because it is a relatively well-organized VC, with strong lead firms and involvement of a government agency (Cotton Institute).

43. **The perils covered during the pilot were excess rainfall during germination; deficit rainfall during germination, vegetative, or flowering stages; consecutive dry days during the vegetative stage; and deficit temperature during ripening.** The product was priced using portfolio pricing, meaning the product had a single premium rate across different areas rather than premium rates for each area. This single premium rate took into account the risk profiles in each of the individual areas, the correlations in risk between all the areas, and the value insured in each area. Premium rates for portfolio-priced products are generally lower than for products that simply aggregate the individual prices for each risk area.

44. **During the pilot, the aggregator—in this case the cotton concessionaire—was the policy holder and the policy covered specific areas where a number of contract farmers operated.** The contract farmers in this area were the insured parties, but at the start of the season, it was the aggregator (policy holder) who paid the premium for the insurance. The aggregator collected the cost back from the insured farmers at the end of the season when the farmers delivered their harvest. When adverse weather hits the area and creates losses, pay-outs are distributed to the aggregator and then to affected farmers in the affected area.

45. **Under the current project, follow-up activities to support the development of index insurance in Mozambique will focus on** (a) restarting and expanding the cotton program to increase coverage from 43,000 of the previous pilot program to 102,000 farmers, corresponding to about 40 percent of all cotton farmers in Mozambique and also increasing the amount of input cost coverage from 20 percent to 60 percent of the input costs and (b) investigating additional VCs for which weather index insurance can be implemented and the feasibility of expanding the coverage to income rather than the current input cost coverage.

46. **Activities will consist of capacity building, funded by the GIIF (trust funded) and risk financing (premium subsidy) to reduce the cost to the farmer beneficiaries.**[98] Risk

[98] Farmers benefit indirectly from insurance as each farmer does not have an individual policy. The aggregator—in this case the cotton concessionaire—is the policy holder and the policy covers an area where a number of farmers operate. When adverse weather hits the area and creates losses, pay-outs are distributed to the aggregator and then to affected farmers in the affected area.

financing will be important for the scaling up of insurance to cover more farmers at a higher level of coverage where the absolute cost increases will need some government financial support. Under this premium cost-sharing scenario, 60 percent of the premium insurance cost will be borne by the beneficiaries of insurance and 40 percent will be the premium subsidy by the Project.

Table A12.1. Financing Scenario

Activity	Funding Amount	Source of Funding
Capacity building to insurers	US$500,000–US$700,000	GIIF Trust Fund
Risk financing	US$935,000	ANRLMP

47. **The agricultural insurance activity will consist of the following**:

Capacity Building to Insurers (GIIF Trust Fund - US$500,000–US$700,000)

48. **The GIIF will provide in-depth advisory services to at least one local insurance company to expand/develop its index insurance business line.** The advisory will provide both operational and technical support to the insurer. The operational support will include business development (that is, coordination with cotton concessionaires) as well as business processes for index insurance. The technical support will focus on product design and evaluation for the cotton VC. In addition, technical support will assist in the feasibility analysis for extending coverage to income insurance (from input cost insurance) and also investigating the development of weather index insurance products for other VCs and crops among the priority ones currently in the Project such as soybeans, maize, horticulture, peas, and cashew. Finally, there will be an M&E component that will enable the periodic evaluation of results and assessment of the impact of insurance on cotton farmers. Such an evaluation will contribute valuable lessons learnt in the potential replication of index insurance to other crops.

Risk Financing (Project 1 IDA US$0.5 million equivelant and Project 2 US$0.5 million)

49. **The risk financing component will provide up to 40 percent premium subsidy for input cost protection index coverage for cotton out-growers.** The policyholders for the coverage will be the cotton concessionaires, while the insured parties will be the out-grower farmers.[99] The cost for the remainder of the premiums (60 percent) will be shared among cotton stakeholders, for example, the cotton concessionaires, *Instituto do Algodão de Moçambique*, and the cotton farmers. Exact cost sharing arrangements for the 60 percent premium cost will be developed during project implementation. However, it is envisaged that an arrangement could be made so that the cost is split among the farmers, the cotton companies, and *Instituto do Algodão de Moçambique* where each will be expected to contribute one-third of the premium cost share of 60 percent (that is, 20 percent each). The premium cost will be known and announced before the start of the crop season, and each party will make its contribution. Farmer payment share of the premium will take place at the delivery of the cotton to the company when also the cost of inputs will be deducted.

[99] This is a portfolio or group policy coverage, in the sense that farmers do not have individual policies but are covered by a group policy that the cotton companies take on their behalf and to protect input costs.

50. **The coverage of insurance under the Project will be US$51 per farmer as opposed to the US$16 coverage per farmer of the previous pilot project, which did not have premium subsidies and thus limited the coverage to reduce the costs.** The previous coverage in the pilot project corresponded only to less than 20 percent of input costs if all/most farmers had to be compensated. Under the Project, using the 2014 input values (in U.S. dollars) the average input cost is US$89 for the two areas of Lalaua and Monapo. Therefore, US$51 will be about 60 percent of the value on inputs. If there is a catastrophe such that everyone has to get a payout, they will get at least 60 percent of the value, which is commensurate with their 60 percent contribution to premium as well.

51. **Premium subsidy funds will be released to the insurer(s) upon receipt of evidence of completed premium payment transactions between the policyholder (that is, cotton concessionaire) and the insurer.** The program can expect to reach approximately 40 percent of cotton out-growers (102,000) in year 5 (Table A12.2). In comparison, a stop-loss facility of US$1.0 million can expect to reach fewer farmers: 68,000 in year 5 (Table A12.3). During the five-year project implementation, the partial premium subsidy of US$935,000 will support cumulatively 361,576 farmers/policies at a cost of US$2.60 per farmer/policy. Without additional assumptions and actuarial analyses, it is not straightforward to quantify how many farmers could be reached by using the US$1.0 million from the Project to finance losses in a stop-loss reinsurance manner, instead of using the amount for premium subsidy. Table A12.3 provides a simplified estimate showing that much less farmers are likely be benefit in such a scenario. The table oversimplifies the use of the US$1.0 million, which is unlikely to be spent every year because of continuously high claim ratios; moreover, this approach takes account of the fact that, unlike a proper reinsurance enterprise, a facility set up exclusively for the Project will not count with solvency capital or provisions for adverse deviations and therefore must be prepared for even the most improbable—albeit possible—claims scenarios.

Table A12.2. Estimated Farmer Outreach: US$935,000 Premium Subsidy

	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Risk financing budget	140,000	163,600	187,000	210,400	233,700	934,700
Total premium	350,600	409,000	467,500	526,000	584,400	2,337,500
Total sum insured*	2,337,500	2,932,300	3,603,500	4,359,000	5,208,000	18,440,400
Total number of farmers**	**45,833**	**57,497**	**70,657**	**85,472**	**102,117**	**361,576**

Note: *Assumes premium rate of 15 percent gradually declining to 11 percent by year 5; ** Assumes sum insured of US$51 per farmer.

Table A12.3. Estimated Farmer Outreach: US$1.0 million Stop Loss

	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Risk financing budget	200,000	200,000	200,000	200,000	200,000	1,000,000
Total premium	210,375	245,438	315,563	337,500	350,625	1,459,501
Insurance retention	420,750	490,875	561,000	631,125	701,250	2,805,000
Stop-loss limit	200,000	200,000	200,000	200,000	200,000	1,000,000
Total sum insured*	1,558,333	1,954,898	2,402,333	2,906,048	3,471,981	12,293,593
Total number of farmers**	**30,556**	**38,331**	**47,105**	**56,981**	**68,078**	**241,051**

Note: *Assumes stop-loss discount factor of 10 percent reflected in the premium; **Assumes sum insured of US$51.

52. **The agricultural insurance activities will link with the broader Disaster Risk Finance strategy of Mozambique under preparation, which focuses on the macro/budget level.** The teams will coordinate to assess connections between the macro-level strategy and meso-level risks in agriculture.

53. **Project funds for the weather-based insurance premium will be disbursed annually once the insurance company presents evidence of premium billing for the year.** All money flows related to the guarantees are managed in the account and managed by the UGFI without any involvement of the PCG FSP.

54. **Project 1 will finance the MG and PCG support of US$10.0 million for 100 SECFs and 25 MSMEs and weather-based agriculture insurance premiums.** The MG and PCG finance for the remaining 100 SECFs and 25 MSMEs will be provided by additional funding under Project 2.

Annex 13: Greenhouse Gas Accounting Analysis

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

1. **The net carbon balance of the Project (Project 1) was assessed, highlighting which project activities have the largest potential to reduce emission and sequester carbon.** This allows for an understanding of how the Project contributes to the country's mitigation goals stated in the INDC to the UNFCCC and also highlights potential for future payments for emissions reductions from different sources (such as the FCPF Carbon Fund).

Policy Context on Climate Change Mitigation

2. **In recent years, climate change has acquired prominence in Mozambique's political agenda.** In 2012, the National Climate Change Strategy 2013–2025 was adopted, which is structured around three core themes: (a) adaptation and climate risk management; (b) mitigation and low-carbon development; and (c) cross-cutting issues. These include institutional and legal reform for climate change, research on climate change, and training and technology transfer. The implementation of the National Climate Change Strategy is planned in three Projects, where the first Project (2013–2015) focuses on adaptation measures and poverty reduction and identifying opportunities for the development of low-carbon economy in local communities.

3. **The National Climate Change Strategy was preceded by a range of other policies that acknowledged the close connection among climate change, poverty, and economic development.** In 2003, Mozambique submitted a national communication to the UNFCCC—the second communication is in draft, identifying seven sectors that are particularly vulnerable to climate change. In 2007, the NAPA proposed immediate adaptation strategies,[100] and soon after, the National Poverty Plan 2011–2014 proposed measures to reduce disaster risk and climate change adaptation, including among others the promotion of conservation agriculture, or a program for reforestation and reducing emissions from deforestation and forest degradation and establishing carbon stocks (REDD+). The country is currently finalizing its national REDD+ Strategy.

4. **The INDC to the UNFCCC. In 2015, through its INDC submitted before the 21st UNFCCC Conference of Parties, Mozambique estimated its contributions to reducing mitigation at about 76.5 million tCO_2eq in the period from 2020 to 2030, with 23.0 million tCO_2eq by 2024 and 53.4 million tCO_2eq from 2025 to 2030.** This should primarily be achieved in the sectors of energy (electricity production, transports, and other—residential, commercial, and institutional), land use, land-use change and forestry (REDD+), and waste. Potential actions in other sectors such as industry and agriculture including in the other energy subsectors will be explored.[101] The implementation of any proposed reduction is conditional on

[100] These focus on strengthening an early warning system; developing capacities of agricultural producers to cope with climate change impacts; reducing climate change impacts in coastal zones through dune erosion control and mangrove restoration; and improving management of water resources through updated water infrastructure and establishment of water sharing agreements.

[101] INDC of Mozambique to the UNFCC (2015). http://www4.unfccc.int/submissions/INDC/Published%20Documents/Mozambique/1/MOZ_INDC_Final_Version.pdf

the provision of financial, technological, and capacity building from the international community.

World Bank Mandate and Accounting Methodology

5. **In its 2012 Environment Strategy, the Bank adopted a corporate mandate to conduct GHG emissions accounting for investment lending.** The quantification of GHG emission is an important step in managing and ultimately reducing emission and is becoming a common practice for many international financial institutions.

6. **The Bank uses the EX-ACT, developed by FAO in 2010,[102] to assess a project's net carbon balance.** This is the net balance of tCO_2eq GHGs that were emitted or carbon sequestered as a result of project implementation compared to a 'without project' scenario compared to the 'initial' scenario. EX-ACT categorizes activities in five modules: land-use change, crop production, livestock and grassland, land degradation, and inputs and investment. EX-ACT thus estimates the carbon stock changes as well as GHG emissions per unit of land, expressed in tCO_2eq per ha per year.

Project Activities Relevant for the Analysis

7. **Project area. As strategy to improve rural livelihoods and to ensure resilience and sustainability of NRM, the Project adopts an integrated landscape management approach recognizing the critical links among different elements from productive agricultural areas to forests, watersheds, and protected areas and their buffer zones.** The targeted landscape is an area of 63,397 km^2, in the provinces of Nampula and Zambézia; 16 priority VCs have been identified along with forest-related VCs, including poultry, maize, soya, horticulture, sesame, cashew nuts, pigeon peas, natural oils, and honey; forest-related VCs include timber from natural and planted forests and non-timber forest productions, on a pilot basis. The Project aims to include up to 20,000 SECFs into a network to work with the smallholders in the project area. SCFs have 3–20 ha of land and medium famers 20–200 ha. Emerging commercial farmers will work with 60–300 smallholder farmers.

8. **Description of project area. The Project areas are found to be in tropical and moist climate regime with project implementation over 5 years and capitalization of 45 years; with LAC soil type**. Table A13.1 provides an overview of project activities and related assumptions for the with and without project scenarios. Tier 1 coefficients are used throughout, and linear dynamic of change is assumed. It is assumed that the without-project situation is the same as with-project, unless otherwise indicated.

9. **Project activities. The Project expects to contribute to reducing deforestation by 10 percent in the project area, resulting in approximately 9,800 ha of avoided deforestation and associated CO_2 emissions from residue burning.** The Project increases afforestation of 1,200 ha on previously degraded land and established forest plantations on 1,600 ha land. The Project aims to introduce sustainable land management practices and aims to introduce improved agronomic and agricultural management practices on about 42,100 ha for all targeted commodities. This corresponds to roughly 50 percent adoption rate among the targeted

[102] http://www.fao.org/tc/exact/ex-act-home/en/

households. The Project will buy around 15 cars that are estimated to work 254 days per year and drive around 100 km every day. Car fuel consumption is estimated to be 0.007 m^3 of gasoline per working day. The improved and sustainable management practices could lead to increased, but more precise use of agrochemicals and fertilizer; and the proposed irrigation investment could also lead to increased electricity use. In addition, the Project proposes investment in rural roads.

Table A13.1. Inputs to EX-ACT

EX-ACT Module Project Activity	Initial Situation	Without Project	With Project
Reduced deforestation rate in tropical dry forests by 10%; with fire use	2,881,087 ha forested area	2,783,874 ha forested area; 97,213 ha annual cropland and residue burning	2,793,595 ha forested area; 87,492 ha annual cropland
Afforestation in tropical dry area (ha)	0	0	1,200
Forest plantation (ha)	0	0	1,600
From degraded to perennials crops (ha)	0	0	3,408
Improved[(a)] maize production (ha)	16,335	0	16,335
Improved soya production (ha)	4,240	0	4,240
Improved beans production (ha)	7,720	0	7,720
Improved sesame production (ha)	3,490	0	3,490
Improved onion production (ha)	3,400	0	3,400
Improved potato production (ha)	2,940	0	2,940
Improved cassava production (ha)	3,980	0	3,980
Inputs: Gasoline (m^3/year)	0	0	26.67
Infrastructure: Irrigation (ha)	0	0	0
Infrastructure: Rural roads(km)	0	0	0
Inputs: Electricity for irrigation systems	0	0	0
Inputs: Fertilizer (ton/year)	0	2,361	3,330
Inputs: Agro-chemicals	0	0	0

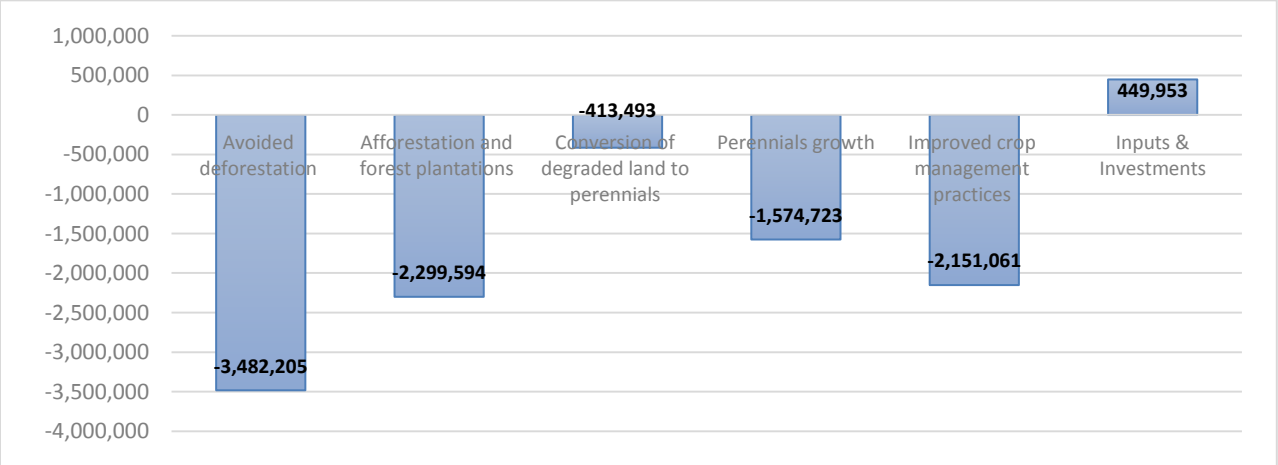
Results - Net Carbon Balance

10. **Results. The Project could be a net carbon sink of -9,471,123 tCO_2eq over a period of 50 years, resulting in a net balance of -189,422 tCO_2eq per year.** Table A13.2 shows the impact of each activity over 50 years and for 1 year and Figure A13.1 illustrates the mitigation potential per activity. Avoided deforestation constitutes a share of 37 percent of mitigated tCO_2eq, followed by afforestation/plantations with 21 percent, improved crop management practices of about 23 percent, and perennials growth and conversion of degraded land to perennials of 14 percent and 4 percent, respectively. On a per ha basis, the ranking differs: afforestation and plantation create a net carbon sink of -821 tCO_2eq over 50 years, followed by conversion to perennials and perennials growth of -583 tCO_2eq, avoided deforestation with -358 tCO_2eq over 50 years, and improved crop management practices of only -11 tCO_2eq over 50 years. However, several elements that will be carbon sources (for example, infrastructure) have not yet been considered in the analysis and can decrease the Project's overall mitigation potential.

Table A13.2. Results per Activity - All GHG in tCO_2eq

Activities	Gross Fluxes (20 years)			Result per Year		
	Without Project	With Project	Net Carbon Balance	Without Project	With Project	Net Carbon Balance
Avoided deforestation	34,823,125	31,340,920	-3,482,205	696,462	626,818	-69,644
Afforestation and forest plantations	—	-2,299,594	-2,299,594	—	-45,992	-45,992
Conversion of degraded land to perennials	—	-413,493	-413,493	—	-8,270	-8,270
Perennials growth	—	-1,574,723	-1,574,723	—	-31,494	-31,494
Improved crop management practices	2,630,248	479,187	-2,151,061	52,605	9,584	-43,021
Inputs and investments	1,078,886	1,528,839	449,953	21,578	30,577	8,999
Total	38,532,259	29,061,136	**-9,471,123**	770,654	581,223	**-189,431**
Per ha	13	10	-3	—	—	—
Per ha per year	0.3	0.2	-0.1	0.3	0.2	-0.1

Figure A13.1. Net Carbon Balance per Project Activity



11. **Sensitivity analysis. The sensitivity analysis assess the impact of a change in adoption rate of improved management practices to 30 percent, 60 percent, and 100 percent (from current 50 percent) and a decrease in reduction of deforestation rate to 5 and 2.5 percent instead of anticipated 10 percent.** Also, changes in moisture regime because of climate change from moist to wet or dry is assessed. The results are shown in Table A13.3 and demonstrate that the Project remains a net carbon sink. Changes in the deforestation rate to 2.5 and 5 percent have the largest impact and can reduce the carbon sink by 20 and 30 percent, respectively. The impact of a reduced deforestation rate to 5 percent instead of 10 percent is more severe than a decrease in adoption rate of improved practices to 10 percent.

Table A13.3. Results of Sensitivity Analysis

	Results	
	Final Balance, tCO_2eq	**Change (%)**
Initial results	**-9,471,123**	—
Change in adoption rate of improved practices		
10%	-8,340,103	+12
30%	-8,905,613	+6
60%	-9,754,984	-3
100%	-10,887,226	-15
Change in reduction of deforestation rate		
To 5%	-7,585,411	+20
To 2.5%	-6,642,555	+30
Change in moisture regime		
Dry moisture regime	-7,601,892	+20
Wet moisture regime	-14,348,917	-52

12. **Conclusion. The ex ante analysis shows that the Project could be a sizeable net carbon sink of about -9 million tCO_2eq over 50 years, which is approximately 12 percent of the mitigation suggested in the INDCs of about -76 million tCO_2eq.** The activities of afforestation and reducing deforestation have the highest per ha mitigation potential, and as the sensitivity analysis shows, changes in forest-related activities have the highest potential to reduce the Project's net carbon balance. Also, several elements that will be carbon sources (infrastructure, production inputs, and processing activities along the VCs) have not yet been considered in the analysis and can decrease the Project's overall mitigation potential.

Annex 14: Project Area Maps

MOZAMBIQUE: Agriculture and Natural Resources Landscape Management Project

Figure A14.1. Target Landscape - Districts/Provinces/Deforestation 2000–2014

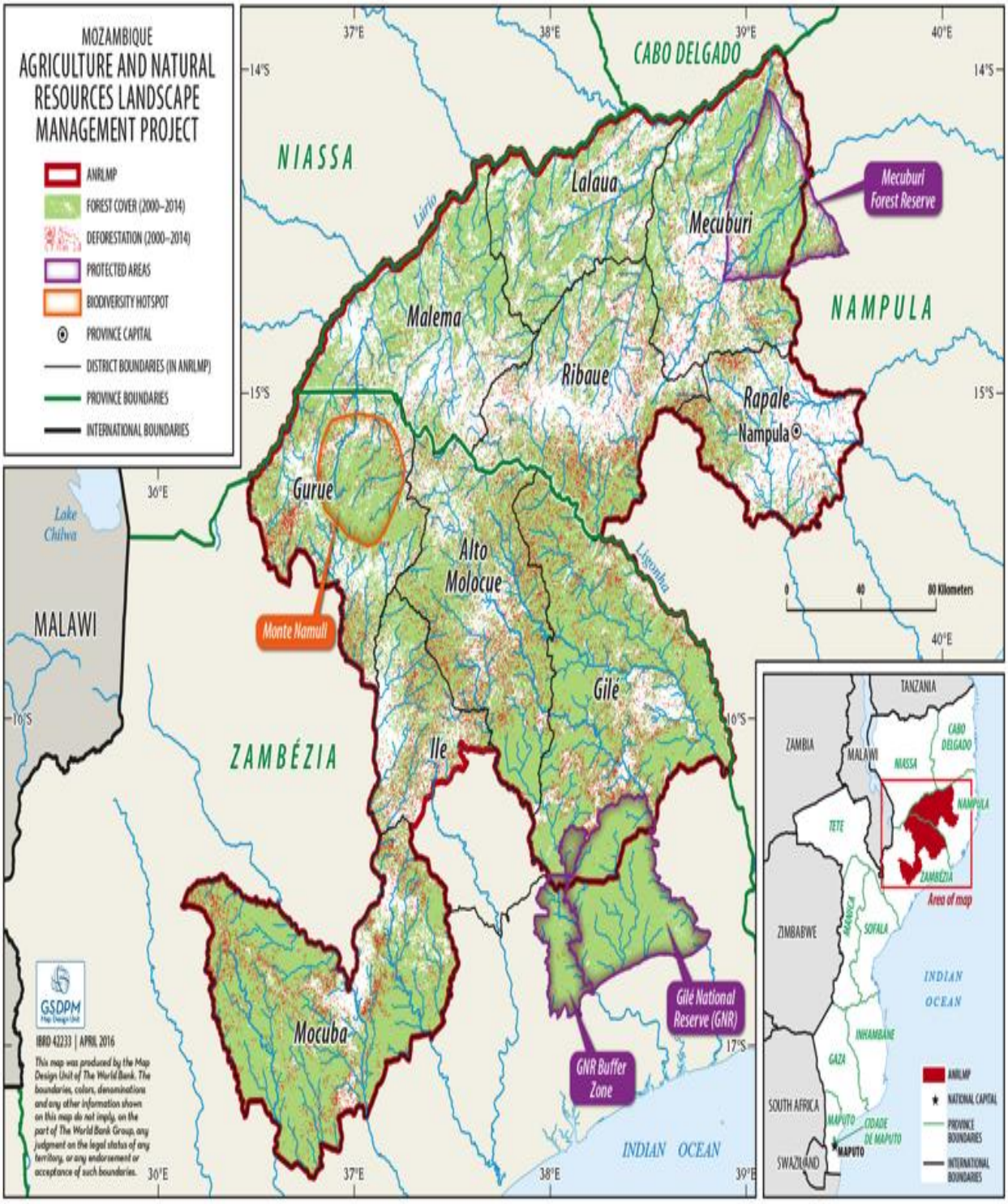


Figure A14.2. Targeted Landscape - Districts/Provinces/Topography

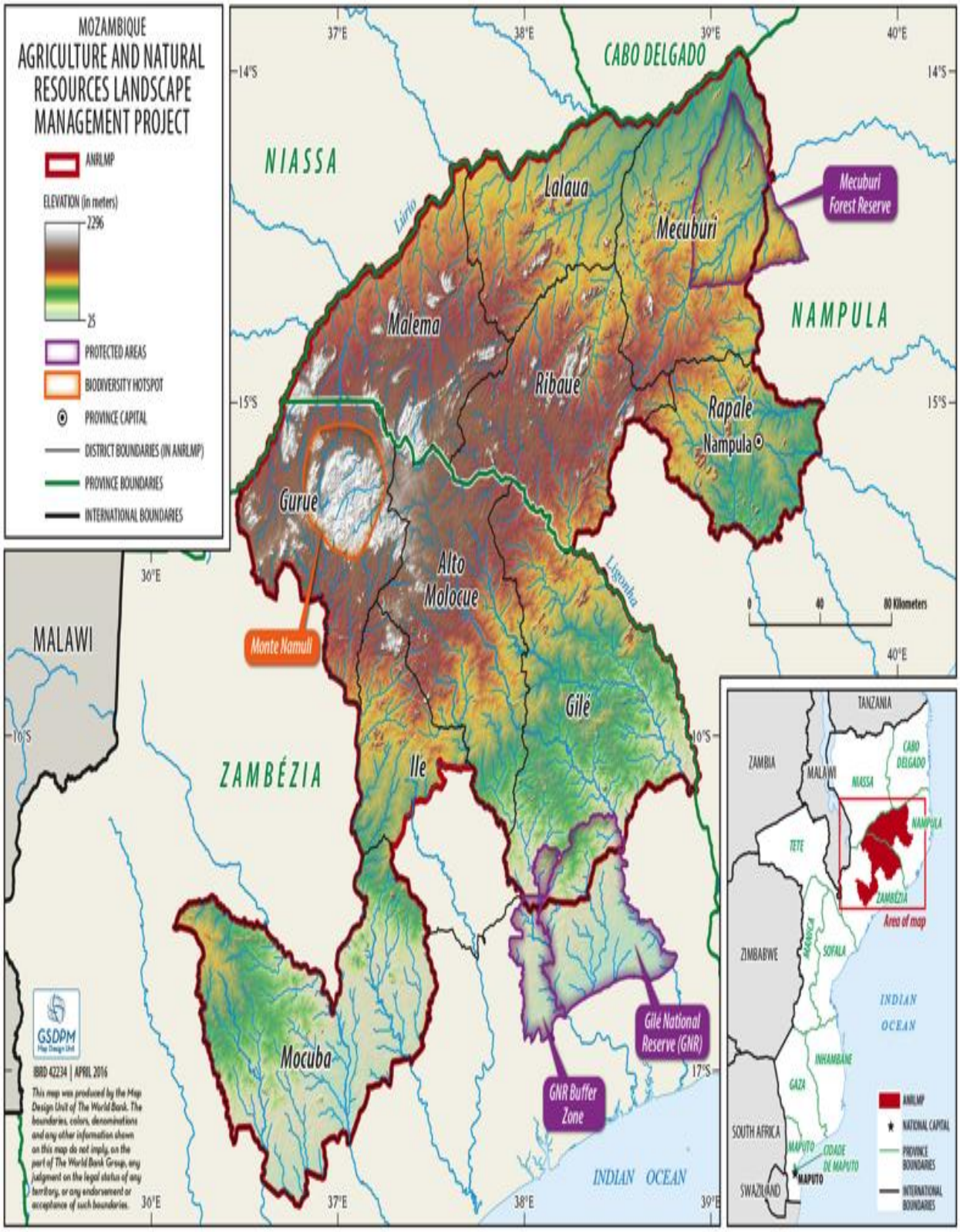


Figure A14.3. Target Landscape - Watersheds