

**Forest Carbon Partnership Facility (FCPF)
Carbon Fund**

Emission Reductions Program Document (ER-PD)

ER Program name and country: Zambézia Integrated Landscape
Management Program (ZILMP) – Republic of Mozambique

Date of submission: February 28th, 2017

Zero Draft

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ACRONYMS

AGB	Aboveground biomass
ANAC	National Agency for Conservation Areas
ANR	Assisted Natural Regeneration
AQUA	National Agency for Environmental Quality Control
BGB	Belowground biomass
CA	Conservation Area
CA	Conservation agriculture
CBRNM	Community Based-Natural Resource Managements
CDS-Natural Resources	Centre for Sustainable Development for Natural Resources
CDS-ZC	Centre for Sustainable Development in Coastal Zones
CENACARTA	National Centre of Cartography and Detection
CF	Carbon Fund
CFJJ	Justice Center for Legal and Judicial Training
CGRN	Natural Resource Management Committees
CIB	Inter-ministerial Commission of Bioenergy
CIF	Climate Investment Fund
CIIMC	Inter-ministerial Group for Climate Change
CLUP	Community Land Use Plan
COGEP	Participative Management Committees
CONDES	National Council For Sustainable Development
CRM	Constitution of the Republic of Mozambique
CSA	Climate Smart Agriculture
CTR	Technical Review Committee
DGM	Dedicated Grant Mechanism
DINAF	National Department of Forests
DINAF	National Department of Forests
DINAGECA	National Directorate of Geography and Cadaster
DINAT	National Direction of Lands
DINAT	National Direction of Lands
DNA	National Direction for the Environment
DNAS	National Directorate for Agriculture and Silviculture
DNDR	National Direction for Rural Development
DNDR	National Direction for Rural Development
DNE	National Direction of Energy
DNEA	National Directorate for Agricultural Extension
DNOTR	National Direction for Territorial Organization and Resettlement
DNPDR	National Directorate for Rural Development Promotion
DPTADER	Provincial Direction of Land, Environment and Rural Development
DUAF	Legal rights to use and benefit from land and forests
DUAT	Right to use and benefit from the land
EDR	Rural Development Strategy
EIA	Environmental Investigation Agency
ER	Emission Reductions
ER-PD	Emissions Reductions Program Document
ER-PIN	Emissions Reductions Project Idea Note
ERI	ER Program Interventions
ERP	Emission Reductions Program
ERPA	Emission Reduction Purchase Agreement
ESIA	Environmental and Social Impact Assessments

ESMF	Environmental and Social Framework
ESMP	Environmental and Social Management Plans
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility
FDA	Agricultural Development Fund
FFEM	French Fund for Global Environment
FGRM	Feedback and Grievance Redress Mechanism
FIP	Forest Investment Program
FNDS	National Fund for Sustainable Development
FREL	Forest Reference Emissions Level
FRIP	Forest Resource Information Platform
FRL	Forest Reference Level
FUNAE	Energy Fund
GDP	Gross Domestic Product
GEB	Global Environmental Benefits
GEF	Global Environment Facility
GHG	Green House Gas
GIS	Geographical Information System
GNR	Gilé National Reserve
GoM	Government of Mozambique
IDA	International Development Association
IGF	Foundation for Wildlife Management
IIAM	National Institute for Agrarian Research
IIAM	Agricultural Research Institute of Mozambique
INCAJU	Institution for Cashew Promotion
INDC	Intended Nationally Determined Contribution
INE	National Institute for Statistics
INFATEC	Management of Lands and Mapping Training Institute
IPM	Integrated Pest Management
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
LCU	Landscape Coordination Unit
LMU	Landscape Management Unit
LOI	Letter of Intent
M&E	Monitoring and Evaluation
MASA	Ministry of Agriculture and Food Security
MEF	Ministry of Economy and Finance
MF	Methodological Framework
MIREME	Ministry of Mineral Resources and Energy
MITADER	Ministry of Land, Environment and Rural Development
MoU	Memorandum of Understanding
MOZBIO	Conservation Area for Biodiversity and Development Project
MozDGM	Mozambique Dedicated Grant Mechanism for Local Communities
MOZFIP	Mozambique Forest Investment Project
MRV	Measurement, Reporting and Verification
MSLF	Multi Stakeholders Landscape Forum
MSME	Micro, Small, and Medium Enterprise
NAPA	National Action Program for Climate Change Adaptation in Agriculture
NEA	National Executing Agency
NFI	National Forest Inventory
NFMS	National Forest Monitoring System
NGO	Non Governmental Organization
NPL	New Land Policy

NSC	National Steering Committee
NTPF	Non Timber Forest Products
OIIL	Local Initiative Investment Budget
PA	Protected Area
PAP	Project Affected People
PCU	Project Coordination Unit
PDD	Project Design Document
PEDSA	Strategic Plan for the Development of the Agricultural Sector
PES	Payment for Ecosystem Services
PF	Process Framework
PI&As	Interested and Affected Parties
PIU	Provincial Implementation Units
PIU	Program Implementation Unit
PMP	Pest Management Plan
PMRV	Participative Measurement, Reporting and Verification
PPFD	Decentralized Finance and Planning Program
PROGIP-CG	Cabo-Delgado Integrated Landscape Management Program
RAP	Resettlement Action Plan
RAP	Resettlement Action Plan
RC	Resettlement Committee
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD+	Reducing Emissions from Deforestation and forest Degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks.
REL	Reference Emission Level
RPF	Resettlement Policy Framework
SDAE	District Service for Economic Activities
SECF	Small Emerging Commercial Farmer
SEP	Stakeholder Engagement Plan
SESA	Strategic Environmental and Social Assessment
SIS	Safeguards Information System
SISFLOF	Forest and Wildlife Management Information System
UEM-FAEF-DEF	Department of Forestry of Eduardo Mondlane University
UGFI	International Funds Management Unit
UMC	Climate Change Unit
UNFCCC	United Nations Framework Convention on Climate Change
UT-REDD+	REDD+ Technical Unit
VC	Value Chain
VCS	Verified Carbon Standards
WB	World Bank
ZILMP	Zambézia Integrated Landscape Management Program

EXECUTIVE SUMMARY

Mozambique is one of the few sub-Saharan countries to possess a significant portion of natural forest: 51% of its territory is composed of natural forest - that is 40,6 millions hectares (ha). Miombo forest is the most extensive forest type, covering approximately two third of the country. Yet, historical deforestation rate in Mozambique is estimated to reach 0,23% between 2000 and 2012, representing an annual loss of 138 000 ha of forest per year and an amount of emissions close to 12 Mt/CO₂ per year – see *section 4*. Deforestation is especially concentrated in areas of greater population density, especially in the Central and Northern provinces of the country, where the ER Program is located – see *Figure 1*.

The Emission Reduction Program (ER Program), which currently is of the two national REDD+ pilot programs in Mozambique¹, was designed in this very framework: standing as its first program of results-based payments for Emission Reductions (ER) in Mozambique, the ER Program is expected to contribute to long-term sustainable management of forest in the province of Zambézia by addressing the main drivers of deforestation and forest degradation while implementing innovative measures aiming to increase rural communities' income and to generate long-term non-carbon benefits. Today, Zambézia is the fourth most deforested province in Mozambique, accounting for 8% of Mozambique's annual deforestation.

The Emission Reductions Program (ER Program): the ZILMP

Concerned about growing deforestation in the Zambézia Province (Central-Northern Mozambique), the Government of Mozambique (GoM) is willing to develop and implement an innovative Emissions Reductions Program (ER Program) in Zambézia province. Designed at jurisdictional scale, as an up-scale of a previous REDD+ pilot project launched in the Gilé National Reserve (GNR) in 2014, the *Zambézia Integrated Landscape Management Program* (ZILMP) has been proposed for inclusion into the Forest Carbon Partnership Facility - Carbon Fund (FCPF CF). The choice of the ZILMP ER Program answers to various criteria – see *section 2 and 3*:

- (i) Zambézia province is characterized by relevant qualities for the ER Program: it is the most densely populated province of Mozambique and the fourth most deforested (it accounts for 13% of Mozambique's forest and 8% of Mozambique's deforestation); 70,5% of its population lives under the poverty line; its economy is based on agriculture and the use of forest resources; it already comprises a strong private sector and civil society involvement;
- (ii) Within Zambézia province itself, the 9 selected districts especially represent a strong area of expansion for deforestation, the annual deforestation rate in the ER Program area reaching 0,89% between 2005 and 2013 and 1,07% between 2010 and 2013, with a forest loss of, respectively, 23 658 ha per year and 28 069 ha per year;
- (iii) The selected districts are geographically coherent with the areas covered by other initiatives already funded by the World Bank, including the Conservation Area for Biodiversity and Development Project (Mozbio project – in the surrounding of the

¹ The other large-scale landscape/REDD+ Program that has been identified is the Cabo Delgado/Quirimbas Emissions Reductions Program (PROGIP-CD). The Program covers 7 districts in Cabo Delgado: Ancuabe, Macomia, Metuge, Quissanga, Meluco, Montepuez and Ibo, in which deforestation rate between 2011 and 2013 reached 0,31% (5 522 ha) per year.

GNR), the Mozambique Forest Investment Project and the Dedicated Grant Mechanism (MozFip and MozDGM), as well as the Agriculture and Natural Resources Landscape Project (the Landscape project), which are all contributing to the ER Program's objectives – see *section 4*;

- (iv) The corresponding with those existing funds also enables to secure long-term financing for the ER Program interventions (see *section 6*) and to provide lessons learned and local capacities for the ER Program;
- (v) The area is characterized by globally important biodiversity with a protected area (the GNR), mangrove forests and a significant share of endemic and vulnerable/endangered species (see *section 3*).

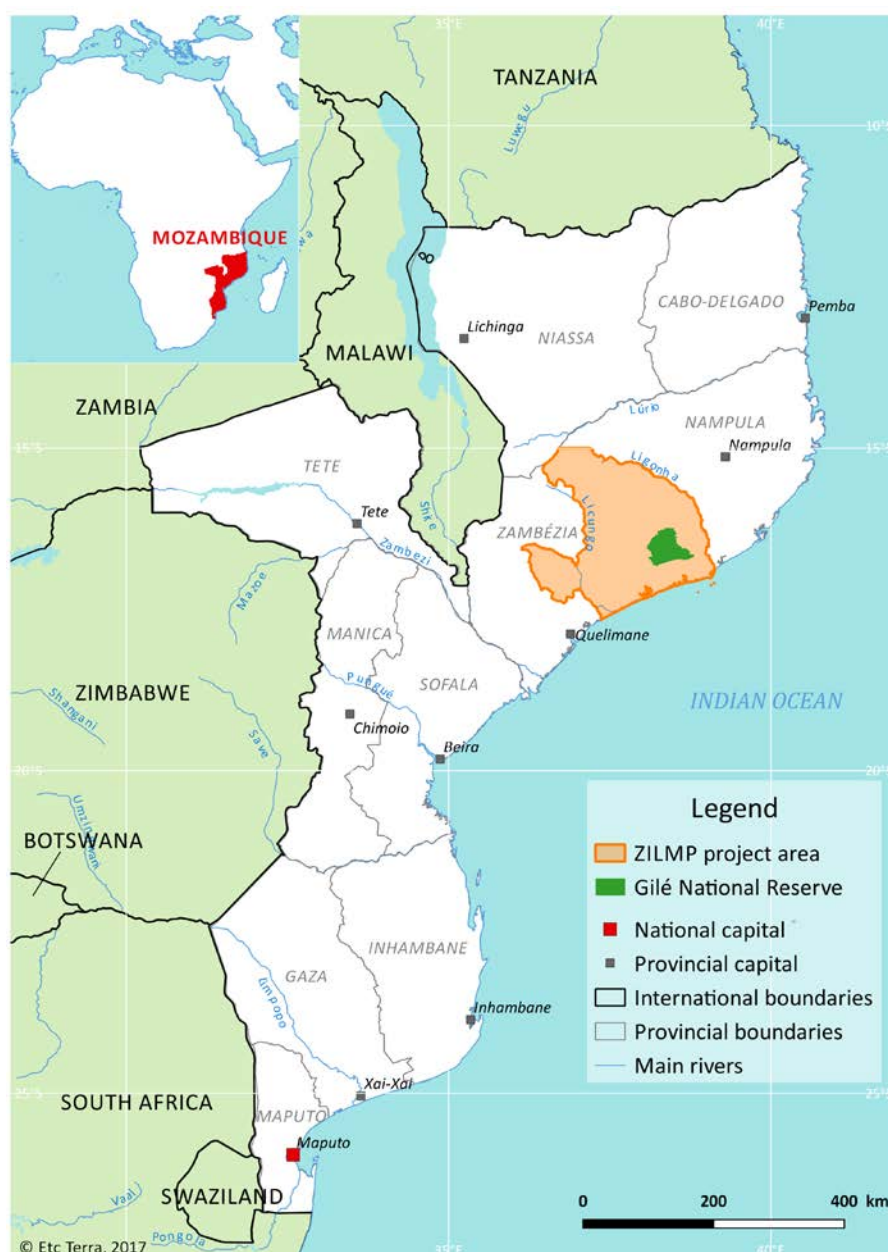


Figure 1: Localization of the ER Program in Mozambique

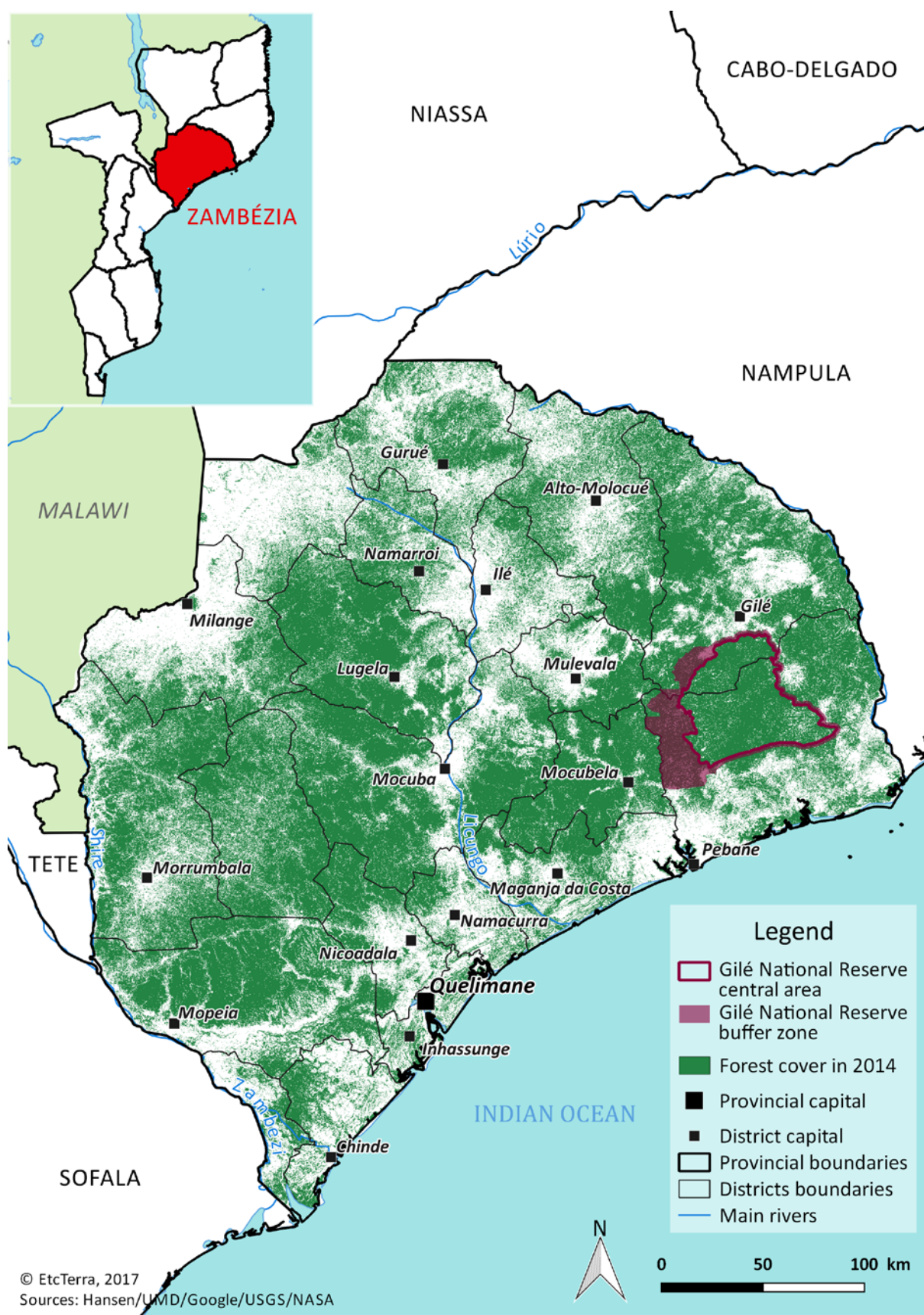


Figure 2: Forest cover in Zambézia

The Emission Reductions Project Idea Note (ER-PIN) of the ZILMP was accepted in October 2015 into the Carbon Fund's pipeline and a Letter of Intent (LOI) between the World Bank and the GoM, on the potential purchase of Emission Reductions from the Emission Reductions Program in Mozambique, was signed during the Paris COP in December 2015. The GoM is now presenting this Emission Reductions Program Document (ER-PD) to the FCPF, hoping that the quality and ambition of its ER Program will justify a positive decision from the FCPF to proceed to negotiating an Emission Reductions Payment Agreement (ERPA), in order to be able to sell carbon credits. [According to the LOI](#), the World Bank could purchase up to 80% of the total ERs generated by this Program.

The ER Program will be implemented in 9 districts (Alto Molocue, Gile, Gurue, Ile, Maganja da Costa, Mocuba, Mocubela, Mulevala and Pebane) of Zambézia province, which represent a total area of 5,3 millions ha including, in 2014, 2,6 millions ha of forest (including mangrove) – that is, 49% of the ER Program area. In the ER Program area, the GNR represents a significant share of natural forest and regionally and nationally significant concentrations of biodiversity values. Inhabited, it is the largest uninterrupted forest massif of Northern Mozambique.

Main drivers of deforestation in the ER Program area

Zambézia province is representative of the rest of the country, with most of its population living in rural area (79% in 2015) and being highly dependent on natural and forest resources. Accordingly, agriculture is the main economic sector in Zambézia province: 91,1% of the economically active population is working in the agricultural sector. The level of production is nevertheless low, agricultural activities being essentially subsistence means. The main form of land use is small-scale sedentary and shifting cultivation, mainly for maize and cassava: “slash-and-burn” agriculture is widely practiced in Miombo areas. Just like at national scale and in Northern Mozambique where it accounts for, respectively, 65% and 72% of deforestation, small-scale (itinerant) agriculture is the first driver of deforestation in the ER Program area. Smallholders' move towards extensification rather than intensification actually is the very basis of the deforestation mechanism we observe in the ER Program area, and is almost exclusively driven for maize and cassava production, constrained by labor availability during peak season (rather than by land availability – see *section 4*).

During Readiness phase, the main drivers and causes of deforestation in Mozambique were analyzed in (Winrock International and CEAGRE, 2015). According to this analysis, at national scale and in Northern Mozambique, bioenergy production accounts for 7% of total deforestation and forest degradation. It is mainly due to the increasing demand for biomass energy and the production of charcoal. Although firewood is produced through deforestation practices that are already accounted for in the deforestation process linked to small-scale agriculture, 80% to 92% of charcoal production is realized with practices causing additional forest degradation - independently from small-scale agriculture practices - especially around urban areas where the consumption is concentrated. In the ER Program area, the main supply basins in size and production are located around Alto-Molocué, Gilé, Maganja and Ilé. They are characterized by low production yields due to non-efficient kilns.

Together, those two drivers represent an increasingly significant share of deforestation and forest degradation in the ER Program area and will concentrate a significant part of the planned interventions of the proposed ER Program – see *section 4*.

At national scale, forestry is another driver of deforestation and forest degradation that is difficult to assess due to the share of illegal logging. It is estimated that forestry could account for 9% of deforestation and forest degradation in Mozambique and in Northern Mozambique. In the ER Program area, the share of forestry in forest degradation and in deforestation can be explained by: (i) illegal logging, focused on specific rare and precious timber (forest degradation); (ii) a too rapid expansion of areas granted under simple licensing exploitation², with subsequent fast exploitation of non selected timber (deforestation); non sustainable exploitation practices in concessions and simple licenses areas (deforestation). Forest degradation due to forestry is a different issue for the ER Program: because it is essentially driven illegal logging backed by the international demand and failure of local law enforcement, the efficiency of the measures implemented will also depend from national policies and should be backed at national scale³. For instance, in 2013, 93% of all commercial logging in Mozambique was illegal; in the same way, 50% of the quantities of timber shipped out of Zambézia is believed to be illegal – see section 4.

Finally, although it is a bit more significant at national scale (4%), in Northern Mozambique, large-scale agriculture only represents 2% of deforestation. In the ER Program area, it is almost non-existent. This is coherent with the fact that, in 2013, large-scale agriculture represents only 5,7% of total cultivated lands in Mozambique. Consequently, large-scale agriculture is not directly involved in the ER Program interventions.

The analysis of the direct drivers of deforestation and forest degradation shows that these processes have complex roots that extend across different sectors of development. The direct drivers of deforestation are all interlinked with indirect and underlying causes that are both economic and social. They are related to population growth, poverty and the demand for timber products on the international market. Poverty is the most important underlying cause of deforestation, with small income and poor access to alternative source of income for rural population being primary drivers for their unsustainable exploitation of forest. In the same way, demography and high population growth can also account for a significant part of deforestation and forest degradation. In this matter, uncontrolled wildfires should also be noted as a significant driver of deforestation and forest degradation in Mozambique and in the ER Program area. Wildfires are, most of the time, of anthropogenic nature: they are triggered for the opening of new agricultural fields, for the production of charcoal or for hunting purposes.

Interventions of the proposed ER Program and complementary initiatives

The ER Program will be based on an integrated landscape management approach that recognizes the link between agricultural development, natural resource management and governance, both in terms of institutional management and practical implementation. This approach also implies that interventions have to be applied at the scale of the nine districts altogether in order to have efficient local impact on rural poverty and natural resources sustainability. The landscape approach will target an integrated territorial planning process in

² In Mozambique, forestry is defined by forest concessions (allocation of lands to private companies for 50 years, which requires a precise management plan) and simple licenses (5 years permit for a maximal harvesting amount of 500 m³ per year on an area that should not exceed 10 000 ha; for Mozambican citizens only). Simple licenses don't require precise management plans to be validated.

³ Currently, there is a strong political will to reform the forest sector in Mozambique, with the recent endorsement of a new policy package including law enforcement elements, *inter alia*: the review of all forest operators in Mozambique; a moratorium on the attribution of new concessions and licenses; a moratorium on *pau-ferro* harvesting; a moratorium on the exportation of unprocessed logs, whatever the wood type.

order to create an enabling environment and involve stakeholders in relevant sectors. This approach is fully aligned with the National REDD+ Strategy. The table below summarizes the main strategic objectives and associated planned interventions of the ER Program. They are all linked to the six Strategic Objectives (SO) of the National REDD+ Strategy, which were followed and declined in various ER Interventions (ERI).

Table 1: Summary of ER Program planned interventions (ERIs)

Summary of ER Program planned Interventions (ERI)	
A. Development, coordination and Monitoring	
ERI - A1: Coordination and management of activities	<i>Coordination and management of the ER Program including, at local scale, through the Landscape Management Unit (implementation of a grievance redress mechanism, oversight of field activities, fiduciary and safeguards management and communications, monitoring, evaluation and reporting, etc.)</i>
ERI – A2: Institutional development and strengthening and intersectoral communication	<i>Financing of the additional costs of FNDS related to project management, including the costs of the Landscape Coordination Unit (LCU) at the provincial level</i>
	<i>Support to the International Funds Management Unit (Unidade de Gestão de Fundos Internacionais, UGFI) and provincial implementation units (PIUs);</i>
	<i>Strengthening of ANAC, Biofund and CITES secretariat</i>
ERI – A3: Community awareness and capacity building – ensuring stakeholders' involvement and participation in the ER Program	<i>Capacity building for local communities and CGRNs (decision-making, accountability, transparency, local governance, business planning and management, use and management of funds, partnerships with the private sector, use of information technology, etc.)</i>
	<i>Workshops, trainings, meetings, communication and consultation about ER Program and REDD+, including through the consolidating of Multi-Stakeholders Landscape Forum in Zambézia (MSLF) – also in ERI-B2</i>
B. Land Planning	
ERI – B1: Regularizing land tenure	<i>Community land delimitation with community delimitation certificates, community land use plans and strengthening of community-based organizations (CBOs)</i>
	<i>Issuance of individual DUATs</i>
	<i>Provision of technical advisory services and equipment to conduct land demarcations, natural resource mappings and legal registration</i>
	<i>Availability of grants for implementing subprojects, including micro-zoning for territorial management plans</i>
ERI - B2: Improvement of districts land use planning & promotion of community level land use planning	<i>(ERI-A3: consolidating of Multi-Stakeholders Landscape Forum (MSLF) in Zambézia)</i>
	<i>Strengthening of land administration services and upgrading of the land administration system</i>
	<i>Implementation of geospatial tools at the provincial and district levels to improve land-use planning, including with the operationalization of a GIS platform</i>
	<i>Development of the National Land Use Plan</i>
C. Law enforcement and forest governance and management	
ERI – C1: Protection of conservation areas and restoration of natural habitats	<i>Restoration of natural habitats through Assisted Natural Regeneration (ANR) and enrichment planting</i>
	<i>Improvement of the management regime of the Gilé National Reserve</i>
	<i>Law enforcement and protection of biodiversity around the GNR</i>

ERI – C2: Strengthening of forest governance, transparency and forest management	<i>Support to the government's forest law enforcement institutions (particularly AQUA and ANAC)</i>
	<i>Improvement of national monitoring, detection and land information systems, including with support to a forest information system</i>
	<i>Support to the National Forest Forum</i>
	<i>Training to forest operators and to forest administration</i>
	<i>Support to small-scale forest businesses</i>
D. Sustainable production, livelihood and income generation	
ERI-D1: Promotion of conservation agriculture and agroforestry system	<i>Trainings to conservation agriculture with extension services, support and monitoring of smallholders' activities</i>
	<i>Support to agroforestry systems through technical assistance, provision of inputs, distribution of fruit trees and assistance to targeted nurseries</i>
ERI-D2: Structuring of key sustainable value chains (forestry-based value chains) for cash crops and support to the establishment of commercial agriculture in areas with no forest cover	<i>Study and analysis of the commercial potential of various cash-crops</i>
	<i>Technical assistance for cash crops production, training on quality standards and on the maintenance of orchards, provision of inputs for smallholders around the GNR</i>
	<i>Technical assistance to small emerging commercial farmers and other key rural micro, small and medium enterprise agribusiness, including on business plans</i>
	<i>Improvement of key selected rural infrastructures for commercialization of cash crops</i>
	<i>Implementation of a market information platform to support cash-crops producers, with the diffusion of information on markets dynamics and prices through SMS around the GNR</i>
	<i>Agribusiness finance to value chains actors, including support to access credit and financing schemes for agribusinesses (matching grant and partial credit guarantee)</i>
ERI-D3: Promotion of multipurpose plantations	<i>Implementation of a planted Forests Grant Scheme and support to community out grower schemes</i>
ERI-D4: Promotion of sustainable charcoal production	<i>Plantation of fast growing trees for energy purpose</i>
	<i>Support to local producers for the creation of improved kilns for charcoal production</i>
	<i>Training of producers for the elaboration and implementation of forest management plans and for the creation of partnerships with private operators</i>
	<i>Training to Assisted Natural Regeneration (ANR) techniques to limit the negative impact of charcoal production</i>
ERI – D5: Valorization of the income generating potential of the GNR and sustainable livelihood around the GNR	<i>Improvement of sustainable tourism in the GNR with support to a community sport hunting area</i>
	<i>Sustainable use of NTPF around the GNR</i>

Those interventions will be supported by various initiatives already in place in the ER Program area, aiming at conservation and enhancement of forest carbon stocks and in which land tenure, in particular, is a significant component. This is especially true for the [Landscape project](#), which covers 5 of the 9 districts of the ER Program area and which will contribute to create the tenure security needed for local people to take part in new economic activities and value chains - also supported by the project. Behind this principle is the underlying assumption that, despite belonging constitutionally to the State, the land is genuinely also

considered as communities' property: the 1997 Land Law and the 2004 Constitution of Mozambique recognized the necessity to integrate customary rights in land legislation and the Land law actually recognizes as land property title (DUAT) any occupation and use rights over lands that are acquired through any normative systems that do not contradict the Constitution. It also created the "Local Community" body, which is the titleholder of DUAT attributed by the State to all land users within a given area – see *section 4.4 on land tenure*.

Other meaningful projects in the ER Program area include the [Mozbio](#) project, which is contributing to the promotion of sustainable forest resource management and sustainable economic development, as well as [MozFip](#) that will significantly contribute to financing the ER Program.

The design and implementation of the ER Program are based on the on-going participation of all stakeholders, accordingly with the Mozambican legal framework and with the FCPF Methodological Framework (FCPF MF). This will especially be achieved by supporting the Multi-Stakeholders Landscape Forum in Zambézia (MSLF) - see *section 5*. Since it is fully aligned with Mozambique REDD+ National Strategy, the information sharing and consultation and participation mechanisms that have been used in the design of the ER Program are interlinked with the consultation structures and mechanisms that were used for the evaluation and validation of the REDD+ National Strategy and related projects, including (and MozFip and MozDGM, Mozbio and the Landscape projects) and safeguards instruments ([ESMF](#) and [PF](#) – see *section 14*). They include two components: (i) a consultative and participative process, relying on extensive public consultations and on MSLF; (ii) an information-sharing process, relying on the automatizing of REDD+ information dissemination on social media, website and mails, on the diffusion of didactic documents (pamphlets, policy briefings, posters, cartoons) and on other innovative communication events in local languages. From March 2013 to November 2016, 61 public consultation meetings on REDD+ and associated projects were organized in the country. 10 of them were community consultations. Along those consultations, 3 370 participants were recorded, 29% of which were women. Public consultations on the ER Program for the development of the ER-PD and the implementation of the first pilot activities were intensified since September 2015, especially at district scale – see *section 5*.

Ambition and potential of the ER Program

Reference Emissions Level

The Reference Period used in the construction of the Reference Level for the ER Program should be 2005 – 2015. Pending on the availability of the national REL and associated national data, in this draft ER-PD, the data used are covering the nine districts of the ER Program accounting area with a reference period going from 2005 to 2014. This REL will be updated in the next versions of the ER-PD, once national data are available (2017).

The 9 districts composing the ER Program area have suffered significant deforestation over the last 10 years, with almost 7% of the 2005 forest cover being already lost – i.e. 193,835 hectares (ha). Between 2005 and 2014, deforestation in the ER Program area represents 24,201 ha per year, with a mean annual deforestation rate of 0,89%. Deforestation has been more intense in recent years: the mean annual deforestation rate increased from 0,71% between 2005 and 2010 to 1,07% between 2010 and 2013, which represents an annual forest loss of 28,307 ha. Between 2005 and 2014, the Miombo forest cover of the ER Program area, especially, lost 180,882 ha.

The Reference Emission Level for the ER Program area of is 6,620,658 tCO₂eq/yr.

Ambition and expected Emissions Reductions

The ER objectives of the ER Program are based on the articulation of two successive periods: (i) from 2016 to 2020 and (ii) from 2021 to 2025. The ambition of the ER Program is to reduce deforestation in the ER Program area by 15% below the reference level in the first 5 years of program implementation (2016-2021) and by 25% in the following 5 years (2021-2025). This represents a total of 11,122,705 tCO₂e of ER to be achieved by 2025, 80% of which will be offered to the FCPF – that is, 8,898,164 tCO₂.

This ambition is highly consistent with national policies and development priorities in Mozambique and the ER Program actually holds a significant place in the national strategy of reducing carbon emissions. In its Intended Nationally Determined Contribution (INDC), the GoM has pledged for the reduction of 76,5 MtCO₂ between 2020 and 2030. In the same way, the National REDD+ Strategy has an overall objective of avoiding 170 M tCO₂e during the reference period going from 2016 to 2030. The ER Program should therefore contribute to 6,5% of the National REDD+ Strategy's objectives in terms of ERs.

Non-carbon benefits

The expected ER associated to the ER Program will eventually generate carbon and monetary benefits, through the sale of carbon credits to the FCPF. However, the ER Program is also expected to be associated with high non-carbon value, which should be generated during its implementation and which is expected to continue long after the terms of the ER-PA. The non-carbon benefits are numerous and can be classified in three main categories: (i) improvement of rural population's livelihood; (ii) strengthening of forest management and governance and (iii) environmental benefits. At this stage, the priority non-carbon benefit of the ER Program remains the improvement of local population's livelihood. This is linked to various non-carbon benefits, including secured and sustainable use and long-term access to forest resources; long-term increase and diversification of income and employment opportunities; alternative and sustainable energy sourcing and health benefits; adaptation of agricultural practices to climate change to increase agricultural production; clarified land tenure. Other non-carbon benefits include increased transparency in the forest sector and the improvement of business environment in the forestry sector, the reduction of unsustainable practices and illegal logging, the long-term engagement of multi stakeholders in forest management with strong role of Local Communities. Environmental benefits, with better soil conservation, the protection of ecosystem and the maintenance of high-value biodiversity, are also crucial.

Risks associated to the ER Program and safeguards

Most of the ER Program measures are primarily based on incentives and on the valorization of non-carbon benefits rather than coercive. They are therefore expected to lower the overall appeal of deforestation and forest degradation *per se* for the agents of deforestation and, at this stage, the ER Program is not expected to generate any displacement of emissions (leakage).

Most of the implementation risks of the ER Program interventions can also be assessed through Reversal risks. Arguably, the main risks associated with the ER Program comprise political and financial risks, the risk of the lack of long term effectiveness in addressing the underlying drivers of deforestation and forest degradation, the risk of not securing broad and

sustained stakeholders support, the lack of institutional capacities and the exposure and vulnerability to natural disturbances. Although the implementation of specific risks mitigation measures result in those risks being all considered as low or medium, a specific reversal management mechanism is designed, based on the creation of an ER – Program specific buffer managed by the Carbon Fund, in which 16% of the ERs generated by the ER Program will be deposited as an “insurance” mechanism.

In order to enhance the positive impacts and reduce any risk of negative impacts of REDD+ projects’ implementation activities, various safeguard documents were prepared for the ER Program – *see section 14*. They include a Strategic Environmental and Social Assessment (SESA), an Environmental and Social Management Framework (ESMF) and a Process Framework (PF). The ER Program will be fully aligned with the recommendations formulated in those documents. Safeguards implementation will be monitored throughout the project lifetime. In particular, a Safeguards Information System (SIS), a Participative Monitoring, Reporting and Verification (PMRV) system and an efficient Feedback and Grievance Redress Mechanism (FGRM) are designed and implemented – *see sections 9, 14 and 16*.

Specific arrangements for the ER Program success

Institutional arrangements - From a general point of view, REDD+ policies and implantation in Mozambique are dependent on properly articulated institutions, enabling the proposed activities to be carried out in harmony. They are especially defined by the National REDD+ Strategy and Decree No. 70/13 on the “Regulation of the procedures for approval of projects for reducing emissions from deforestation and degradation”, which created the Landscape Management Unit (at that time designated as the “REDD+ Technical Unit”, or “UT REDD+”) and the inter-ministerial Technical Review Committee/National Steering Committee (CTR) for REDD+. The CTR’s main objective is to pilot the inter-institutional coordination among all the sectors and stakeholders that are involved in REDD+ in Mozambique and among the key ministries of Agriculture and Food Security (MASA), of Economy and Finance (MEF), of Energy (MIREME) and of Land, Environment and Rural Development (MITADER). The implementation of the ER Program will mostly rely on those institutional arrangements, adapted to local context. In particular, the Landscape Management Unit insures the practical implementation of REDD+ activities in Mozambique, with high contribution of the Landscape Coordination Unit based in the ER Program area in Zambézia – *see section 6*.

The recent creations of (i) the MITADER⁴ and of (ii) both the National Fund for Sustainable Development (FNDS)⁵ and the International Funds Management Unit (UGFI) are subsequent signs of the commitment of the GoM to REDD+. The main functions of the MITADER are to manage and implement policies in the fields of land management and administration, forests and wildlife, environment, conservation areas and rural development. Its creation shows the efforts that the GoM has been carrying out to integrate complex issues and promote synergy between those core challenges for REDD+ in Mozambique. This restructuring is a clear indication of the Government’s vision and commitment to promote a landscape-based approach to forest and natural resources management. Financial capacity for the implementation of the ER Program was reinforced with the creation of the FNDS that is responsible for managing REDD+ funding - it coordinates and supervises major donor

⁴ Which brings together responsibilities that were previously spread across several ministries, namely the Ministry of Agriculture (MINAG) and the Ministry responsible for the Coordination of Environmental Affairs (MICOA) – *see sections 3 and 6*.

⁵ The decree of creation of the FNDS is available [here](#).

support programs, including REDD+. The FNDS will have a strong implication in the implementation of the ER Program – see section 6.

Benefit sharing mechanisms

Specific arrangements will be created for the distribution of the monetary and non-monetary benefits generated by the ER Program. Communities' representation, for now, is best embodied in the Natural Resources Management Committees (CGRNs) which are already in charge of capitalizing the “20% revenues” for local communities: indeed, Mozambique already has a benefit-sharing scheme in which, according to the 1999 Forest and Wildlife Law and to the Ministerial Diploma 93/2005 of 4 May, 20% of the revenues derived from the commercial management of forest and fauna resources should be transferred to the relevant local communities (through the CGRNs). Although there have been some practical difficulties and criticisms regarding this scheme, it represents the most achieved experience of benefit sharing through the use of forest resources in Mozambique. The ER Program could base its Benefit Sharing Plan on a “revised 20% scheme”, gathering more funds into one single mechanism that would result in larger payments reaching the local communities. Those arrangements are still being discussed and will be concluded before the ER-PD final draft in the form of a dedicated Benefit Sharing Plan for the ER Program. At this stage, it should be stressed that the ER payments may be performance based. Performance will therefore have to be assessed prior to any payment, through an efficient MRV system. This should be defined clearly by the Benefit Sharing Mechanism that is currently being designed – see section 15.

Monitoring, Reporting and Verification

The MRV section will be substantially updated for the ER-PD advanced draft.

The Measurement, Monitoring and Reporting (MRV) system of the ER Program will follow the National Forest Monitoring System (NFMS) - which is currently under development – as soon as it is available. For each monitoring session, data for the ER Program will be extracted from results of the national monitoring. The NFMS will report on deforestation, and forest degradation and enhancement of carbon stocks through plantations. Since natural regeneration and plantations are excluded from the ER Program - see section 7 - only data for deforestation and degradation will be extracted from national MRV. It should be noted that the MRV system will partly rely on community participation, through the creation of a PMRV – see section 9. The overall organizational structure of the ER Program for MRV is based on national arrangements with specific staff within the FNDS and the Landscape Management Unit at national level and within the Landscape Coordination Unit at provincial level, as well as with the creation of local offices for community monitoring.

1. ENTITIES RESPONSIBLE FOR THE MANAGEMENT AND IMPLEMENTATION OF THE PROPOSED ER PROGRAM

1.1 ER Program Entity that is expected to sign the Emission Reduction Payment Agreement (ERPA) with the FCPF Carbon Fund

Name of entity	Ministry of Economy and Finance (Ministério da Economia e Finanças)
Type and description of organization	<p>The Mozambican Ministry of Economy and Finance is responsible for managing and coordinating national financial planning process. It aims to ensure the integrated and balanced economic and social development of the country, through consolidating an integrated system of planning and implementing a sustainable and decentralized development strategy.</p> <p>In the ER Program context, the Ministry of Economy and Finance will manage the reception of the ER payments and will transfer them to the National Fund for Sustainable Development (FNDS - responsible for managing the ER Program).</p>
Main contact person	<i>To be completed after consultation with ERP team.</i>
Title	<i>To be completed after consultation with ERP team.</i>
Address	Praça da Marinha Popular – C.P. 272 - Maputo
Telephone	<i>To be completed after consultation with ERP team.</i>
Email	<i>To be completed after consultation with ERP team.</i>
Website	www.mpd.gov.mz

1.2 Organization(s) responsible for managing the proposed ER Program

Name of organization	National Fund for Sustainable Development (<i>Fundo Nacional de Desenvolvimento Sustentável</i> – FNDS)
Type and description of organization	<p>The FNDS was created by governmental decree in February 2016 (Decree n°6/2016). It is an independent body with administrative and financial autonomy, under the sectorial tutelage of the Ministry of Land, Environment and Rural Development (MITADER – which signed the Letter of Intent (LOI) with the Carbon Fund in December 2015) and the financial tutelage of the Ministry of Economy and Finance. It aims to promote and manage the financing of programs and projects contributing to a sustainable and inclusive development in Mozambique, with special attention to rural development.</p> <p>One of its core responsibilities is to channel domestic and international funding to the relevant beneficiaries including, in the context of the ER Program, the ER Payments. The FNDS will supervise the good implementation of the ER Program and proceed to the equitable payments of the Emission Reductions.</p>
Organizational or contractual relation between the organization and the ER Program Entity identified in 1.1 above	The FNDS is placed under the financial tutelage of the Ministry of Economy and Finance. This tutelage includes the approval, by the Ministry of Economy and Finance, of <i>inter alia</i> : its budgets; the investment and financial plans; the financial management and annual financial reports and its investments and contracting of loans.
Main contact person	Mr. Momade Nemané
Title	Director of Resources Mobilization
Address	Rua Joe Slovo, n°21 - Maputo
Telephone	+258 84 312 4210
Email	momade.nemane@fnds.gov.mz / momedenemane@gmail.com
Website	http://www.redd.org.mz/

1.3 Partner agencies and organizations involved in the ER Program

Name of partner	Contact name, telephone and email	Core capacity and role in the ER Program
Government		
Ministry of Land, Environment and Rural Development (MITADER) – <i>Ministério da Terra, Ambiente e Desenvolvimento Rural</i>	<i>To be completed after consultation with ERP team.</i>	Sectorial tutelage of the FNDS; national steering of REDD+ activities and programs.
Ministry of Economy and Finance (MEF) - <i>Ministério da Economia e Finanças</i>	Adriano Maleiaine	Financial tutelage of the FNDS; support and coordination of financial strategy; future signature of ER-PA agreement.
Ministry of Agriculture and Food Security (MASA) – <i>Ministério da Agricultura e Segurança Alimentar</i>	Mahomed Valá (+258) 82 85 64 190	Coordination and support to conservation agriculture and cash crops related activities.
National Fund for Sustainable Development (FNDS) - <i>Fundo Nacional de Desenvolvimento Sustentável</i>	Momade Nemane momedenemane@gmail.com (+258) 84 312 4210	General management of the ER program and its financing; management of the ER Payments.
National Administration of Conservation Areas (ANAC) – <i>Agencia Nacional das Áreas de Conservação</i>	Afonso Madope (+258) 82 32 22 270 afonso.madope@gmail.com	Support and coordination of activities of the Mozbio program.
Zambezia Provincial Government	Abdul Noormamad Razak	Governor of the Province. Coordination of ER Program activities at provincial level.
Landscape Management Unit (LMU)	Thomas Bastique tbastique@gmail.com (+258) 82 82 26 000 (+258) 84 49 63 140	Coordination within the national directions of MITADER and inter-ministerial coordination; everyday steering of ER Program implantation.
Private sector		
Confederation of Economic Associations of Mozambique (CTA) – <i>Confederação das</i>	Assane Chaul chaulparia@yahoo.com.br	Support to development of sustainable businesses and value chains.

<i>Associações Económicas de Moçambique</i>	(+258) 82 57 30 890	
Zambezia Timber Associations (AMOMA, AMAZA, APAMAZ)	Several associations	Support on the organization and engagement of individual forest concessionaires.
Zambézia Timber Association	Rui Silva (+258) 86 04 60 277	Promotion and engagement of local loggers with sustainable forest management.
Development partners		
Etc Terra	Corentin Mercier c.mercier@etcterra.org (+258) 84 87 11 327	Redaction of ZILMP Background study and ER-PD; Support to MRV and technical assistance for conservation agriculture activities and cash crops.
International Institute for Environment and Development (IIED)	Isilda Nhantumbo isilda.nhantumbo@iied.org	Support/implement activities related to community forest management.
Food and Agriculture Organization of the United Nations (FAO)	Carla Cuambe carla.cuambe@fao.org	Implement a pilot project on payment for environmental services.
Adventist Development and Relief Agency (ADRA)	Farai Muchiguel fmuchiguel@adramozambique.org	Technical assistance for conservation agriculture and sustainable livelihoods
Rural Association of Mutual Help (ORAM) – Associação Rural de Ajuda Mútua	Lourenço Duvane (+258) 24 21 44 09	Technical assistance for conservation agriculture and sustainable livelihoods.
Community Lands Initiative (ITC) – Iniciativa para Terras Comunitárias	Hilário Patricio (+258) 24 21 77 62 (+258) 84 24 15 538 hpatricio@itc-f.org	Support to participatory and community strengthening, land planning and land zoning.
Rural Development Support Project in Zambézia Province (PRODEZA) - Projeto de Apoio ao Desenvolvimento Rural na Província da Zambézia	<i>To be completed after consultation with ERP team.</i>	Technical assistance for conservation agriculture, sustainable livelihoods and rural development.
Network of Environment and Community Sustainable Development Organizations in Zambézia Province (RADEZA)	Daniel Maula radezamos@yahoo.com.br (+258) 82 43 21 280	Technical assistance to community development and natural resources

– Rede de Organizações para Ambiente e Desenvolvimento Comunitário Sustentável da Zambézia		management.
World vision	Mauricio Munikele (+258) 24 21 20 75	Technical assistance to community development and natural resources management.
International Foundation for Wildlife Management (IGF) – Fondation Internationale pour la Gestion de la Faune	Alessandro Fusari alessandrofusari@yahoo.it	Sustainable Forest and Wildlife Management in the Gilé National Reserve (GNR).
Pedagogic University (GADEC)	Manuel José de Moraes (+258) 24 21 62 98	Education, research and capacity building for Environmental Management and community Development.
Uni-Zambeze (FEAF)	Noé Ananias Hofiço (+258) 81 70 940 (+258) 84 26 42 706 n_hofico@yahoo.com.br	Education, research and capacity building in forestry and agriculture.

2. STRATEGIC CONTEXT AND RATIONALE FOR THE ER PROGRAM

2.1 Current status of the Readiness Package and summary of additional achievements of readiness activities in the country

As stated in the Emission Reduction Program Idea Note (UT REDD+, 2015a), it is estimated that Mozambique will definitely complete its Readiness Package by early 2017. The completed Readiness package should be submitted for approval to the board of the Readiness Fund of the Forest Carbon Partnership Facility in March 2017 - that is, before the submission of the ER-PD V2.

The FCPF financially and technically supported the GoM on the REDD+ Readiness process through a first grant of US \$ 3,8 millions in 2013-2017 and an additional US \$ 5 millions grant 2016-2018 to finalize the Readiness process. In 2015, the Government of Mozambique (GoM) successfully presented to the Carbon Fund of the Forest Carbon Partnership Facility (FCPF CF) the Early Idea and the Emission Reductions Program Idea Note (ER-PIN) of the Zambézia Integrated Landscape Management Program (ZILMP). The ER-PIN was accepted in the Carbon Fund's pipeline in October 2015. A Letter of Intent (LOI) was signed during the Paris Conference of Parties (COP 21) in December 2015 between the Ministry of Land, Environment and Rural Development (MITADER) of the GoM and the Carbon Fund (CF) on the potential purchase of Emission Reductions (ER) from the ER Program. According to this LOI, the World Bank (WB) could purchase up to 8,7 millions of ER from this program – “Maximum Contract Volume”.

The most recent achievements under Readiness funds are related to national and provincial level studies that have already been conducted or are being conducted; they include:

- The analysis of the drivers of deforestation and the strategic options to address those drivers (Winrock International and CEAGRE, 2015);
- The analysis of the legal and institutional framework for REDD+ in Mozambique (Beta and Nemus, 2015);
- The establishment of the National Forest Definition (Falcão and Noa, 2016);
- The completion of the National REDD+ Strategy (MITADER, 2016a);
- The preparation of the Safeguard Instruments for REDD+, especially the Strategic Environmental and Social Assessment (SESA), the Environmental and Social Framework (ESMF) and the Policy Framework (PF) (FUNAB, 2015; MITADER, 2016c, 2016e, 2016d);
- The background study for the preparation of the ER Program (Mercier et al., 2016), which includes forest inventory, REL, analysis of the drivers of deforestation and the institutional framework for Program implementation;
- The definition of the Forest Reference Level and Forest Reference Emissions Level (FRL / FREL), including a national Reference Emissions Level (REL) with national level forest inventory;
- The designing of the Monitoring System for Forest - including national measurement, reporting, and verification system (MRV).

At this stage, the National REDD+ Strategy, the National Forest Definition, the analysis of the drivers of deforestation and degradation, the analysis of the institutional and legal framework for REDD+, the SESA and the ESMF were successfully concluded. The final draft of the national REDD+ Strategy and the Definition of Forest were recently approved by the Council of Ministers in November 2016.

Table 2: Level of achievement of Readiness package elements

Readiness package documents	Coarse level of achievement
National REDD+ Strategy	Completed
Environmental and Social Management Framework - ESMF (safeguard instrument)	Completed
Strategic Environmental and Social Assessment - SESA (safeguard instrument)	Completed
Policy Framework - PM (safeguard instrument)	Completed
Forest Reference Level and Forest Reference Emissions Level	In progress
National Reference Emission Level	In progress
National Forest Inventory	In progress
Monitoring system for forest, including National Measurement, Reporting, and Verification system	In progress
Analysis of the drivers of deforestation and the strategic options to address those drivers	Completed
Analysis of the legal and institutional framework for REDD+ in Mozambique	Completed
Establishment of the national forest definition	Completed
Background study for the preparation of the Zambézia Integrated Landscapes Management Program	Completed

A Forest Inventory is currently being conducted at national level. From this study, the Forest Reference Level and Forest Reference Emissions Level (FRL / FREL) and the National Reference Emission Level should be established, and the Monitoring System for Forest (including the MRV system) will be completed. However, national statistics for the Zambézia province and for the ER Program area will only be available in the course of 2017. As a consequence, the present ER-PD draft is based on the Reference Emission Level (REL) designed in the Background study for the preparation of the Zambézia Integrated Landscapes Management Program (Mercier et al., 2016). Once national level data are available, this REL will be updated.

In addition to those studies, major institutional achievements under Readiness funding include: (i) the creation in 2013 of the inter-ministerial Technical Review Committee (*Comité Técnico de Revisão* - CTR) for REDD+, of which the main objective is to promote inter-institutional coordination among sectors and stakeholders on every issues related to REDD+ activities in Mozambique; (ii) the creation of the REDD+ Technical Unit (UT-REDD+) that had, since then, been absorbed into the International Funds Management Unit (UGFI) – see section 6; the UGFI is now responsible for implementing the REDD+ Strategy in Mozambique; (iii) the creation of the Zambézia Provincial Forum for REDD+ and of the Zambézia Multi-Stakeholders Landscape Forum (MSLF) (2016), which are crucial instruments for stakeholders consultation and participation in the design and implementation of the ER Program – see section 5.

Status of the Readiness package will regularly be updated in the next drafts of the ER-PD, until final endorsement of the Readiness Package by the FCPF Participants Committee – which is expected to happen in March 2017.

2.2 Ambition and strategic rationale for the ER Program

Since the late 1990s and early 2000s, the adoption of various national policies and the valorization of development priorities linked to ER, carbon stock enhancement, sustainable management of forest and conservation areas have shown the commitment of the GoM to REDD+ initiative. In particular, Mozambique has a progressive legal framework for the promotion of sustainable forest management (UT REDD+, 2015a). Through forest sector legislation (Law on Forests and Wildlife, 1999) and regulatory procedures for land management (Land Law, 1997), Mozambique seeks to balance social, environmental and economic issues, paying special attention to the role and benefits to rural communities. Actually, the very Constitution of the Republic of Mozambique of 2004 (Governo de Moçambique, 2004) specifies that the State shall adopt policies to "ensure the rational use of natural resources to safeguard its renewal capacity, ecological stability and rights of future generations" (Article 117, 2, d) as well as the "rational utilization of its natural resources" (Article 90, 2).

This commitment has been confirmed with the new Government, who took office in February 2015 after general elections. In particular, the new administration adopted a Five Year Government Plan (*Plano Quinquenal do Governo - PQG*) for the 2015-2019 period, for economic and social development (Governo de Moçambique, 2015b). The PQN settles five national priorities. In particular, the Plan's 5th strategic pillar is focused on transparent and sustainable management of natural resources and the environment. Among the strategic objectives is to "ensure the integration of the Blue/Green Economy and Green Growth agenda in national development priorities, ensuring conservation of ecosystems, biodiversity and the sustainable use of natural resources."

Standing as its first program of results-based payments for ER in Mozambique, the Zambézia ER Program - Zambézia Integrated Landscape Management Program (ZILMP) - is fully keeping with this momentum. The program is expected to contribute to long-term sustainable management of forest in the province of Zambézia by addressing the main drivers of deforestation and forest degradation while implementing innovative measures aiming to increase rural communities' income in the area. All in all, the ER Program aims to initiate a virtuous circle reconciling economic development and environmental preservation funded by carbon credits.

Consistency with national policies and development strategies

The ER Program is highly consistent with national policies and development priorities in Mozambique. In particular, the National Sustainable Development Program (Governo de Moçambique, 2015a), promoted by MITADER, provides the key linkages between country priorities and REDD+, stressing the need to invest in resilience to climate change with particular emphasis on the agricultural sector, tourism and infrastructure. The Program aims to achieve the broad goals and strategies reflected in the PQG by outlining key actions and projects to be implemented in rural Mozambique. Importantly, this vision includes MITADER's *Terra Segura* (Secure Land) Project - aiming at registering 5 million parcels and completing 4,000 community land delimitations - as well as the *Floresta Em Pé* (Standing Forest) project, focusing on strategic policy and management options for the forest sector (UT REDD, 2016) – see section 4.1 for more details.

The ER Program is expected to highly contribute to those goals, reaching for the protection of biodiversity and the sustainable use of forest resources and economic rural development through the promotion of secure tenure rights, of sustainable agricultural practices as well as of diversified agricultural production and increased efficiency of charcoal production through a better management of wood resources, among other components - *details on actions and interventions to be implemented under the proposed ER Program are provided in section 4.3.*

Further, the ER Program has a strong social component and seeks to increase the participation of stakeholders in order to reduce poverty, especially in rural areas: it will support strategic goal of the Forest Policy and Strategy (2016-2020), especially in relation with its objectives of (i) social participation and equitable benefit sharing mechanisms; (ii) environmental sustainability on use of forest resources and (iii) increase of the economic contribution of forests to the country's development. It is also fully aligned with the Forest Investment Plan (FIP) of the Climate Investment Fund (CIF), MozFip, which was approved in January 2017, with a budget of 47 millions USD – *see section 4.1 for more details (UT REDD, 2016).*

Beyond compliance with national policies, synergistic potential actions may be identified in various sectors. The intensification of agriculture to increase production and productivity and improve soil conservation through conservation agriculture techniques, for instance, which is also an important component of the ER Program, is defined as a priority in the Strategic Plan for the Development of the Agricultural Sector (PEDSA - 2011-2020) (Governo de Moçambique, 2011a) and the National REDD+ Strategy. In the same way, the Ministry of Mineral Resources and Energy (MIREME) promotes actions linked to the production and sustainable use of biomass energy. It has been emphasized in the Strategy for Conservation and Sustainable Use of Energy from Biomass (Ministério da Energia, 2013) that lays down general guidelines for the production of biomass and its transformation into energy and sustainable use.

Ambition and strategic rationale

According to criterion 1 of the FCPF Methodological Framework (FCPF MF), the ER Program should be ambitious, in that it aims to (i) “address a significant portion of forest-related emissions and removals” in the country and (ii) uses “new or enhanced ER Program Measures to reduce emissions or enhance removals” (FCPF, 2016). In the same way, its implementation should be at jurisdictional or programmatic scale, involving multiple stakeholders and various interventions that are coherent with the national REDD+ strategy. The ZILMP ER Program fully respects those requirements and is also clearly aligned with the National REDD+ Strategy targets.

The ZILMP ER Program was designed at jurisdictional scale, as an up-scale of a previous REDD+ pilot project coordinated by the International Foundation for Wildlife Management (IGF) and with the technical and financial support of the French Fund for Global Environment (*Fonds Français pour l'Environnement Mondial* - FFEM), which was launched in the Gilé National Reserve (GNR) and its periphery in 2014. In 2015, the GoM decided to upscale this initiative to make it an innovative REDD+ jurisdictional program, covering 7 and then 9⁶ districts of Northern Zambézia (Mercier et al., 2016). The ZILMP is the first program of results-based payments for ER in Mozambique. It is located in a province, Zambézia

⁶ The 7 + 2 districts that constitute the ER Program area are: Alto Molocué, Gilé, Ilé, Majanga da Costa, Mocubela, Mulelava, Pebane + Gurué and Mocuba.

province, especially prone to deforestation and forest degradation, where various other initiatives are already being implemented – see section 4.1 – enabling both the availability of funding at middle and long terms and significant synergies between projects all aiming at reducing ERs. *The choice of the ER Program area is justified in section 3.* This context makes the ER Program be a strategic component for reducing ERs in the country. In addition, the ER Program fully complies with the National REDD+ Strategy. Existing knowledge from the ZILMP ER Program will also enable fast-tracking the implementation of the National REDD+ Strategy, beside generating important results and outcomes on the ground such as poverty reduction, improved governance and social development. More details are provided below.

Progress since ER-PIN - The GoM initially presented an ER Program covering 7 districts in Zambézia province. Since the ER-PIN, it was decided to expand the ER Program area to two additional districts (Gurué and Mocuba), bearing to 9 the total number of districts covered by the program. *Justification the ER Program area is provided in section 3.*

First, it should be specified that the ER Program’s ambition is fully aligned with the National REDD+ Strategy, which promotes “integrated multisectoral interventions to reduce carbon emissions associated with land use and land use change through adherence to the principles of sustainable management of forest ecosystems (natural and planted), contributing to global mitigation and adaptation to climate change and to the efforts for an integrated rural development” (MITADER, 2016a). Those coincide perfectly with the planned interventions of the ER Program, detailed in section 4.3. Admittedly, the ER Program is based on multiple actions that reflect a variety of interventions from the national REDD+ strategy in a coordinated manner. Mozambique’s REDD+ Strategy comprises six strategic pillars translated into equal number of main sets of activities, namely:

1. Cross-cutting actions: establish an institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation;
2. Agriculture: promoting alternative sustainable practices to shifting cultivation, which ensure increased productivity of food and cash crops;
3. Energy: increase access to alternative sources of biomass in urban areas and increase the efficiency of production and use of biomass energy;
4. Conservation Areas: strengthen the system of protected areas and find safe ways of generating income;
5. Sustainable Forest Management: promote the system of forest concessions, community management and strengthening forest governance;
6. Restoration of degraded forests and planting trees: establishing a favorable environment for forest businesses, restoration of natural forests and planting of trees for various purposes, production and use of biomass energy.

All the above interventions are established as priorities for the ER Program. The totality of the ER Program interventions are related to those objectives and were defined according to the six pillars of the National REDD+ Strategy. *They are detailed and classified according to those pillars in section 4.3.*

Consequently, activities and results from the ER Program are also expected to generate lessons learnt to help fine-tune REDD+ National Strategy and extend REDD+ activities and interventions to other areas of the country in the future. It will also contribute to identify possible unforeseen gaps and need of the REDD+ strategy (UT REDD+, 2015a).

Second, the ER Program addresses a significant portion of ER for the country. It will be implemented in the province of Zambézia, which concentrates 13% of total forest cover of Mozambique (mainly Miombo forest) and represents 8% of the national level of deforestation: out of the 11 provinces of Mozambique, Zambézia is the 4th one that is the most affected by deforestation (UT REDD+, 2015b). In 2014, the 9 districts involved in the program entail a total of 2,6 millions ha of forest – or 2,5 millions ha of forest without mangroves. They have suffered significant deforestation over the last 10 years, with about 7% of the 2005 forest cover being already lost – i.e. 193 835 ha (or 193 847 ha, mangroves excluded). Between 2005 and 2014, the mean annual deforestation in the ER Program area represents 24 200 ha per year (or 23 658 ha, mangroves excluded). In the ER Program area, deforestation has increased from 0,71% per year between 2005 and 2010 to 1,07% per year between 2010 and 2013 – that is, a mean annual deforestation rate of 0,89% between 2005 and 2013 – *for more details, see Table 43 in section 8.*

Table 3: Evolution of forest area in the ER Program area between 2005 and 2014 per district (mangroves excluded)

Forest areas in year (ha)	2 005	2 010	2 014	Districts areas (ha)
Alto Molocue	259 960	248 594	227 596	630 812
Gile	581 217	563 446	543 366	896 516
Ilé	102 624	98 573	90 147	303 411
Maganja da Costa	96 501	95 394	94 134	267 925
Mocubela	327 213	321 893	319 636	499 234
Mulevala	133 979	130 731	126 358	261 685
Pebane	603 705	591 930	582 546	1 005 479
Gurué	100 815	88 908	73 144	564 933
Mocuba	549 006	532 437	504 246	877 351
ER Program area	2 755 020	2 671 906	2 561 173	5 307 346

Table 4: Evolution of annual rate of deforestation in the ER Program area between 2005 and 2013 per districts

Annual rate of deforestation [%]	2005-2010	2010-2013	2005-2013
Alto Molocue	1,12	2,26	1,69
Gile	0,65	0,95	0,79
Ilé	1,32	2,22	1,84
Maganja da Costa	0,28	0,34	0,31
Mocubela	0,34	0,18	0,27
Mulevala	0,57	0,88	0,71
Pebane	0,39	0,42	0,41
Gurué	3,05	4,84	3,94
Mocuba	0,74	1,34	1,04
ER Program area	0,71	1,07	0,89

According to the National REDD/ Strategy, *ceteris paribus*, it is estimated that emissions from deforestation and forest degradation could reach 39 MtCO₂ / year by 2030 in Mozambique. The overall National REDD+ Strategy's target in terms of ER is to reduce those emissions to 3 MtCO₂ / year in 2030, through reducing deforestation and increasing carbon stocks. This represents an overall objective of avoiding 170 MtCO₂e during the reference period going from 2016 to 2030. **The ER Program is expected to significantly contribute to this objective, its ambition being to achieve a total of 11,1 MtCO₂e of ER between 2016 and 2025**, which corresponds to deducing deforestation in the ER Program area by 15% in the first 5 years of the ER Program implementation (2016-2020) and by 25% in the following 5 years (2021-2025) - *for more details on the estimation of the ERs expected from the program, see section 13*. The ER Program should therefore contribute to 6,5% of the National REDD+ Strategy's objectives in terms of ERs.

2.3 Political commitment

Since 2008, Mozambique's commitment to REDD+ implementation has been strong and is reflected in the various legislation that were listed in section 2.1, and in which frame the ER Program fits. The progress of Mozambique in the FCPF CF process for the design of the ER Program has been straightforward, demonstrating the strong will of the GoM to achieve expected Emission Reductions. Another step in this direction is the recent adoption of the National REDD+ Strategy, which lays out clear institutional arrangements that facilitate the flow of information within the State institutions and ease cooperation with the private sector and civil society, service providers and members of local communities who are expected to highly contribute to the ER Program (UT REDD+, 2015a). Those institutional arrangements completed the initial institutional design for REDD+ implementation, described in the Decree No. 70/13 of December 20th, 2013 ("Regulation of the procedures for approval of projects for reducing emissions from deforestation and degradation") (Governo de Moçambique, 2013), which established the REDD+ Technical Unit (now designated at the Landscape Management Unit) and the inter-ministerial CTR (already mentioned) - *For more information on institutional arrangements for REDD+ and for the ER Program, see section 6*.

Enhanced political commitment to REDD+ in Mozambique and to the ER Program

Box 1 *chronologically summarized the main events of GoM's political commitment to REDD+.*

The current Government has publicly recognized forest-related challenges and shown commitment to addressing them. Over the last years a number of remarkable changes took place, which point to a change in direction in the management of the forest sector. **Recently, the GoM has demonstrated its full commitment to REDD+ with the creation of two main bodies: the Ministry of Land, Environment and Rural Development (MITADER) and the National Fund for Sustainable Development (FNDS).**

The MITADER was created in January 2015, bringing together responsibilities that were previously spread across several ministries; in order to facilitate the coordination needed to address challenges of cross-sectorial nature. For many years (1994 -2014), environmental issues had only been managed through the Ministry responsible for environmental coordination (the Ministry for the Coordination of Environmental Affairs / *Ministério para a*

Coordenação da Acção Ambiental - MICOA), without vertical mandate or direct responsibility of implementing development programs on the ground (Beta and Nemus, 2016). Agricultural policies were only managed by the Ministry responsible for Agriculture (MINAG).

Today, the main functions of the MITADER are to design, plan, coordinate, monitor and ensure the good implementation of policies in the fields of land management and administration (demarcation, land use planning, and registry), forests and wildlife, environment, conservation areas and rural development (poverty reduction in rural areas). It should be noted that MITADER contains the National Direction for Lands, the National Centre of Mapping and Tele-detection (CENACARTA), the Management of Lands and Mapping Training Institute (INFATEC), the National Direction for Rural Development (DNDR) and the National Agency for Conservation Areas (ANAC), which was, before, under tutelage of the Ministry of Tourism (Beta and Nemus, 2016) – see section 6 for more details.

Admittedly, cross-sectorial commitment to REDD+ initiative is evidenced by the joining of such issues into one single entity. More precisely, with regards to forests management, MITADER is responsible for proposing development strategies linked to the forest sector but also to the sustainable use of forest resources; it is also in charge of evaluating the quantitative and qualitative forest resources of the country, of coordinating and of ensuring the good implementation of Emission Reduction initiatives.

The MITADER's coordination role is expected to be improved in a situation where it has direct management mandate over a wider number of important natural resources and social issues and particularly to manage rural development and forests. Note is taken of the fact that rural development is a cross-cutting subject. Its materialization relies on the coordination of multiple interventions (Beta and Nemus, 2016). Actually, since its creation, MITADER already adopted several strategic actions to address challenges in the forest sector, including a participatory audit of all forest concessions, the suspension of new requests for exploration areas, a ban on log exports, the updating of forest policies and regulations, and an ambitious project called “*Floresta em Pé*” (already mentioned in 2.1), which aims to promote sustainable integrated rural development through protection, conservation, valorization, creation and sustainable management of forests – see section 4.1 for more details.

Most of the planned interventions under the proposed ER Program will fall under MITADER itself, which has the bulk of the responsibilities to manage forests and rural development and to manage the funds to implement the ER Program activities.

All in all, the creation of MITADER is a turning point in Mozambique's commitment to REDD+, showing the efforts that the GoM has been carrying out to integrate complex issues and promote synergy between those core challenges for REDD+ policies. This restructuring is a clear indication of the Government's vision and commitment to promote a landscape-based approach to forest and natural resources management.

Table 5: MITADER's main responsibilities and relevance for REDD+

Land management	<ul style="list-style-type: none"> - Ensure the development, implementation and supervision of territorial planning instruments - Develop a sustainable national land registration and information system on land including the rights of occupation in good faith and communal lands
Forest management	<ul style="list-style-type: none"> - Propose the approval of legislation, policies and development strategies in the area of forests

	<ul style="list-style-type: none"> - Establish standards for licensing, management, protection, conservation, supervision and monitoring of sustainable use of forest resources - Develop and implement policies and procedures on the use and sustainable management of forest resources - Assess quantitative and qualitative forest resources and the reduction of emissions from deforestation and forest degradation <ul style="list-style-type: none"> - Establish measures of prevention and control of uncontrolled fires; - Ensure sustainable use of woody biomass - Promote rational use of secondary forest species and non-timber forest products - Promoting community participation in sustainable management of forest resources
Environment	<ul style="list-style-type: none"> - Propose policies and legislation and standards for preservation actions of environmental quality - Establish and implement policies and procedures for environmental licensing of development projects - Promote the adoption of integration policies of the green economy, biodiversity and of climate change in sectorial programs - Ensure participation of local communities in co-management of natural resources and ecosystems
Rural development	<ul style="list-style-type: none"> - Propose policies and rural development strategies that are integrated and sustainable - Promote community participation and empowerment of associations in local economic development processes - Strengthen the local economic actors to contribute in the sustainable exploitation of natural resources and in boosting the local economy
Conservation and wildlife management	<ul style="list-style-type: none"> - Ensure the licensing, management, protection, conservation, supervision and monitoring of the use of wildlife resources - Establish and implement policies and procedures for licensing, management and operation of the national protected areas network - Administer the national parks and reserves and conservancies and other conservation areas - Ensure the protection, conservation and wildlife recovery of endangered species and endangered species and fragile ecosystems

This commitment is also evidenced by the subsequent creation of the FNDS, in February 2016 (national decree n°6/2016) (Governo de Moçambique, 2016) under the sectorial tutelage of MITADER. The FNDS aims to, precisely, contribute to the strategic planning of the land, environment and rural development sector in Mozambique and to give impetus to the integrated and sustainable rural development process in a coherent and sustainable way. Its main objective is to promote and finance programs and projects that guarantee sustainable, harmonious and inclusive development, with particular emphasis on rural areas.

The FNDS is especially responsible for managing REDD+ funding, which coordinates and supervises major donor support programs, including REDD+, and reports directly to the Minister – see *section 6 on UGFI's responsibilities and composition*. In particular, the FNDS

is responsible for the technical and financial coordination of the ER Program, and works closely with some of MITADER's technical directorates, mainly the National Directorate of Forests (DINAF), the National Directorate of Land (DINAT), the National Agency for Environmental Quality Control (AQUA) and the National Agency of Conservation Areas (ANAC). On every REDD+ issues, the FNDS also liaises with other ministries such as the Ministry of Agriculture and Food Security and the Ministry for Mineral Resources and Energy, amongst others.

Box 1: Chronological summary of political commitment to REDD+

- **March 2008:** Submission and approval of the Readiness Project Idea Note (R-PIN) for the ZILMP ER Program;
- **2013:**
 - Submission and approval of the final version of the Readiness Preparation Proposal (R-PP);
 - The GoM granted a 3,8 M USD grant from the FCPF Readiness Fund;
 - Adoption of the Decree No. 70/13 of December 20th, 2013 ("Regulation of the procedures for approval of projects for reducing emissions from deforestation and degradation") that creates the inter-ministerial Technical Review Committee (*Comité Técnico de Revisão* - CTR) for REDD+ and the REDD+ Technical Unit (UT-REDD+) – it that has, since then, been absorbed into the International Funds Management Unit (UGFI);
- **2015:**
 - Creation of the Ministry of Land, Environment and Rural Development (MITADER) ;
 - Adoption of the Five Year Government Plan (*Plano Quinquenal do Governo* - PQG) for the 2015-2019 period, with a focus on transparent and sustainable management of natural resources and the environment;
 - Adoption of the National Sustainable Development Program with the *Terra Segura* (Secure Land) Project and the *Floresta Em Pé* (Standing Forest) project;
 - Forest Sector Review, including a forest license moratorium, new incentives toward sustainable forest management and the assessment of forest operators;
 - Creation of the Zambézia Provincial Forum for REDD+;
 - Submission and approval of the Emission Reductions Project Idea Not (ER-PIN) for the ZILMP ER Program;
 - Signature of Letter of Intent (LOI) between the FCPF CF and the GoM for the ZILMP ER Program;
- **2016:**
 - The GoM granted an additional 5 M USD grant from the FCPF Readiness Fund;
 - Creation of National Fund for Sustainable Development (FNDS) and of the International Funds Management Unit (UGFI);
 - Creation of the Zambézia Multi-Stakeholders Landscape Forum (MSLF) and of the Landscape Management Uni (LMU) and establishment of the provincial Landscape Coordination Unit (LCU);
 - Approval of the National REDD+ Strategy and establishment of the National Forest Definition;
 - Start of Emission Reductions Program Document (ER-PD) redaction, expected to be submitted for validation to the FCPF CF in December 2017;

- **February 2017:** submission of the R-Package.

Cross sectorial commitment

Cross-sectorial commitment in REDD+ in Mozambique is enhanced through Ministries' cooperation, including for the implementation of the ER Program.

The Ministry of Agriculture and Food Security (MASA) maintains its focus on promoting agriculture productivity and management of planted forests in the country. However, all affairs related to REDD+ that were under the management of MASA have migrated to MITADER's coordination. The next table summarizes specific tasks of MASA under each area of important responsibility for REDD+ (Beta and Nemus, 2016).

The Ministry of Mineral Resources and Energy (MIREME) plays a critical role in REDD+ through the promotion of sustainable use of energy and managing the mining sector (UT REDD+, 2015a). Rural development is part of its priority axis of actions, with one of the objectives being to increase the offer of alternative energy to charcoal (Beta and Nemus, 2016) – the production of charcoal is responsible for a significant part of forest degradation and deforestation in the ER Program area, as explained in section 4.1. This has been embodied in the adoption in 2013 of the Strategy for Conservation and Sustainable Use of Energy from Biomass (Ministério da Energia, 2013). MIREME especially contains the National Direction of Energy (DNE) as well as the FUNAE (*Fundo de Energia* – Energy Fund) – see section 6 on institutional arrangements.

The Ministry of Economy and Finance (MEF), which brings the former Ministry of Planning and Development and the MEF into one Ministry, is responsible for the planning of all activities related to economical development in Mozambique. The recently created National Directorate for Rural Development Promotion (DNPDR) especially aims at implementing Mozambique's Rural Development Strategy (EDR) (Beta and Nemus, 2016). The MEF is also actively engaged on issues related to climate change in Mozambique, and manages the Climate Change Unit (UMC).. The participation of the MEF in the REDD+ program is also associated with its role and responsibilities in budgeting and making available public funds for overall development of the REDD+ strategy in Mozambique. MITADER, under which the ER Program is administered, has a close relationship with MEF on matters of planning and financial resources allocation.

Table 6: MASA's responsibilities under REDD+

Relevant areas of performance for REDD+	Specific task
Agro-forest plantations	<ul style="list-style-type: none"> • Proposing legal and institutional frameworks that are appropriate for development of agro-forest plantations; • Implementing sector policies, plans, programs and strategies; • Proposing and establishing operational norms for agro-forest projects; • Ensuring development of agro-forest plantations for conservation, energetic, commercial and industrial purposes; • Promoting research activities and ensuring dissemination of results; • Promoting local/internal processing of agro-forest products. • Proposing policy framework for agrarian development in Mozambique; • Establishing norms for sector licensing, monitoring of activities;

Agriculture	<ul style="list-style-type: none"> • Ensuring quality and phyto-sanitary measures in the sector; • Promoting research activities and ensuring dissemination of results; • Promoting extension services and ensuring these services are rendered to farmers; • Providing capacity building to farmers; • Promoting development of infrastructures that are relevant for the sector; • Managing sector related information.
Food security	<ul style="list-style-type: none"> • Promoting food security related to legal framework, strategies, policies and plans; • Managing food security related information; • Promoting information access on food conservation and processing; • Promoting food security education of communities to ensure nutrition; • Ensuring inter-institutional coordination in food security policy formulation, implementation, monitoring and evaluation.

Within the dedicated REDD+ institutional arrangements, inter-institutional cooperation and cross-sectorial commitment can be observed in the very composition of the CTR, which is the means of consultation and supervision of all REDD+ activities in Mozambique. It is composed of representatives from the Ministry of Culture and Tourism, Ministry of Gender, Ministry of Education, Child and Social Action, Ministry of Industry and Commerce, Ministry of Economy and Finance, Ministry of State Administration and Public Function, Ministry of Justice, Constitutional and Religious Affairs, and Ministry of Mineral Resources and Energy, as well as by representatives from the private sector, NGOs and research institutions. In the same way, the Landscape Management Unit is in charge of the coordination within the national directions of MITADER and inter-ministerial coordination (between MITADER, MASA, MIREME, etc.). The implementation of the ER Program reflects this tendency to cross-sectorial commitment – *see section 6*.

3. ER PROGRAM LOCATION

3.1 Accounting Area for the ER Program

Mozambique is divided in Provinces, districts and municipalities that were first defined by its 1975 Constitution. The current administrative national organization comprises 11 provinces: Niassa, Cabo Delgado, Nampula, Zambézia, Tete, Manica, Sofala, Gaza, Inhambane, Maputo and Maputo City. Since the new Law of Administrative division 26/2013, which created 23 new districts, those provinces are divided in 151 districts. The ER Program will be implemented in part of the Zambézia province, in Central-Northern Mozambique.



Figure 3: Location of Zambézia province and of the ER Program area

Within Zambézia province, the Gilé National Reserve (GNR), long considered as one of Mozambique's main biodiversity hot spots, extends over the districts of Pebane and Gilé. It covers 436,400 ha, divided between a full protection zone - commonly called the Reserve (283,600 ha) - and a peripheral buffer zone (152,800 ha), where some activities are allowed, located mainly west of the Reserve (Mercier et al., 2016).

Progress since ER-PIN

The GoM initially presented a program covering 7 districts in Zambézia province. Since ER-PIN, it was decided to expand this ER Program area to two additional districts (Gurué and Mocuba), bearing to 9 the total number of districts covered by the accounting area of the ER Program: Gilé, Pebane, Maganja da Costa, Mocubela, Ilé, Mulevala and Alto-Molocué, Mocuba and Gurué. They cover a total area of 5,3 millions ha⁷ (Mercier et al., 2016; Governo de Moçambique, 2005b; 2005c), including, in 2014, 2,6 millions ha of forest (including mangroves). Those districts were selected for various reasons:

⁷ Based on the data of (Mercier et al, 2016), updated to add the areas of the districts of Mocuba and Gurué (Governo de Moçambique, 2005b; 2005c)..

- (vi) Zambézia province is characterized by relevant qualities for the ER Program: it is the most densely populated province of Mozambique and the fourth most deforested (it accounts for 13% of Mozambique's forest and 8% of Mozambique's deforestation); 70,5% of its population is under the poverty line; its economy is based on agriculture and the use of forest resources; it already comprises a strong private sector and civil society involvement;
- (vii) In Zambézia, the 9 selected districts especially represent a strong area of expansion for deforestation within the province itself, the annual deforestation rate in the ER Program area reaching 0,89% between 2005 and 2013 and 1,07% between 2010 and 2013, with a forest loss of, respectively, 23 658 ha per year and 28 069 ha per year;
- (viii) The selected districts are geographically coherent with the areas covered by other initiatives already funded by the World Bank, including Mozbio (around the GNR), MozFip and DGM, as well as the Agriculture and Natural Resources Landscape Project (see section 4.1), which are all contributing to the ER Program's objectives;
- (ix) The corresponding with those existing funds also enables to secure long-term financing for the ER Program interventions (see section 4.3 and section 6.2) and to provide lessons learned and local capacities for the ER Program;
- (x) The area is characterized by globally important biodiversity with a protected area (the GNR), mangrove forests and a significant share of endemic and vulnerable/endangered species (see section 3.2).

Table 7: Surface of the ZILMP area (Mercier et al, 2016)

District	District Area (ha)	Forest Area 2014 (ha)**	Percentage of forest cover
Alto-Molocué	630,812	227,596	36%
Gilé	896,516	543,366	61%
Ilé	303,411	90,147	30%
Maganja da Costa	267,925	94,134	35%
Mocubela	499,234	319,636	64%
Mulevala	261,685	126,358	48%
Pebane	1,005,479	582,546	58%
Mocuba	873,300*	504,246	58%
Gurué	560,600*	73,144	13%
ZILMP area	5,298,962	2,561,173	48%

Those data are extracted from (Mercier et al., 2016)

* Data from Governo de Moçambique, 2005b; 2005c.

** Data from Etc Terra for the ER-PD

Those forest data exclude mangrove

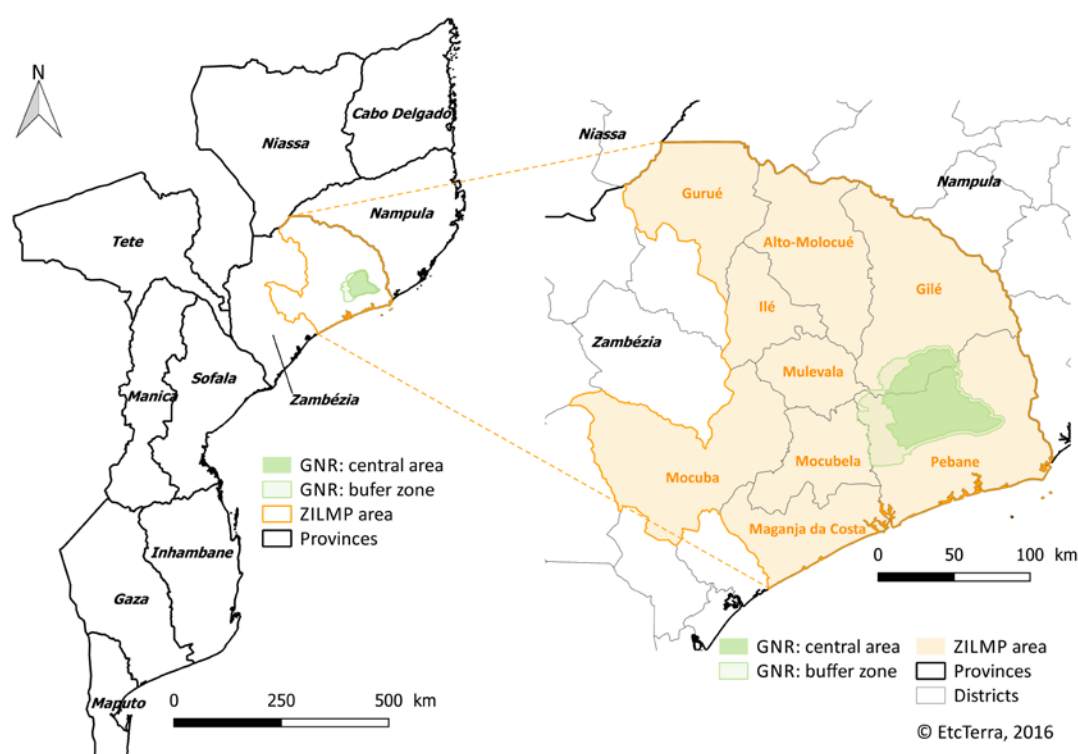


Figure 4: Location of the ER Program Accounting Area, including the GNR

3.2 Environmental and social conditions in the Accounting Area of the ER Program

Environmental conditions in the Accounting Area of the ER Program

Existing vegetation type. Mozambique is one of the few sub-Saharan countries to possess a significant portion of natural forest: 51% of its territory is composed of natural forest - that is 40,6 millions ha (Marzoli, 2007). Miombo forest is the most extensive forest type, covering approximately two thirds of the country. Miombo forests especially cover vast areas of the central and northern regions of Mozambique, and are characterized by a dense vegetation, with deciduous and semi-deciduous trees, often reaching between 10 and 20 meters (FUNAB, 2015) – see Figure 5.

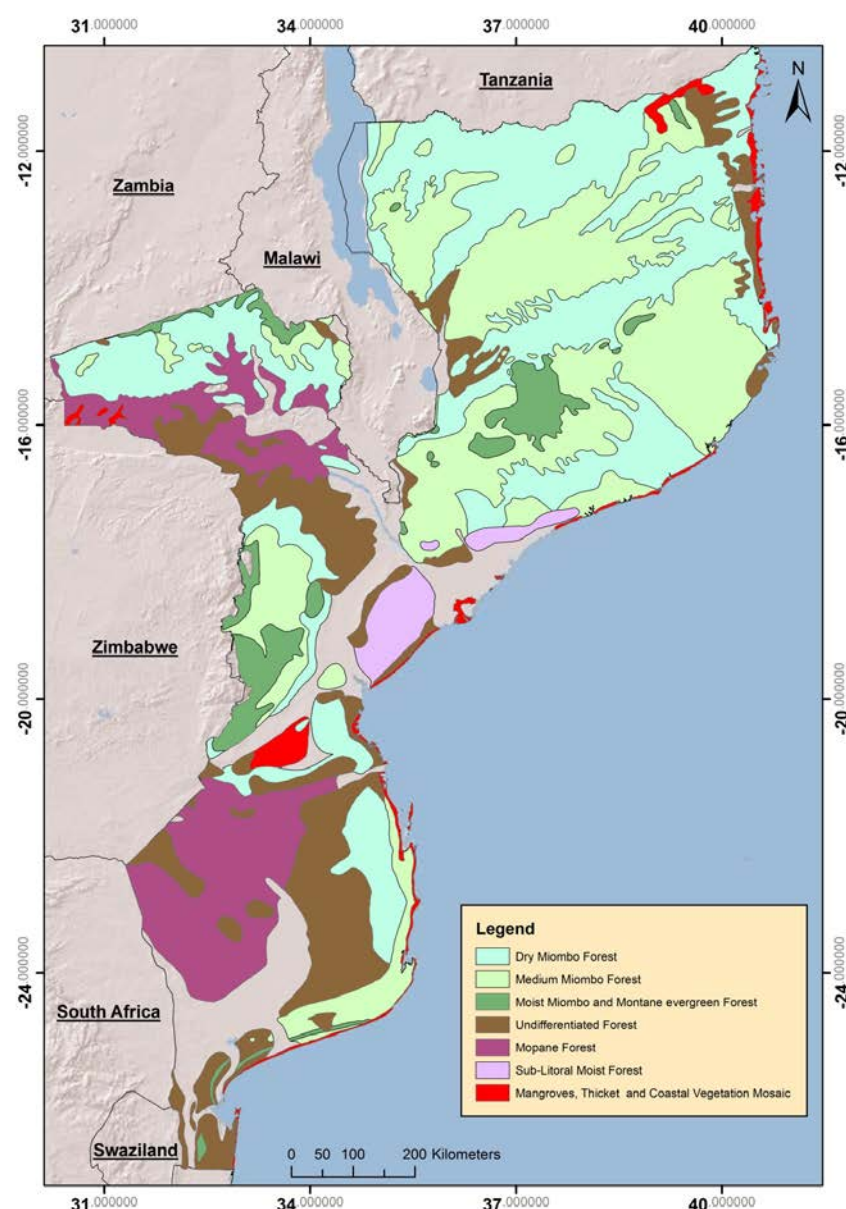


Figure 5: Main vegetation types in Mozambique
(MITADER, 2016d)

The accounting area covers a total of 5,3 millions ha, of which 2,6 millions ha are forests (mangroves included). This represents 48% of the total accounting area (or 59+ mangroves included). It is located in the “eastern Miombo wooded area” (FFEM, 2011). As defined by (White, 1983 – cited in Mesochina et al., 2010), it falls within the Zambezian Regional Centre of Endemism phytogeographic unit. It is also composed of medium Miombo forest.

This formation, widely found across Southern and Central Africa, is mainly composed of deciduous woody vegetation where *Brachystagia spp* and *Strichnos spinosa* are the dominant species. *Brachystagia* is commonly associated with *Julbernadia globiflora*, *Pterocarpus angolensis* (called “Umbila” in Mozambique), *Burkea africana*, *Bridelia micrantha*, *Cynometra sp.*, *Dalbergia melanoxylon*, *Swartzia madagascariensis* (called “Pau Ferro” in Mozambique) and *Millettia stuhlmannii* (called “Panga-Panga” in Mozambique).

Strichnos is usually associated with *Combretum* spp, *Terminalia* spp, *Pteleopsis myrtilifolia* (MITADER, 2016d).

In the ER Program area, the GNR represents a significant share of natural forest. Inhabited, it is the largest uninterrupted forest massif of Northern Mozambique (FFEM, 2011). The GNR and its adjacent areas are mainly composed of trees belonging to the *Caesalpinioideae* legume sub-family: *Brachystegia*, *Julbernardia* and *Isoberlinia* (Campbell, 1996). *Diplorhynchus condylocarpon*, *Brachystegia boehmii*, *Julbernardia globiflora*, *Dalbergia nitidula*, *Brachystegia spiciformis*, *Parinari curatellifolia* and *Pterocarpus angolensis* account for more than 54% of the trees (Etc Terra, 2014). In addition to this dense forest, the GNR and its surroundings also entail Dambos areas: concentrated in low and wet land, dambos are very common at the base of the inselbergs and act as a buffer, capturing water and releasing it slowly throughout the year (MITADER, 2016d) – see figures below. The herbaceous cover is mainly composed of *Themeda triandra* (63% of transcripts), which is, most of the time (85%), dominant (Prin, 2008).



Figure 6: Miombo forest (1) in the GNR and its surrounding and Dambo (2) in the GNR Delbergue, 2015.

Miombo is especially rich in term of biodiversity and entails a very specific ecosystem: unlike other tropical formations, its ground components can store large amounts of carbon because of the role played by ectomycorrhiza (FFEM, 2011). It is estimated that mean total biomass in Miombo forest is 84,7 tC/ha or 310.7 tCO₂eq/ha (90% CI) (Mercier et al., 2016).

Table 8: Carbon stocks in the natural Miombo forest (pre-deforestation)

	Aboveground	Belowground	Total
Carbon stocks in tC/ha			
Average	65.9	18.4	84.3
Standard deviation	28.3	7.7	36.2
90% CI	4.7	1.3	6
Carbon stocks in tCO₂eq/ha			
Average	241.6	68.2	309.8
Standard deviation	103.7	28.3	131.8
90% CI	17.1	4.7	21.7

Climatic conditions. Mozambique has a tropical climate with two seasons: a wet season from October/November to March/April and a dry season from April/May to September/October. Climatic conditions, including temperature, rainfall and precipitation vary depending on altitude (FUNAB, 2015). In Zambézia province, the climate is classified as tropical savannah (Aw) by the Köppen-Geiger system. In the Accounting Area, temperatures fluctuate throughout the year due to the tropical location and considerable proximity to the Equator, also influenced by oceanic monitions (cost lane) and mountain condition (interior) (MITADER,2016d), with temperature varying between 13°C (minimum in June in average) and 37°C (maximum in October in average). Mean annual rainfall vary from 1 857 mm for the wettest part of the area to less than 995 mm for the driest part (FUNAB, 2015).

It is worth noticing that Mozambique is expected to be one of the countries that will be the most affected by climate change in the coming years, due to high exposure and high vulnerability. Mozambique is one of the highest ranked African countries in terms of exposure to risks from weather-related hazards - it is especially subject to drought, floods and tropical cyclones, originated in the Mozambican Channel or to the east of the Channel, depending on the atmospheric conditions - and its low adaptive capacity and high dependence of its population and economy on natural resources exacerbates its vulnerability to climate change (UT REDD, 2016). The effects of climate shocks are compounded by high levels of poverty, low levels of human development and low response capacity (UT REDD, 2016). In addition, as stated in (UT REDD, 2016) forest degradation and deforestation may increase the vulnerability of rural communities to changing climatic conditions in the future.

Soil characteristics. The interior land (Ile, Gilé, Alto Molocué, Mulevala) is predominantly formed by medium textured red soils and clay grayish brown soils, produced from the weathering of granitic rocks and resulting from residual or limited transported soils (MITADER,2016d). This area is predominated by red clay soils, characterized by depth and high retention capacity for water. Most of the soil has a medium texture to sandy loam and is generally well drained. The river valleys are dominated by alluvial soils, dark, deep, heavy texture and average to moderately drained, subject to regular flooding (FAO, 1995). The coastal zone of the Accounting Area (Pebane, Maganja da Costa and Mocubela) comprises yellow sandy, gray, soils. The coastal line is formed by loose, high permeable sandy soils, with scarce vegetation (MITADER, 2016d).

Rare and endangered species and habitat. Mozambique is endowed with considerable biodiversity associated with the high diversity of its existing ecosystems. Floristically, 4 phytogeographic regions of endemism are recognized in the country: (i) Zambezian, (ii) Swahilian, (iii) Swahilian-Maputaland transitional zone and (iv) Maputalalad-Tongoland (Ministry for the Coordination of Environmental Affairs, 2014). The Accounting Area is mainly located within the Zambezian Regional Centre of Endemism, which is the second largest phytogeographic region in Africa, probably having the richest and more diversified flora. There are at least 8,500 different species, 54% of which could be endemic species (White, 1983).

In addition, the Accounting Area comprises the GNR and its buffer zone, which contain regionally and nationally significant concentrations of biodiversity values - the GNR currently holds the status of a national reserve and can be classified in IUCN "Management Category II" (Fusari, Lamarque, Chardonnet & Boulet, 2010) - with 70 different identified tree species and 10 different identified gramineae species (Prin, 2008). Wildlife in the GNR and its buffer zone is also significant with, possibly, 75 different species of mammals (Deffontaines, 2012)

and up to 210 species of birds (FFEM, 2011). More importantly 10 mammal species and 2 bird species that are considered to be globally vulnerable, near threatened or endangered have been identified - see Table 9.

Actually, the GNR and its buffer zone include a site of high biodiversity conservation priority on the basis of Key Biodiversity Area (KBA) framework of vulnerability and irreplaceability, as defined by IUCN: more than 30 individuals of a vulnerable species have been identified, with 58 African elephants being present in the area (Ntumi et al., 2012). The existence of other few remarkable species is worth noticing: for instance, Lichtenstein Hartebeests, who have been identified in the GRN and its buffer zone - they are estimated to be between 5 and 10 individuals (Brugière, 2013) - are in danger of extinction in Mozambique (Fusari, Lamarque, Chardonnet & Boulet, 2010).

Table 9: Near threatened and vulnerable species in the ER Program area (GNR)

English name	Scientific name	IUCN Status
African clawless otter	<i>Aonyx capensis</i>	Near Threatened
Chequered sengi	<i>Rhynchocyon cirnei</i>	Near Threatened
European Rabbit	<i>Oryctolagus cuniculus</i>	Near Threatened
African elephant	<i>Loxodonta africana</i>	Vulnerable
Temminck's ground pangolin	<i>Smutsia temminckii</i>	Vulnerable
Hippopotamus	<i>Hippopotamus amphibius</i>	Vulnerable
Leopard	<i>Panthera pardus</i>	Near Threatened
Lion	<i>Panthera leo</i>	Vulnerable
Spotted-necked otter	<i>Lutra maculicollis</i>	Near Threatened
African wild dog	<i>Lycaon pictus</i>	Endangered
Bateleur	<i>Terathopius ecaudatus</i>	Near threatened
Southern ground hornbill	<i>Bucorvus cafer</i>	Vulnerable

This list is based on the [IUCN Red List of Threatened Species](#) and (Deffontaines, 2012), (Mésochina et al., 2010) and (Fusari et al., 2010)

All in all, although Miombo forest is not a rare woodland formation, the size and density of forest habitat make the Accounting Area be of particular biodiversity value. It also contains some of the world most precious hardwood timbers, including *Pterocarpus angolensis*, *Millettia stuhlmannii*, *Pericopsis angolensis* and *Swartzia madagascariensis*. The Accounting Area is, therefore, an important concentration of natural forest and threatened habitat to be preserved.

Social conditions in the Accounting Area of the ER Program

Population demographics and growth. Zambézia province is the most diverse province of Mozambique in terms of ethnicity. In the ER Program area, five major ethnic groups co-exist (Chuabo, Macua-Lomué, Manhaua, Marengo and Senas), with the Macua-Lomwé being predominant. Their main repartition per district is described in Table 21 (section 4).

Zambézia province is also the most densely populated and the second most populated province of Mozambique: with 45 people per km² in 2014 (see Table 15) and an estimated population of 4,8 million people in 2015, it concentrates about 19% of Mozambique's total population – which, in 2015, should represent 25,7 million people⁸.

The population composition in Zambézia is representative of the rest of the country with more than 51% of women and a significant share of young people, with over 80% of the population being younger than 40 years old. Most of the population of Zambézia province lives in rural area: 82,55% in 2007 and 79% in 2015 – at national scale, rural population is estimated to represent almost 70% of the population (INE, 2014).

The last population census in Mozambique was realized in 2007. It showed a significant rate of population growth in the country, with an average population growth rate of 3% for Zambézia province between 1997 and 2007 – see Table 10.

Table 10: Population growth in program area

District	Population in 1997*	Population 2007*	Population growth rate (exponential) between 1997 – 2007*	Population 2013**	Population 2015**
Alto-Molocué	185 224	275 155	4	346 369	375 504
Gilé	126 988	171 091	3	192 115	198 424
Ilé	224 167	293 054	2,7	323 116	331 706
Maganja da Costa	229 230	280 000	2	306 288	314 454
Mocubela	na	Na	na	na	na
Mulevala	na	Na	na	na	na
Pebane	135 275	187 289	3,3	215 481	224 462
Mocuba	214 748	303 973	3,5	365 707	385 902
Gurué	197 179	301 034	4,2	377 195	403 558
Total Zambézia	2 891 809	3 890 453	3%	4 563 018	4 802 365

* Data extracted from (INE, 2007a)

** Data extracted from INE projections (INE, 2007b)

Main livelihood and economic activities. Forest-based activities and industries are important contributors to the Mozambican economy and a major source of employment in

⁸ Those estimations are based on projection from the last population census of 2007 (INE, 2007b).

Mozambique's rural areas. The forest economy contributes to about 2% of Mozambique's GDP. In 2011, this figure was approximately 2,8%. Twenty-two thousand people are directly employed by the forestry sector (UT REDD+, 2016).

In rural Mozambique, households' earnings are mainly generated by crop and environmental income⁹ with estimated households' income shared ranging from 42% (Waleign, 2015 – cited in UT REDD+, 2016) to 93% (Pereira and Cossa, 2001; Mansur and Cuco), depending on adopted livelihood strategies (MozDGM, PCN, 2016). In the ER Program area, this situation is also prevalent and dependence on forest resources is significant. Most of the economy in Zambézia province is actually based on direct and integrated exploitation of natural resources with very little transformation (MITADER, 2016d). The collection of timber and non-timber forest resources is part of the everyday life of those populations.

Accordingly, agriculture is the main economic sector in Zambézia province, with 91,1% of the economically active population working in the agricultural sector (INE, 2010). The level of production is nevertheless low, agricultural activities being essentially subsistence means. The main form of land use is small-scale sedentary and shifting cultivation of maize, cassava, small grains and pulses. "Slash-and-burn" agriculture, in particular, is widely practiced in Miombo areas. This practice appears well adapted to the generally infertile soils of Miombo but has become the first driver of deforestation in the ER Program area – see *section 4*.

Table 11: Economically Active People (EAP) by sector and province (2008/09)

Territory	EAP by Sector (%)			
	Agriculture	Industry	Service	Others
Zambezia	91,1	1,3	6,6	1
National	81	2,8	13,6	2,7

INE, 2010

Those socio-economic conditions and, especially, stakeholders' high dependence on forest resources, are key elements to be considered for the ER program. Ultimately, finding ways of changing natural resources unsustainable exploitation, transforming agricultural practices and securing income for rural population in the ER Program area should be the core of the REDD+ jurisdictional program (Mercier et al., 2016).

⁹ Defined as income generated from agriculture or harvesting products (e.g., timber, fuelwood, fodder, medicine plants, wild foods and processed products like charcoal and wood carvings) from forest and non-forest land.

4. DESCRIPTION OF ACTIONS AND INTERVENTIONS TO BE IMPLEMENTED UNDER THE PROPOSED ER PROGRAM

4.1 Analysis of drivers and underlying causes of deforestation and forest degradation and existing activities that can lead to conservation or enhancement of forest carbon stocks

This sub-section and national estimations on deforestation are based on the study on the drivers of deforestation realized during the Readiness phase by (Winrock International and CEAGRE, 2015). The ranking of the main driver of deforestation in the ER Program area is, more specifically, based on (Mercier et al., 2016) analysis.

In Mozambique, historical deforestation is estimated to reach 0,23% per year between 2000 and 2012 (Winrock International and CEAGRE, 2015). This represents an annual loss of 138 000 ha of forest and an amount of emissions close to 12 Mt/CO₂ per year (data based on Hansen et al., 2013). Deforestation is concentrated in areas of greater population density, especially in the central and northern provinces of the country where the ER Program is located. The main drivers of deforestation and forest degradation in Northern Mozambique are described below.

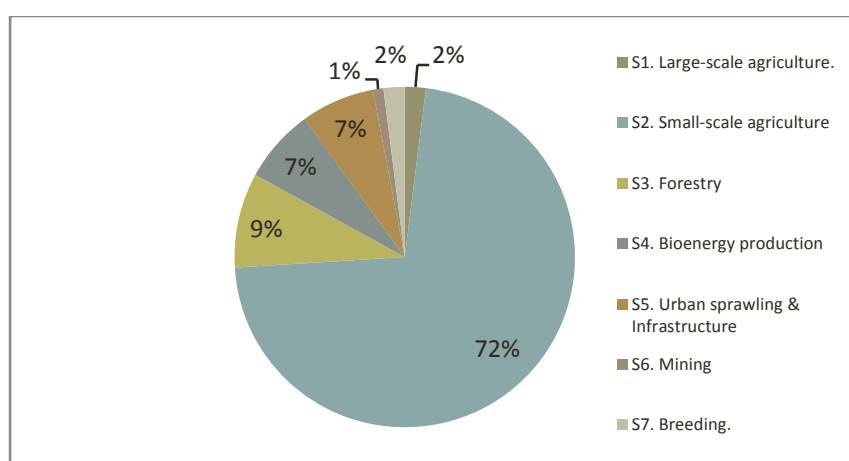


Figure 7: Part of deforestation according to driver in the North zone of Mozambique
Winrock international and CEAGRE, 2015

As stated earlier, Zambézia province is the fourth most deforested province in Mozambique, accounting for 8% of Mozambique annual deforestation (UT REDD+, 2015a). Within Zambézia, the ER Program area is located in the main zone of deforestation expansion in Zambézia: in the ER Program area, deforestation has increased from 0,71% per year between 2005 and 2010 to 1,07% per year between 2010 and 2013.

As stated by (Winrock International and CEAGRE, 2015), the drivers of deforestation can be divided into two categories: (i) the direct drivers, which are visible actions led by the agents of deforestation and resulting in observable deforestation and forest degradation; (ii) the indirect drivers, or underlying causes of deforestation, which can explain why the agents of deforestation engage in such activities.

The main direct drivers of deforestation and their inter-relation in the ER Program area are summarized in Box 2 and are detailed below.

Box 2: Summary of the main direct drivers of deforestation and forest degradation and how they inter-relate

Although large scale agriculture is almost non-existent in the ER Program area, **small-scale agriculture is the first driver of deforestation in the ER Program area**, due to itinerant (“slash and burn”) agriculture, especially for the production of maize and cassava, based on a land extension strategy especially to optimize work productivity – and, to a lesser extent, to overcome poor soil fertility. The majority of smallholders are also engaged in activities of charcoal production in the ER Program area. Actually, **the second driver of deforestation and forest degradation is bio-energy production, especially around urban areas where the consumption of charcoal is more important**. The production of firewood is almost exclusively derived from trees that were already cut by smallholders for agricultural purpose; although it is achieved through practices responsible for deforestation, firewood production has no additional impact on forest cover. However, charcoal production is based on a process of tree selection based on species and geographical position (next to the roads and cities). It is therefore an important driver of forest degradation (rather than deforestation). This selection of tree species is also widespread in the **forestry sector** where it is linked to illegal logging for precious timber and miss-respect of concessions management plans, responsible for subsequent forest degradation. The forestry sector is also linked to deforestation through too fast attribution of lands, leading to a rapid exploitation of the available timber, with lower selection of tree species. Few forest concession operators are fully compliant with legislation and operational requirements.

Direct drivers of deforestation and forest degradation in the ER Program area

Small scale agriculture

In Mozambique, small-scale agriculture is defined as subsistence agriculture, with most of the production being consumed within the household. It is a familial agriculture, practiced by smallholders in rural area. These smallholders’ farming systems are capital extensive and use few inputs: less than 5% of households use mineral fertilizers (Leonardo et al. 2015). The cultivation system is usually made in mix fields, including cereals (especially maize), tubers (cassava, sweet potatoes, yams), legumes (peanuts, beans) and horticulture, but the two main food crops are, by far, cassava and maize, for which the production techniques are defined by itinerant agriculture (Sitoe, Guedes and Nhantumbo, 2013). Maize and cassava play a key role in the population's diet: those two crops alone represent more than 50% of caloric intake across the country, according to FAO 2011 Food balance sheet (Mercier et al., 2016).

Just like at national scale and in central-northern Mozambique – where it accounts for, respectively, 65% and 72% of deforestation (Winrock International and CEAGRE, 2015) –

small-scale agriculture is, by far, the first driver of deforestation in the ER Program area (Mercier et al., 2016). It is related to the unsustainable land use practices including land clearing - continuous expansion of total area of cultivated lands for subsistence agriculture, based on “slash and burn” techniques.

In the ER Program area too, the two main food crops are cassava and maize, of which most of the production is also realized in mixed-fields (Mercier et al., 2016). The link between maize and cassava production and deforestation in the ER Program area is twofold (Mercier et al., 2016):

- First, it should be noted that in, the ER Program area, maize and cassava production cannot be separated, as small producers are used to culture associations and rotations within a same cleared plot. Most of the time, the first year of cultivation is restricted to maize because it is more demanding than cassava and needs to benefit from soil fertility; cassava is introduced in the same field from the second year.
- Second, the production pattern of maize (and associated cassava) follows a land expansion strategy. Savanna lands are characterized by poor soil fertility and, without any appropriate measures, they require a high amount of work for poor yields. Consequently, smallholders, looking for better soil fertility and optimization of their work productivity, deforest small part of forested land and grow on these new plots. Eventually, with soil fertility depletion or excessive presence of weeds, they abandon this field (called “*ruína*” in Mozambique) and open a new field next to it by deforesting a new part of forest: this dynamic explains continuous extension of deforestation around rural localities that are mostly inhabited by farmers.

For seven districts of Alto Molocué, Gilé, Ilé, Maganja da Costa, Mocubela, Mulelava and Pebane, and according to the production statistics elaborated by the District Services for Economic Activities (*Serviço Distrital das Atividades Económicas* - SDAE), maize and cassava account for more than 56% of the agricultural area. However, (Mercier et al., 2016) estimated this surface to reach 75% of total cultivated areas in the same seven districts. Both assumptions strengthen the position of the maize - cassava couple as the primary driver of land occupation in ER Program area.

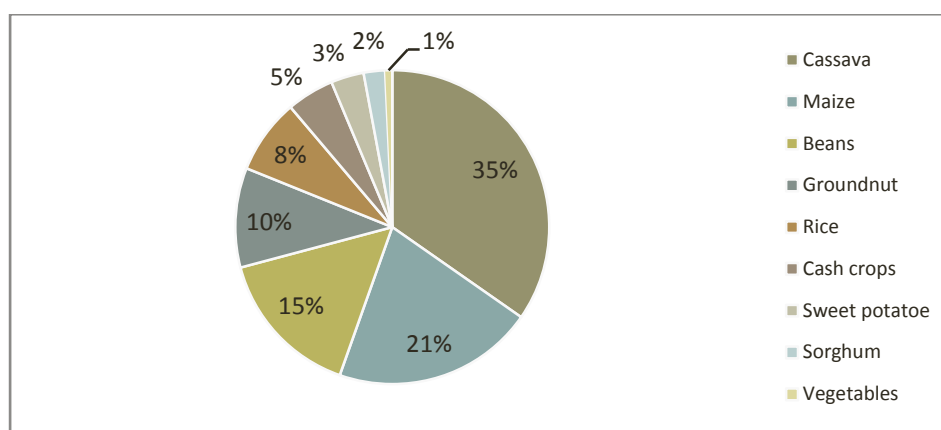


Figure 8: Breakdown of surfaces by crop in 2014 in the districts of Alto Molocué, Gilé, Ilé, Maganja da Costa, Mocubela, Mulelava and Pebane (SDAE)

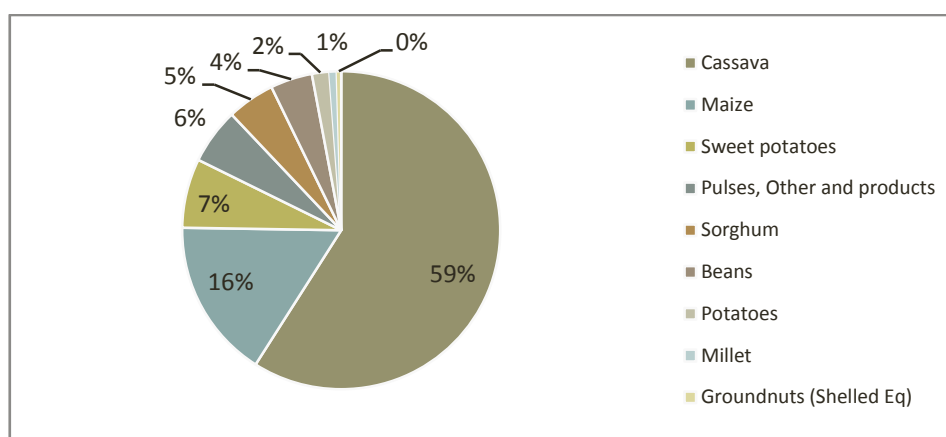


Figure 9: Breakdown of surfaces by crop in 2014 in the districts of Alto Molocué, Gilé, Ilé, Maganja da Costa, Mocubela, Mulelava and Pebane
Rongead & Etc Terra in (Mercier et al, 2016)

Just like in the rest of the country, where only 5% of households use mineral fertilizers, the main available resources for farmers in the ER Program area are their land and labor (Leonardo et al. 2015). Studies (Leonardo et al., 2015; Baudron, 2009) have shown that maize cultivation by smallholders is not constrained by land but by labor availability during peak season, especially for weeding. In the context of the ZILMP, with no access to external inputs (no animal traction, no mechanization, no fertilizers) and as long as forest land is available, the easiest way to increase labor productivity is to seek better natural fertility and lesser weed presence in newly cleared areas. Admittedly, smallholders' move towards extensification rather than intensification (Baudron et al. 2012) is the very basis of the deforestation mechanism we observe in the ER Program area.

Bioenergy and charcoal production

In Mozambique, the consumption of fuel wood is estimated to reach 9,3 and 5,5 million tones per year in, respectively, rural and urban areas. This represents a total consumption of 14,8 million tones per year at national level (Siteo, Guedes and Nhantumbo, 2013). The high demand through the informal markets for biomass energy in the urban areas has led to unsustainable exploitation of wood for charcoal in rural areas: according to (Winrock International and CEAGRE, 2015) bioenergy production accounts for 7% of deforestation and forest degradation in Mozambique and in Northern Mozambique.

However, according to (Mercier et al., 2016), in the ER Program area, bioenergy production is responsible for forest degradation almost exclusively. Indeed, households' fuel wood is composed of firewood in rural areas and of a mix of firewood and charcoal in urban areas. Firewood is produced through deforestation practices that are already accounted for in the deforestation process linked to small-scale agriculture: although it might also be constituted of deadwood harvested on woodlots or orchards near villages, the majority of it is derived from the trees that were cut for the opening of new agricultural fields. This assumption is significant as it means that fire wood production is not expected to have any additional impact, relatively to agriculture, on forest cover (Mercier et al., 2016).

However this is not true for the production of charcoal, of which 80% to 92% of the production is realized with practices causing additional forest degradation - independently from small-scale agriculture practices - especially around urban areas where the consumption is concentrated (Mercier et al., 2016). Hence bioenergy production remains a

significant driver of forest degradation: on average, charcoal production could impact 10,777 ha of the Miombo forest in the ER Program area¹⁰ (Mercier et al., 2016). On field surveys have shown that, in the ER Program area, few producers have made charcoal production their unique economic activity. It usually constitutes their secondary revenues source: 83% of charcoal producers also have another economic activity that often is, if not always, agriculture (Mercier et al., 2016). There are few intermediaries and they are usually small without motorized vehicle.

Box 3: Bioenergy and charcoal production in the ER Program area

In the ER Program area, charcoal production is concentrated next to the roads (on a 2km radius in average) and especially in areas characterized by a good availability of resources – that is, areas where forest cover is higher (Gilé and Maganja da Costa districts). The main supply basin in size and production is located around Alto-Molocué. The basins of Gilé, Maganja and Ilé are similar in size and production, which can be explained by their distance to main roads (Ilé) and to high forest cover (Gilé and Maganja).

According to (Mercier et al., 2016), charcoal producers make, on average, 21 kilns of 3 to 6 m long every year. Their yields are usually low, hardly reaching 20% (Falcão, 2008), with an averaged production of 1,6 bags of 48 kg per m³.

The *Brachystegia spiciformis* and *Julbernardia globiflora* species, which are the main species found in the Miombo forest in ER Program area, are preferred species used for charcoal production, thanks to their size, abundance and combustion properties. In addition, trees are selected in a small area located around kilns (25 meters radius in average) to ease wood transport. These processes of trees selection and geographically limited collection make charcoal production be a significant driver of forest degradation rather than deforestation. However, if too many producers are working next to each other, it might eventually lead to deforestation (Mercier et al., 2016).

Based on the production data and total consumption in the main district capitals of the ER Program area, (Mercier et al., 2016) deducted the average number of charcoal producer around urban centers and the impact of the production on forest cover in the seven districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa.

Table 12: Characterization of charcoal consumption in urban centers in the districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa

	Gilé	Pebane	Maganja da Costa	Alto Molocué	Ilé	Total
Number of inhabitants	21,969	22,535	13,438	37,437	15,570	110,949
Percentage of charcoal consumers in the city population	74%	63%	86%	93%	90%	
Mean number of bags consumed per month per households	2.8	2.6	2.6	2.4	2.7	

¹⁰ Based on data for the main urban centers in the ER Program area, which are the towns of Gilé, Pebane, Maganja da Costa, Alto Molocué and Ilé.

Equivalent in tons per year	3,707	3,684	3,036	7,634	3,363	21,424
Consumption of charcoal in t/year/household	1.5	1.6	1.7	1.3	1.4	

Mercier et al., 2016

Table 13: Characterization of the charcoal production in the supply basins of urban centers in the districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa

Urban centers sampled in the ER Program area	Gilé	Pebane - from the Miombo forest	Pebane - from mangroves	Maganja da Costa	Alto Molocué	Ilé	Average
Radius of the supply basin in km	22	17	3	17	29	17	22
Estimates of the number of producers working in the supply basin	580	185	98	401	930	729	487
Mean number of kilns per producer per month	19	18	29	11	29	22	21
Mean length of kilns in m	3.3	6.2	5.6	5.5	5.2	4.3	5.4
Mean percentage of kilns done with trees from slash and burn agriculture per producer per month	12%	10%	1%	8%	17%	8%	10%
Equivalent of the area of forest impacted or (degradation or deforestation) in ha/year	2,131	601	544	747	4,382	2,909	1,886

Mercier et al., 2016

Large scale agriculture

In Mozambique, commercial agriculture, or large-scale agriculture, is limited and represents, in 2013, only 5,7% of total cultivated lands in Mozambique – that is, 321 314 ha out of 5,634 millions ha of cultivated lands. According to (Winrock International and CEAGRE, 2015), large-scale agriculture, which is mainly driver by tobacco and cotton cultivation, only accounts for 4% of total deforestation in Mozambique. In the ER Program area, large scale agriculture is not identified as a significant driver either. In the districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa, large-scale agriculture is almost non-existent. Little large-scale exploitations were settled during colonization, especially in Pebane and Maganja da Costa; they entail coconut plantations, which have been abandoned since then, and irrigated perimeter for rice, which have partly been rehabilitated. In recent years, only one DUAT for large-scale agriculture was granted, to *Cister* company, for 250 ha of beans, in Alto-Molocué district. According to Mercier et al. (2016), large-scale exploitations are not responsible for current deforestation in those seven districts, with one exception in Ilé with the *Chá de Socone* tea plantation: created during colonization and abandoned during the war, it is now being restored through forest clearing.

It should be noted that, while commercial agriculture is not considered to be 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 the two additional districts of Mocuba and Gurué, added in the ER Program area (see section 3) large-scale agriculture is more significant. Additional research would be needed to assess the exact share of large-scale agriculture in deforestation and forest degradation in those districts. **However, although it may be higher in Mocuba and Gurué, the role played by large-scale agriculture in the ER Program as whole is still not expected to out-weight the role played by small scale agriculture, which is by far the main driver of deforestation in Mozambique in general.**

In addition, in Northern Mozambique, it is established that large-scale agriculture only account for 2% of deforestation (Winrock International and CEAGRE, 2015). Consequently, the intervention planned in the proposed ER Program, while being defined in a comprehensive approach, does not especially focus on large-scale agriculture – see *section 4.3 for more details in ER Program interventions*.



Figure 10: Restoration of an industrial tea plantation in Socone, Ilé District
Mercier et al., 2016

Forestry

The forestry sector is another driver of deforestation and forest degradation, although it is difficult to assess its exact share in these processes. In the ER Program area, the share of forestry in forest degradation and in deforestation can be explained by: (i) illegal logging, focused on specific rare and precious timber (forest degradation); (ii) a too rapid expansion of areas granted under simple licensing exploitation, with subsequent fast exploitation of non selected timber (deforestation); non sustainable exploitation practices in concessions and simple licenses areas (deforestation).

Box 4: Forestry in the ER Program area

In Mozambique, forestry is defined by forest concessions (allocation of lands to private companies for 50 years, which requires a precise management plan) and simple licenses (5 years permit for a maximal harvesting amount of 500 m³ per year on an area that should not exceed 10 000 ha; for Mozambican citizens only). In recent years, the total surface of land granted in concessions and simple licensing has significantly increased in Zambézia province: in 2011, operational concessions and simple licenses represented, respectively, 15% and 4% of the area covered by the seven districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa; in 2015, they represented, respectively, 31% and 21% of this area (Mercier et al., 2016).

The commercial exploitation of native trees species is done through a selective regime (species and sizes). Although the list of commercial timber species in Mozambique's legislation recognizes about 118 species, less than 10 species are actually exploited for commercial purposes, including Umbila (*pterocarpus angolensis*), panga-panga (*Millettia stuhlmannii*), chanfuta (*Afzelia quanzensis*), blackwood (*Dalbergia melanoxylon*) and mondzo (*Combretum imberbe*) (Sitoe, Guedes and Nhantumbo, 2013).

Forest degradation due to forestry is a different issue for the ER Program, as it is essentially driven by the international demand and failure of local law enforcement. As stated by (Mercier et al., 2016), in Mozambique, total exported wood quantities are higher than licensed quantities: most exports are illegal and, therefore, excluded from official reports (Mackenzie 2006; Mackenzie and Ribiero, 2009). Statistical analysis conducted by the Environmental Investigation Agency (EIA, 2014) estimated that, in 2013, 93% of all commercial logging in Mozambique was illegal; between 2007 and 2012 it was, in average, 81% of commercial logging (UT REDD+, 2016). More importantly, 50% of the quantities of timber shipped out of Zambézia is believed to be illegal (Ekamn, Wenbin, and Langa E. 2013; Mackenzie 2006; Mackenzie and Ribiero 2009). Illegality lies in different practices, from illegal harvest that do not respect management plans to violation of labor laws, violation of transport laws and illegal exports of unprocessed timber for first class species (Ekamn, Wenbin, and Langa E. 2013; Mackenzie 2006; Wertz-Kanounnikoff S., Falcão M.P., and Putzl L. 2013).

The impact of forestry on forest conservation should therefore be degradation rather than deforestation, as illegal logging and exploitation pressure are concentrated on a few species. Some cases of deforestation have nevertheless been identified by (Mercier et al., 2016), especially in areas under simple licensing where deforestation can reach up to 0,86% per year. This may be explained by the fast attribution of lands, leading to a rapid exploitation of the available timber, with lower selection of tree species.

Table 14: Concession or simple license status and deforestation rate in the districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa

Land cover classes	Area	2011		2015	
		Concessions	Simple licenses	Concessions	Simple licenses
Total area (ha)	3,865,062	594,925	157,794	1,208,748	799,292
Proportion of the area	100%	15%	4%	31%	21%
Forest cover in 2013 (ha)	1,983,784	461,045	82,829	766,025	348,119

Proportion of the forest	100%	23%	4%	39%	18%
Historical deforestation rate between 2010-2013	-0.86%	-0.39%	-1.12%	-1.09%	-1.75%

Mercier et al., 2016

In addition, in Mozambique and in Zambézia province especially, current practices are based on short cutting cycles that jeopardize logging sustainability: although it is acknowledged that a 30 years rotation would be necessary in the Miombo forest to ensure regeneration (Mackenzie and Ribiero 2009), management plans are usually based on a 20 years rotation, or less - often 5 to 10 years rotation. (EIA, 2014) estimates that, with a linear evolution of the 8% exploitation growth rate, the exploited species stocks would be exhausted within 15 years (Mercier et al., 2016). With this regard it should be noted that, in 2015, DINAF held a nation-wide evaluation (audit) of 154 forest concessionaires and 727 simple license holders to assess their compliance against a set of criteria based primarily on national legislation. This first evaluation, which also serves as a baseline of the performance of forest operators for the Project, revealed low levels of compliance of the sector with national legislation (MozFip, PAD). In the same way, according to a comprehensive evaluation of Mozambique's forest concession operators in February 2016, only 7 concessions (5%) were fully compliant with legislation and operational requirements. Most forest management plans are outdated or not implemented, technical capacity is low and concessions lack of investments in regeneration, reforestation or protection activities (IDA, 2017).

Indirect drivers of deforestation and forest degradation

The analysis of the direct drivers of deforestation and forest degradation shows that these processes have complex roots that extend across different sectors of development. The direct drivers of deforestation are all interlinked with indirect and underlying causes that are both economic and social. They are related to population growth, poverty and the demand for timber products on the international market and include: (i) limited access to high productivity technologies by much of smallholders or means to implement them including sparse extension network; (ii) poor governance and weak enforcement of land, forests and environmental legislation; (iii) demand for food and wood products in the domestic and international markets and inadequate employment and income opportunities in the rural areas.

Poverty is the most important underlying cause of deforestation, with small income and poor access to alternative source of income for rural population being primary drivers for their unsustainable exploitation of forest. Their social environment is meaningful, forest and natural resources being used for traditional and hunting purposes – see section 3.

In this matter, **uncontrolled wildfires should also be noted as a significant driver of deforestation and forest degradation in Mozambique and in the ER Program area.** In the Northwest and central regions of Mozambique, where the ER Program area is located, wildfires impact 73,6% of the area (Taquidir, 1996, cited in Zolho, 2005). This may have direct consequences on vegetation composition and carbon cycles, both influenced by fires frequency and fires intensity. Although not all the woody species are equally sensitive to fire, most species present in the ER Program area - especially *Brachystegia* and *Julbernardia* - and, generally speaking, Miombo woodland, are highly susceptible to fire: late season and

high frequency burning may, in particular, inhibit their regeneration potential (Sitoe, Guedes and Nhantumbo, 2013). It is worth noticing that wildfires are, most of the time, of anthropogenic nature: they are triggered for the opening of new agricultural fields, for the production of charcoal or for hunting purposes (Sitoe, Guedes and Nhantumbo, 2013). Today, wildfires are one of the most significant ecological factors that affect and regulate Miombo forests. Several ER Program planned interventions therefore focus on fire management – see *section 4.3*.



Figure 11: Main indirect drivers of deforestation in the ER Program area

In the same way, demography and high population growth can also account for a significant part of deforestation and forest degradation. The impact of growing demography on forest degradation and on deforestation in the ER Program area is linked to the fact that the main identified drivers of deforestation are anthropic activities. (Mercier et al., 2016) identified four major demographic forces in the ER Program area:

- Natural demography, especially from the historical Molocué settlement: Cultural and social organization, based on low centralization and little accumulation strategies (whether in the form of “plantation” or “cattle”), favors a diffuse population and extensive land use;
- Resettlement of people displaced by the war: In some scarcely populated areas and still highly forested, we can observe households re-opening plots that had been occupied a few decades ago, as attested by the presence of mango and cashew trees within the forest;
- Extension of coastal populations: coastal settlements - which are denser and have received influx of people during the war - supplied by international aid, are redeploying towards forest areas. This is especially true for southern area of the GNR;
- People who settle for mining and gather the typical characteristics of colonization as “veins” farms. They are especially present in the area northeast of Gilé

Table 15: Population density and deforestation per inhabitant for each district of the ER Program area (2005(2007) – 2014) – mangrove excluded

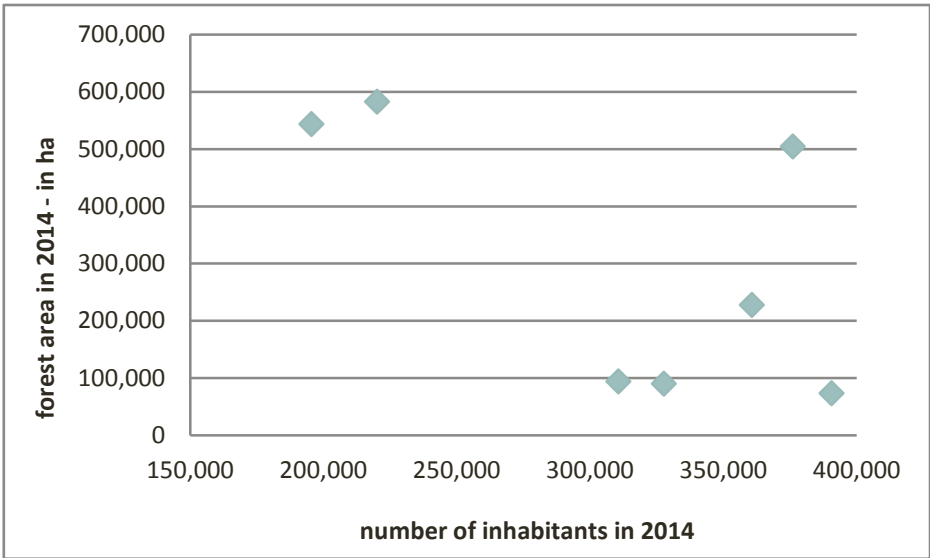
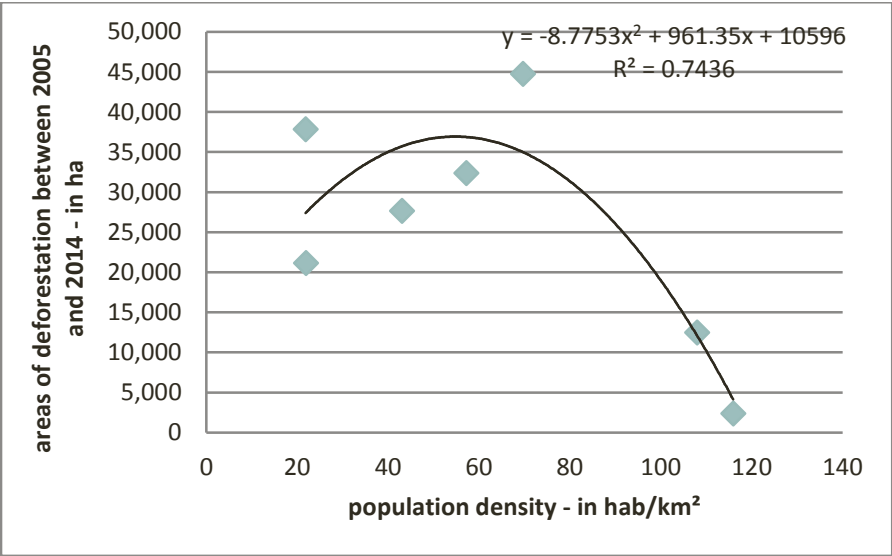
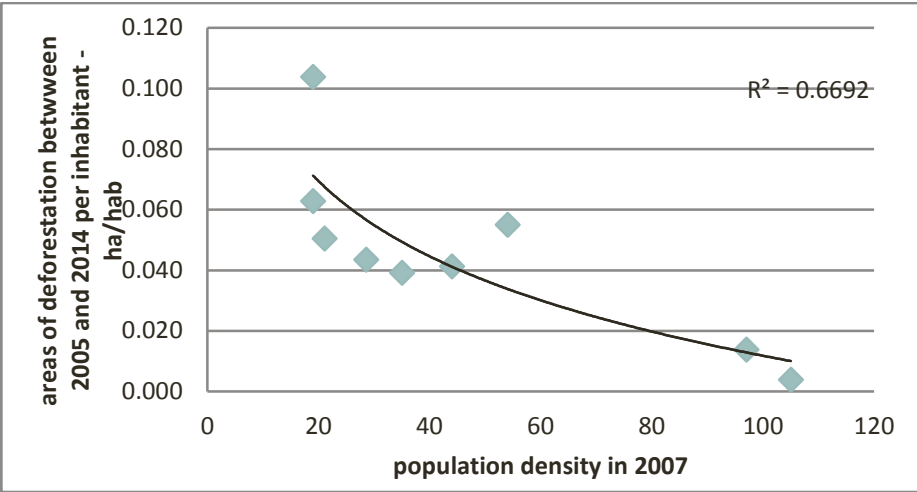
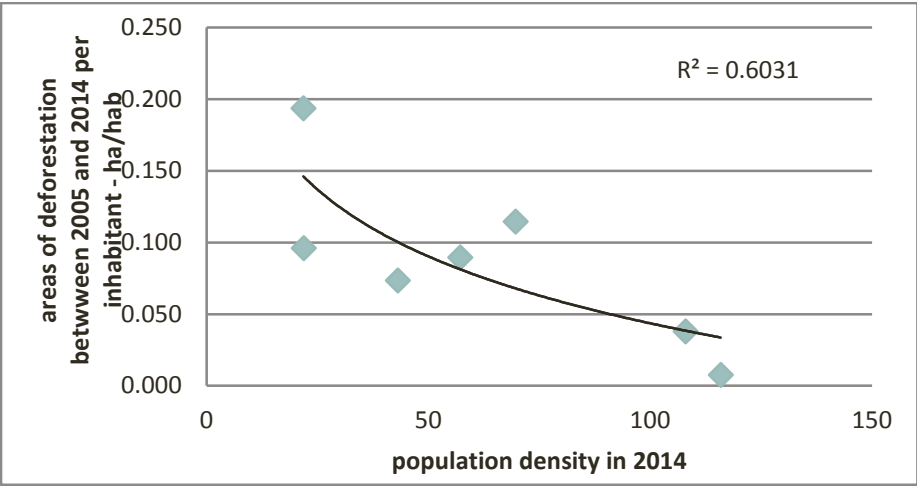
District	District Area (ha)*	Population 2007**	Population density in 2007	Forest Area in 2005*** (ha)	Population 2014**	Population density in 2014	Forest Area 2014 (ha)***	Areas of deforestation per inhabitant in 2014 - in ha/hab***	Areas of deforestation per inhabitant in 2007 - in ha/hab***
Alto-Molocué	630 812	275 155	44	259 960	360 604	57	227 596	0,090	0,041
Gilé	896 516	171 091	19	581 217	195 349	22	543 366	0,194	0,104
Ilé	303 411	293 054	97	102 624	327 558	108	90 147	0,038	0,014
Maganja da Costa	267 925	280 000	105	96 501	310 471	116	94 134	0,008	0,004
Mocubela	499 234	105266	21	327 213	na	na	319 636	na	0,051
Mulevala	261 685	74665	29	133 979	na	na	126 358	na	0,044
Pebane	1 005 479	187 289	19	603 705	220 040	22	582 546	0,096	0,063
Mocuba	873 300	303 973	35	549 006	375 934	43	504 246	0,074	0,039
Gurué	560 600	301 034	54	100 815	390 419	70	73 144	0,115	0,055
Total ER Program area	5 298 962	275 155	51	2 755 020	na	na	2 561 173	na	na
Total Zambézia	10 347 800	3 890 453	38	na	4 682 435	45	na	na	na

* Mercier et al., 2016

** Data extracted from (INE, 2007a)

*** Data from Etc Terra for ER-PD (2017)

Population data are not available before 2007 – we used 2007 data (most recent population census)



Admittedly, with increasing demography in the ER Program area, pressure on forest is expected to rise, increasing deforestation and forest degradation rates, while the available lands will be reduced in some districts; this may intensify rural migration towards urban centers, with a subsequent increase of the demand for charcoal (Mercier et al., 2016).

No other factor has been identified as significant enough to be considered as a driver of deforestation in the ER Program area. It should be noted that mining in the ER Program area only focuses on two commodities: tantalum and heavy sands. Although a few concessions have been granted for tantalum exploitation, the deforestation impact of tantalum mining concessions is low, as the exploitation pits were opened a long time ago. In the same way, although two heavy sand prospection licenses were successful in the ZILMP area, exploitation has not started yet – and is not expected to start in near future. Likewise, urban sprawling is not considered as a direct driver of deforestation in the ER Program area - no plan at provincial level for new transport infrastructure in the ZILMP area and new houses are usually implanted on fields that already are opened for agriculture. However, urban extension reveals a growing demography that has to be sustained by additional agriculture production (Mercier et al., 2016).

Existing policies that can lead to conservation or the enhancement of carbon stocks

National scale

At national scale, Mozambique benefits from a complete and thorough legal framework with regards to the environment, natural resources, protected areas, forests and lands. This framework and the associated policies and laws that are relevant for forest conservation and the enhancement of carbon stocks are described in section 4.5. This subsection describes complementary programs, projects and initiatives related to REDD+ and upon which the ER Program will partly rely for its implementation.

◆ Agricultural sector

The agricultural sector is both a key for national economy and the main driver of deforestation in Mozambique. The Ministry of Agriculture and Food Security (*Ministério da Agricultura e Segurança Alimentar*, MASA) has shown its commitment, those past few years, to raising rural incomes and improving food security. This has especially been obvious in the PEDSA (Governo de Moçambique, 2011a), which aims to promote an integrated prosperous, competitive and sustainable agriculture sector, defining as one of its top 5 objectives “*the use of land, water, forestry and fauna resources in a sustainable way*” (UT REDD+, 2015a).

Recognizing the increasing importance of building resilience to climate variability and change, MASA has also developed the National Adaptation Program for Action (NAPA) (Ministry for the Coordination of Environmental Affairs, 2007), with actions aimed at mitigating both longer-term climate and shorter-term weather risks, including in agriculture.

◆ National Program for Sustainable Development and the *Projecto Floresta em Pé*

To implement its vision, MITADER formulated a new sustainable rural development program known as the National Program for Sustainable Development, which is a vision of integrated rural development guided by the priorities of the 5-Years Plan. The National Program for Sustainable Development provides for an integrated development model for rural hubs, developing infrastructure and revitalizing rural production, with five pillars: improved access

to energy; capacity development and technology transfer; infrastructure for market access; improved access to water and sanitation; and improved access to financial services.

This is

bolstered by five complementary projects in the areas of Conservation (“MozBio”), Land Rights (“Terra Segura”), Environmental Protection (“*Ambiente em Movimento*”), Integrated Centers for Services (“*Novas Centralidades*”), and Standing Forest (“*Floresta em Pé*”) (UT REDD+, 2016).

The project *Floresta em Pé*, more specifically, focuses on five key principles: conservation and valuing of forests; financial sustainability of forest based activities; building national capacity; transparency and access to information; and climate change mitigation. Its vision, to be enshrined in a new forest policy, is that of “prosperous forests providing goods and services to society (local communities, natural and legal persons), contributing to the sustainable development of Mozambique.” The overall objective of the project is thus “to promote the protection, conservation, creation, use and valuing of forest resources in their diversity of goods and services in a rational, responsible and transparent manner, to the economic, social and ecological benefit of Mozambicans in a framework of sustainable development, and to build resilience to climate change.” To achieve its overall objective, *Floresta em Pé* has developed seven Specific Objectives (SO):

- The legal and institutional objective relies on the updating and adaptation of forest policy and legislation to changes in the sector and on the creation of an administrative structure able to implement them in an effective, efficient, and transparent manner. A New Forestry Law is currently being designed to replace the forestry elements of the 1999 Forest and Wildlife Law – it is reaching an advanced pre-publication stage. The Land Law may also be revised during 2017/18.
- With regards to legality and transparency, one of the objectives is to introduce systems and mechanisms that are open and effective to strictly apply the law on all, with the active involvement of communities, forest operators and civil society in the process.
- For conservation purpose, the project aims to create alternatives to unbridled exploitation of the forest through conservation activities and the increase of forest stock.
- The private sector should be supported through the development of the national timber industry in order to diversify and maximize the value chains in the forestry sector, while mitigating the impact of the restructuring of the sector.
- As for local communities, the project promotes their development by supporting community management of forest resources - particularly of non-timber forest products.
- The project supports the creation of jobs in the forestry sector, through diversification of goods and products.
- The financial objective is based on the identification and application of international funds and national revenue sources in the protection, conservation, presentation, creation and sustainable use of forests.

Those objectives are also meaningful components of the proposed ER Program in Zambézia and are observed and pursued in its various planned interventions – see section 4.3.

◆ **MOZFIP - Mozambique Forest Investment Project - USD 24 millions**

The Forest Investment Program (FIP) provides financing for REDD+ efforts in developing countries in order to address key drivers of deforestation and forest degradation with a focus on transformational change. In Mozambique, the FIP is made up of different projects, including the Mozambique Forest Investment Project (MozFIP) and the Mozambique Dedicated Grant to Local Communities (MozDGM).

MozFip is a five years program (2016 – 2020) financed by the World Bank IDA, a Multi Donor Trust Fund and the Climate Investment Fund (CIF) that was endorsed in [June 2016](#) with a total budget of USD 47 millions. The main objective of MozFip is to improve the practices and enabling environment for forest and land management in targeted landscapes in Mozambique. Guided by the National REDD+ Strategy and the Government strategies, MozFip represents the GoM's ambition for transformational change to address the drivers of deforestation and promote sustainable rural development. It is envisioned as a large-scale, modular framework for implementing the National REDD+ strategy across the country, including ambitious reforms in the forest sector. It comprises three components:

- **Component 1 - Promoting Integrated Landscape Management:** The goal of this component is to promote integrated landscape management, including in the Zambezia landscapes (where the ER Program is located) to address the most important drivers of deforestation while reducing rural poverty. It will support the regularization of land tenure, promote land-use planning, integrated landscape management tools, multipurpose planted forests, agroforestry systems, and sustainable charcoal production;
- **Component 2 - Strengthening the Enabling Conditions for Sustainable Forest Management:** The objective of this component is to improve the enabling conditions in the forest sector to promote sustainable forest management. Activities will promote the development of the national land use plan, strengthen forest governance and promote sustainable forest management initiatives;
- **Component 3 - Project Coordination and Management:** This component includes activities related to project coordination and management, fiduciary management, consultations, safeguards management, M&E, training and communications. It will also finance the additional costs of FNDS related to project management.

As stated in component 2, MozFip will be crucial for the implementation of the ER Program in Zambézia, which it will partly contribute to financing.

The FIP also encompasses a Dedicated Grant Mechanism (DGM), to provide grants to enhance the capacity and support specific initiatives of Indigenous Peoples and Local Communities (IPLCs) in FIP pilot actions. This will form the MozDGM project.

◆ **MOZDGM - The Dedicated Grand Mechanism in Mozambique - USD 4,5 millions**

The Dedicated Grant Mechanism (DGM) for Local Communities¹¹ is part of a global program - the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities (DGM)

¹¹ Mozambique is one of the new pilot countries, following Brazil, Burkina Faso, Democratic Republic of Congo, Peru, Indonesia, Ghana, Lao and Mexico.

under the FIP. Its objective is to provide grants that enhance the capacity and support specific initiatives of local communities in FIP pilot countries.

Acting as a funding mechanism, but with independent governance and decision-making, the DGM in Mozambique (MozDGM) has a 5-year project execution period. In July 2016, a project concept note was prepared and shared with the interim NSC to support discussions about project components and activities.

MozDGM will promote synergies between MozFip and other REDD+ activities in Mozambique, including with the ER Program. Its main objective is “to strengthen the capacity of local communities, community-based and civil society organizations to participate actively in sustainable forest and land management and REDD+ processes at the local, national and global levels”. It is being prepared as a stand-alone project that complements the MozFIP and operates at two levels: the national level (focusing on capacity building and institutional strengthening) and the landscape level, focusing on implementation of activities in the two selected landscapes: Cabo Delgado and, more importantly, Zambézia (where the ER Program is located). It is designed to promote the active participation of local communities in Mozambique’s Forest Investment Program.

The final components of the Project still have to be validated, but the main provisional components are:

- **Component 1 - Capacity Building and Strengthening for Sustainable Natural Resources Management:** This component will finance capacity-building and institutional-strengthening activities for communities, community-based and civil society organizations¹² across the country;
- **Component 2 - Promoting Sustainable Local Community Initiatives:** This component is divided into two parts: direct grants to community organizations and technical assistance to help grantees with implementation and reporting.

MozDGM will operate at two levels: (i) the national level, focusing on capacity building and institutional strengthening and (ii) the landscape level, focusing on the implementation of activities in the two selected landscapes, including in the ER Program in Zambézia.

Zambézia province

◆ LANDSCAPE PROJECT - Agriculture and Natural Resources Landscape Management project (2016 – 2021) -USD 40 millions

The Agriculture and Natural Resources Landscape Management project (the “Landscape project”) was approved in June 2016 for a total budget of USD 40 millions. It covers an area of 63,397 km² and a total population of 2,48 million inhabitants of which 70% are rural and 57% are below the poverty line.¹³ Its main objective is to contribute to improving the livelihoods of targeted rural households and the sustainability of natural resources in its area of implementation. **A strong emphasis is put on supporting new private sector investments in agriculture and on creating new value chains that can integrate local**

¹² Natural Resource Management Committees (CGRNs), Associations and Unions could be considered community-based organizations (CBO).

¹³ Within the Project landscape, the poverty incidence in the five Zambézia districts is 63%, and in the five Nampula districts is 49%.

farmers and thus diversify and enhance their incomes. It focuses on the provinces with high levels of poverty and agriculture and forestry potential in the central and northern region of the country: the project covers 5 districts in Nampula province and 5 districts in Zambézia province – which are all part of the ER Program area.

This objective will be achieved by promoting inclusive and sustainable agricultural and forest-based value chains through expanding the network of Small Emerging Commercial Farmer (SECF) and supporting key investments of agribusinesses along the value chains, improving land tenure security and strengthening natural resources resilience, improving rural infrastructure and enhancing institutional performance in integrated landscape management. The project has 4 components:

- **Component 1 - Agriculture and Forest-Based Value Chain Development:** The objective of this component is to increase smallholders and SECFs' participation in key agriculture and forest-based value chains;
- **Component 2 - Securing Land Tenure Rights and Increasing Natural Resources Resilience:** This component is based on the promotion of integrated landscape management, securing land tenure regularization at the community and individual levels, and restoration of critical natural habitats;
- **Component 3 - Support to the UGFI and provincial implementation units:** This component includes support for project coordination and management at provincial level, including fiduciary and safeguards management, monitoring and evaluation (M&E) and communications.
- **Component 4 - contingency emergency response:** This component aims to support the recipients in case of potential disaster-recovery need by providing immediate response to an eligible crisis or emergency.

The “Landscape project” is fully aligned with the ER Program, to which it is expected to highly contribute. The 5 districts of Zambézia covered by the project are all part of the ER Program area. The project encompasses 450,000 rural households, who mostly use traditional, low productivity agriculture practices: reducing “slash and burn” agriculture through the strengthening of value chains, which is a core objective of this project, is also a crucial component for and complementary to the ER Program initiatives.

In addition, through its component 4, this project has an important land rights dimension: it will support the identification of land registration of collectively-held community “land use and benefit rights” (or DUAT, the State-allocated right over land awarded to all land users); and it will support the titling of DUATs of individual households within these communities.

These activities create the tenure security needed for local people to take part in new economic activities and value chains that are also supported by the project. They are also essential for a successful ER Program (Tanner, 2017a) – *see section 4.4 on land tenure assessment.*

◆ **MOZBIO - Conservation Area for Biodiversity and Development Project (2016 – 2018) - USD 46,32 millions**

The Conservation Area for Biodiversity and Development Project (Mozbio) project is a 4 years project funded by the World Bank through the International Development Association (IDA) and the Global Environment Facility (GEF) for a total budget of USD 46,32 millions. It is implemented in Mozambique by the National Agency for Conservation Areas (ANAC) and Biofund. Its overall objective is to increase the effective management of conservation areas and to enhance the contribution of these areas to the living conditions of surrounding communities. It is expected to directly benefit local people living within and around the targeted conservation areas through the promotion of sustainable livelihood activities. The project is based on 5 components:

- **Component 1 - Institutional strengthening for conservation areas' management:** The objective of this component is to improve the capacity of the administration of Mozambique to develop and influence conservation and tourism policies and regulations, strengthen coordination and management of the national conservation areas system and critically endangered species conservation, increase the financial sustainability of conservation areas and tourism revenues, improve monitoring and evaluation systems and support communication strategies.
- **Component 2 - Promotion of tourism in conservation areas:** The objective of this component is to increase revenues and the number of beneficiaries from tourism-related economic activities in conservation areas. This component will provide support to the Mozambican administration and selected public-private institutions to address several barriers to nature-based tourism development and to promote sports hunting management and revenues generation in Mozambique.
- **Component 3 - Improving conservation areas management:** The objective of this component is to strengthen the management of key conservation areas and wildlife surveys and monitoring.
- **Component 4 - Piloting sustainable community livelihoods around conservation areas:** The objective of this component is to improve and strengthen natural resource-based livelihoods of communities living in and surrounding conservation areas through (i) enabling the conditions for sustainable management of natural resources by local communities; (ii) promoting sustainable livelihoods within and around conservation areas; (iii) promoting sustainable forest management within and around selected conservation areas, in order to reduce deforestation and forest degradation through the carrying out of activities related to agroforestry, conservation agriculture, promotion of non-timber forest products and environmental education, as well as the promotion of energy efficient charcoal making kilns.
- **Component 5 - Project management, monitoring and evaluation:** The component will provide support for managing and coordinating the project and building its procurement, financial and safeguards management, monitoring and evaluation capacity.

With regards to the ER Program, the component 4 of the Mozbio project is crucial. It is applied in the surroundings of the GNR, located in the ER Program area, in the two districts of Gilé and Pebane, where pilot activities are implemented to address the main drivers of deforestation, promote sustainable forest resource management and sustainable economic development.

The activities carried out in this context are fully complementary to the ER Program ambitions and are expected to highly contribute to the forecasted emissions reductions:

- (i) Law enforcement and enhanced protection of biodiversity in and around the GNR through capacity strengthening and improved surveillance;
- (ii) Development of community management plans for non-timber products;
- (iii) Promotion of conservation agriculture practices and agro-forestry;
- (iv) Promotion of improved techniques for charcoal production;
- (v) Promotion of a sustainable use of forest based on natural regeneration;
- (vi) Valorization of the cashew value chain to increase smallholders' revenues.

According to (Tanner, 2017a), it will be important to conduct community delimitation exercises of the communities that live close to and around the GNR, in order to determine more effectively how they should be organized around key activities and how they are able to participate in the distribution of roles and responsibilities and in the distribution of benefits that accrue from the conservation activities that will be developed over the life of the ER Program.

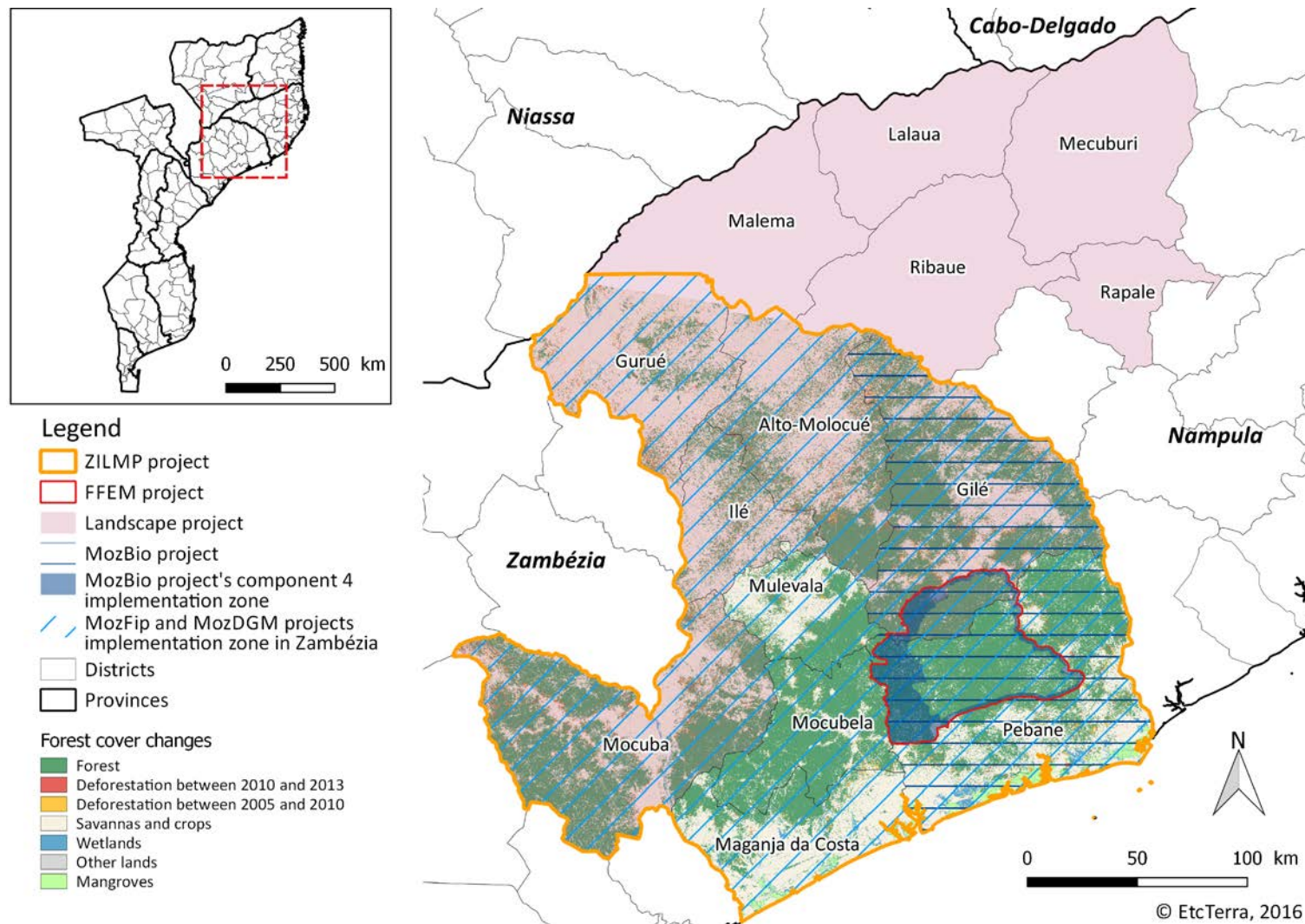


Figure 12: Map of other REDD+ project in the ER Program area with forest cover change

4.2 Assessment of the major barriers to REDD+

The barriers to applying REDD+ initiatives and therefore reducing deforestation are at the same time political, financial and institutional. From a more practical point of view, the application of REDD+ initiatives is also undermined by the lack of tangible information as a base for REDD+ projects designing. At local scale, with regards to the agents of deforestation themselves, the main barriers include poverty and the lack of alternative sources of income, among other factors.

Political, institutional and financial barriers to REDD+

From a political and institutional point of view, it should be noted that REDD+ implies high commitment from the government in order to meet its requirements. Although strong progress has been made in Mozambique, there still is room for improvement of the political and institutional framework for REDD+ and ER Program implementation.

Legal framework, law implementation and institutional challenges - Admittedly, Mozambique has a progressive legal framework for the promotion of sustainable forest management. However, its implementation has had mixed success. Transparency and, especially, the accountability to the law by private sector entities and government officials is a challenge, particularly in the timber industry. The current scenario is characterized by irrational and unsustainable use that occurs in the exploration and illegal export, mainly marked by the widespread breach of the rules and procedures of the law (MITADER, 2015).

Current forestry legislation clearly defines economic, social, ecological and institutional objectives and strategies to achieving them. All objectives are underpinned by principles of sustainable use, ecological integrity, creation of positive impact to the national economy and ensuring benefits to forest dependent communities. An interesting example of this is the GoM requiring 20% of timber royalties to return to communities for rural development purposes¹⁴. However, implementation of these various mechanisms is unclear or ineffective. There are no systems or mechanisms in place to ensure that the reforestation surcharge is spent, or spent effectively and, similarly, there is also limited oversight of the proper delivery of the community share of royalty proceeds (IDA, 2016).

In addition, inter-institutional and sectorial collaboration is sometimes not performing enough. The coordination between the various sectors involved in REDD+ and in the implementation of the ER Program – such as environment, land, agriculture, energy, etc. - is crucial at all levels, from the national level to the provincial and district ones.

Those weaknesses indicate the need to review and assess the implicit and explicit incentives in the current system, as well as the costs and barriers associated with compliance. Increasing transparency and the equitable application necessary to ensure that access to opportunities and distribution of benefits is seen as fair to all stakeholder groups (IDA, 2016). Better enforcement and improved incentives for compliance should result in a more consistent revenue base for funding GoM actions and more sustainable use of the forest resource.

¹⁴ See section 4.4 on Land Tenure Assessment and section 15 on Benefit Sharing Mechanisms for more details.

In this sense, it should be noted that Mozambique has shown is full understanding of the challenge through various measures that are expected to tackle this issue, including the creation of the MITADER. In the same way, the legal framework associated to the management of forest in Mozambique is currently being reviewed. Indications from the first drafts are that the progressive nature of existing legislation with its focus on community rights and promoting partnerships with incoming investors is enhanced in the new law, which also introduces concepts like FPIC and clarifies the licensing and concession process.

Financial barriers - Another barrier to REDD+ in Mozambique is a financial component, characterized by a lack of upfront financing to support the adoption of new agriculture, forestry and charcoal production methods that are expensive and not commonly adopted as business as usual in the ER Program area. Developing innovative models for forest conservation, low emissions agriculture and sustainable development requires substantial investments to generate results in the long term. Yet, credit in the country is both expensive and difficult to obtain for many local operators. These financial barriers also constrain the ability to mobilize enabling investments that are needed to increase capacity, promote knowledge exchange and attract responsible businesses from the private sector and institutions committed to sustainable forestry production and deforestation free agricultural supply chains (IDA, 2016).

Lack of relevant data and information sharing

Poor accuracy of data on forest - The forest sector faces significant challenges in the provision of information, with the lack of timely, consistent and accurate data to support sound, evidence-based policy decision making and planning; limited information flow from central level to the district or the ground; insufficient data sharing and public access to data and information to ensure transparency; and the lack of an information system that has been systematically implemented at the district or field level (IDA, 2016).

With regards to those barriers, a few measures shave already been undertaken and should be underlined. Notably, a Forest Information system is currently being developed, with FAO technical support and financial backing from the MozFip program. Its consolidating is actually part of the ER Program planned interventions, as described in section 4.3. This information system is designed to store data on forest and wildlife licensing, compliance efforts, contracts and elaborate reports.

An important module to be added to the information system is the MRV for forests, a specific tool required by the REDD+ process, for the measurement, reporting and verification of a country's forest, and associated GHG emissions and removals, including their changes over time. *This, as well as a national forest inventory, are currently being designed in Mozambique and are expected to be concluded by end-2017. They are currently funded by the FCPF.*

Poor information sharing with agents of deforestation - In the same way, there are few platforms and consistent information sources that allow the involvement of civil society on policy implementation, lessons and challenges. The challenge is to improve timely availability of information to give opportunity for an informed response by communities. Several case studies (e.g. Nhantumbo and Salomao, 2009) have documented that this process is often not implemented according to regulations and some parties might use it to further their interests. Better information systems and better dissemination would enable stakeholders to participate

in improving the responsiveness of GoM institutions and create more incentive for greater compliance (IDA, 2016).

On that matter, it is worth noticing that **the ER Program includes the creation, updating and continuous improvement of an interactive platform (GIS platform), available [online](#), relating all projects, activities and relevant data for forest conservation in the ER Program area.** This platform will be managed by the GoM thanks to data and information collected on the ground, with the support of the Zambézia Multi-Stakeholders Landscape Forum who will help provide part of the information. The creation and functioning of the Zambézia Multi-Stakeholders Landscape Forum actually is another meaningful initiative with regards to information sharing and stakeholders' involvement - *see section 5 for more details*. The ER Program will also support it.

Weakness in land zoning and tenure rights - Community land delimitation is a key instrument to reduce land conflicts and increase communities' land tenure security. It is also important to create a base of community management of land and natural resources, and set the stage for local agreements with investors and new programs such as the ER Program. Despite recent and significant progress, with initiatives led by civil society organizations in cooperation with the GoM, land zoning and tenure right are not fully operational yet. Land zoning and secured tenure rights are believed to be essential for reducing deforestation as they enable stakeholders to invest in other practices on their own lands, and to assess performance with regards to emissions reduction - *see section 4.4 on Land Tenure Assessment and section 15 on Benefit Sharing Mechanisms for more details*.

This is a critical point that will be addressed in the ER Program and, especially, through the Agriculture and Natural Resources Landscape Management project (IDA, 2016).

Barriers linked to the agents of deforestation

With regards to the barriers to REDD+ linked to the agents of deforestation themselves, as stated earlier, the main barriers remain poverty and the lack of alternative sources of income for rural population who is highly dependent on forest resources for their day-to-day life from an economic and social point of view – *see section 3*. Poor professional and economic opportunities linked to a limited access to credit may undermine the adoption of any other practices based on the reduction of forest exploitation, if this is not proven as economically beneficial for rural communities living in the ER Program area. This is also intensified by the difficulty to achieve compliance, at local scale, with forest law, as well as by the lack of strong community-based organizations, which undermines coordination of planned activities on the field.

Economic and financial viability of production, transformation and use of goods and the integration of actions that lead to reduced deforestation and forest degradation that are socially and culturally adapted to the local context are therefore meaningful components of Mozambique REDD+ Strategy and the ER Program.

4.3 Description and justification of the planned actions and interventions under the ER Program that will lead to emission reductions and/or removals

ER Program comprehensive approach: integrated landscape management program

The ER Program will be based on an integrated landscape management approach that recognizes the link between agricultural development, natural resources management and governance, both in terms of institutional management and practical implementation. This approach also implies that interventions have to be applied at the scale of the nine districts altogether in order to have efficient local impact on rural poverty and natural resources sustainability. This approach is fully aligned with Mozambique's national REDD+ Strategy, which aims to promote integrated cross-cutting interventions to reduce carbon emissions associated with land use and land use change through adherence to the principles of sustainable management of forest, contributing to global mitigation and adaptation efforts to an integrated rural development.

The ER Program will be implemented through a cooperative approach combining national policies components, programs and projects activities across various levels of the government (at national, provincial and district levels) and multiple stakeholders (government, smallholders, communities, private sector, NGOs, etc.) to maximize funds and institutional capacity. The ER Program is based on a comprehensive approach, taking into account the policies and activities described in section 4.1. It will therefore combine (i) "command-and-control" policies for land use to (ii) positive incentives for stakeholders to adopt new practices based on a sustainable use of forest resources (UT REDD+, 2015a).

The proposed ER Program integrated approach aims to address the drivers of deforestation and degradation while generating rural development benefits by combining land-based economic activities with the management and conservation of natural resources, as shown in the crosscutting interventions described in the figure below.

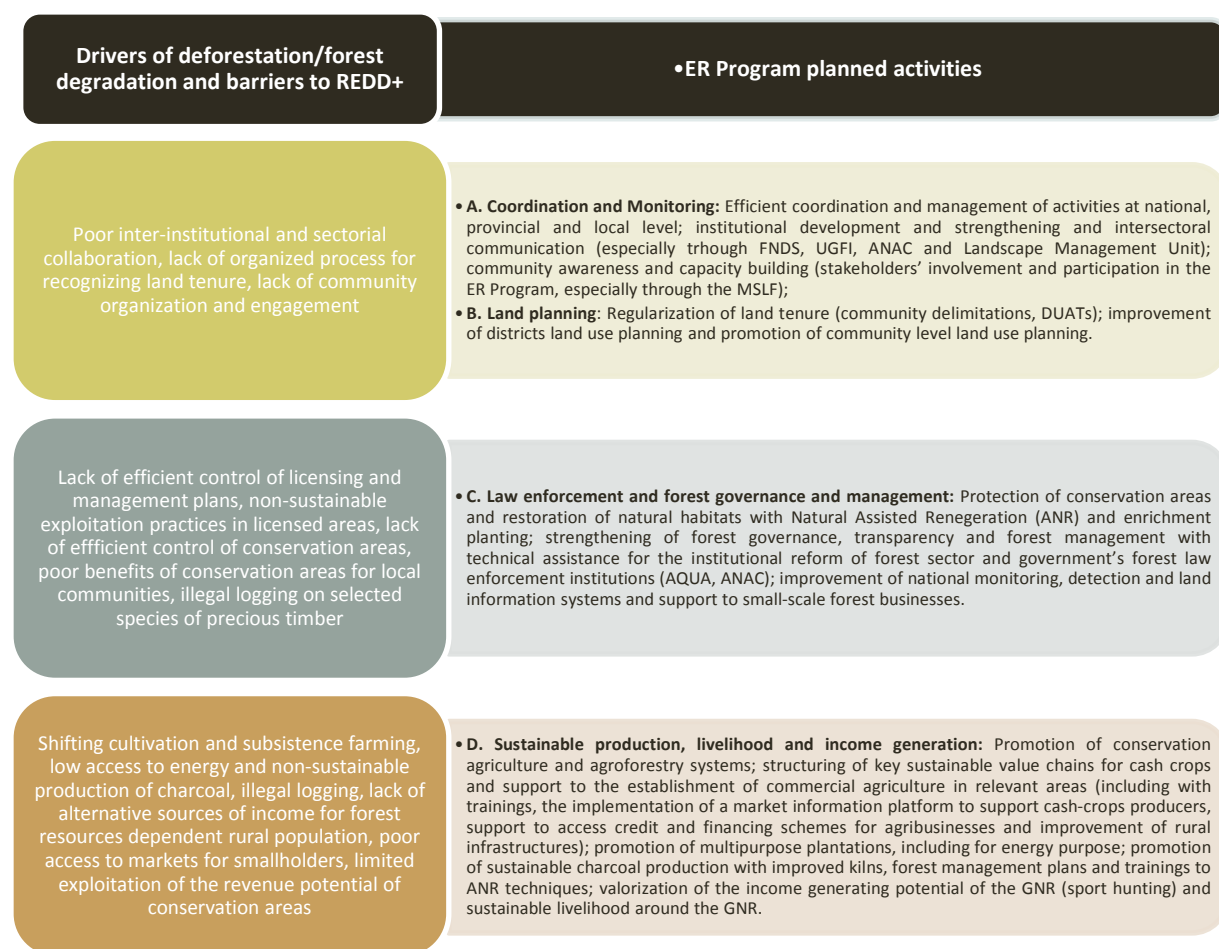


Figure 13: Cross-cutting interventions and topics to be covered in the ER Program

Overview of the prioritization of the ER Program activities

The prioritization of the ER Program activities depends on various factors, including their implementation risks and potential benefits. Most of the implementation risks of the ER Program interventions can actually be assessed through Reversal risks – *see section 11 for more details on those risks and their assessment*. As stated in section 11, key risks associated with the ER Program are political and financial risks, including the risk of the lack of long-term effectiveness in addressing the underlying drivers of deforestation and forest degradation.

Accordingly, the priority activities are those already funded through existing projects and initiatives that were listed in section 4.1.

The risk related to the difficulty to address the underlying drivers of deforestation and forest degradation is actually related to most of the ER Program activities aiming at changing non-sustainable behavior of the identified agent of forest degradation and deforestation. Those activities will all be implemented at the same time, considering the fact that their degree of implementation success – especially with regards to the adoption of sustainable practices based on behavior change for local population – depend on various factors: most of the ER Program interventions are mutually supporting and, eventually, reinforcing. This view is also coherent with the comprehensive approach and the integrated landscape vision of the ER Program.

Prior to those activities, land tenure regularization, especially community delimitation, is a pre-requisite for most of the interventions. As explained in section 11, improved accountability and « ownership » on forest areas through collaborative management and participatory forest monitoring is key to the ER Program success. This will be pursued through providing security over land to all actors and particularly to the communities. Secure tenure rights can give local people a strong stake in any developments involving natural resources. In addition, a sense of secure tenure that is respected by other parties also predisposes them to actively support the implementation of activities that at first sight may seem unfamiliar and in conflict with their livelihoods strategies (Tanner, 2017a). Those activities are key to and will be funded by the Landscape project.

Planned actions and interventions

The Table 16 summarizes the main strategic objectives and associated planned interventions of the ER Program. They are linked to the six Strategic Objectives (SO) of the National REDD+ Strategy, which were followed and broken down into concrete operational ER Interventions (ERI). For each area of intervention, the drivers of deforestation that are being addressed are clearly identified.

Table 17, Table 18, Table 19 and Table 20 provide for more details on the various actions to be implemented under the ER Program. It should be noted that, because many of the actions are crosscutting interventions, they could actually fit in various topics within the four pillars that were defined above.

Table 16: Summary of strategic objectives (SOs) and planned interventions (ERIs) of the ER Program

Strategic objectives (SO) of the National REDD+ Strategy	Strategic objectives broken down into ER Program planned Interventions (ERI)	Drivers/underlying causes of deforestation and forest degradation and/or barriers to REDD+ that are addressed
A. Development, coordination and Monitoring		
Cross cutting actions and inter-institutional coordination (SO1): institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation	ERI - A1: Coordination and management of activities	<i>Coordination and management of the ER Program including, at local scale, through the Landscape Management Unit (implementation of a grievance redress mechanism, oversight of field activities, fiduciary and safeguards management and communications, monitoring, evaluation and reporting, etc.)</i>
	ERI – A2: Institutional development and strengthening and intersectoral communication	<i>Financing of the additional costs of FNDS related to project management, including the costs of the Landscape Coordination Unit at the provincial level</i> <i>Support to the International Funds Management Unit (Unidade de Gestão de Fundos Internacionais, UGFI) and provincial implementation units (PIUs);</i> <i>Strengthening of ANAC, Biofund and CITES secretariat</i>
	ERI – A3) Community awareness and capacity building – ensuring stakeholders' involvement and	<i>Capacity building for local communities and CGRNs (decision-making, accountability, transparency, local governance, business planning and management, use and management of funds, partnerships with the private sector, use of information technology, etc.)</i>
		<ul style="list-style-type: none"> - Lack of community organization and engagement; - Poor inter-institutional and sectorial collaboration.

	participation in the ER Program	<i>Workshops, trainings, meetings, communication and consultation about ER Program and REDD+, including through the consolidating of Multi-Stakeholders Landscape Forum in Zambézia (MSLF) – also in ERI-B2</i>	
B. Land Planning			
Cross cutting actions and inter-institutional coordination (SO1): institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation		<i>Community land delimitation with community delimitation certificates, community land use plans and strengthening of community-based organizations (CBOs)</i>	
		<i>Issuance of individual DUATs</i>	
	ERI – B1: Regularizing land tenure	<i>Provision of technical advisory services and equipment to conduct land demarcations, natural resource mappings and legal registration</i>	- Lack of organized process for recognizing land tenure and zoning, including for communities; - Lack of community organization and engagement.
		<i>Availability of grants for implementing subprojects, including micro-zoning for territorial management plans</i>	
	ERI - B2: Improvement of districts land use planning & promotion of community level land use planning	<i>(ERI-A3: consolidating of Multi-Stakeholders Landscape Forum (MSLF) in Zambézia)</i>	
		<i>Strengthening of land administration services and upgrading of the land administration system</i>	
		<i>Implementation of geospatial tools at the provincial and district levels to improve land-use planning, including with the operationalization of a GIS platform</i>	
		<i>Development of the National Land Use Plan</i>	

C. Law enforcement and forest governance and management

Conservation areas (SO4):

Strengthening the system of protected areas and finding safe ways of generating income

ERI – C1: Protection of conservation areas and restoration of natural habitats

Restoration of natural habitats through Assisted Natural Regeneration (ANR) and enrichment planting

- Lack of effective control of conservation areas and of their boundaries (illegal logging, small scale agriculture);

Sustainable Forest Management (SO5):

Promoting the system of forest concessions and community management and strengthening forest governance

Improvement of the management regime of the Gilé National Reserve

Law enforcement and protection of biodiversity around the GNR

- Poor benefits of conservation areas for local communities;

- Illegal logging on selected species of precious timber and limited cost of “being illegal”;

Restoration of degraded forests and planting trees (SO6):

Establishing a favorable environment for the increase of plantations areas, forestry businesses, restoration of natural forests and planting of trees for various purposes

ERI – C2: Strengthening of forest governance, transparency and forest management

Support to the government's forest law enforcement institutions (particularly AQUA and ANAC)

Improvement of national monitoring, detection and land information systems, including with support to a forest information system

- Lack of efficient control of licensing and management plans;

- Non-sustainable exploitation practices in licensed areas.

Support to the National Forest Forum

Training to forest operators and to forest administration

Support to small-scale forest businesses		
D. Sustainable production, livelihood and income generation		
Agriculture (SO2): Promoting alternative technique to shifting agriculture to ensure increased productivity of subsistence and cash crops	ERI-D1: Promotion of conservation agriculture and agroforestry system	<i>Trainings to conservation agriculture with extension services, support and monitoring of smallholders' activities</i> <hr/> <i>Support to agroforestry systems through technical assistance, provision of inputs, distribution of fruit trees and assistance to targeted nurseries</i>
	ERI-D2: Structuring of key sustainable value chains (forestry-based value chains) for cash crops and support to the establishment of commercial agriculture in areas with no forest cover	<i>Study and analysis of the commercial potential of various cash-crops around the GNR</i> <hr/> <i>Technical assistance for cash crops production, training on quality standards and on the maintenance of orchards, provision of inputs for smallholders around the GNR</i> <hr/> <i>Technical assistance to small emerging commercial farmers and other key rural micro, small and medium enterprise agribusiness, including on business plans</i> <hr/> <i>Improvement of key selected rural infrastructures</i>

- Small scale agriculture based on “slash and burn” practices and uncontrolled wildfires;
- Poor soil fertility associated with labor constraint;
- Low income and poor social conditions;
- Growing demography and increase of urban population;
- Lack of alternative source of income for forest resources dependent rural population;
- Poor access to markets for smallholders with limited information and infrastructure;
- Low income and poor social conditions.
- Growing demography and increase of urban

			<i>for commercialization of cash crops</i>	population;
			<i>Implementation of a market information platform to support cash-crops producers, with the diffusion of information on markets dynamics and prices trough SMS around the GNR</i>	
			<i>Agribusiness finance to value chains actors, including support to access credit and financing schemes for agribusinesses (matching grant and partial credit guarantee)</i>	
Restoration of degraded forests and planting trees (SO6): Establishing a favorable environment for the increase of plantations areas, forestry businesses, restoration of natural forests and planting of trees for various purposes	ERI-D3: Promotion of multipurpose plantations	of	<i>Implementation of a planted Forests Grant Scheme and support to community out grower schemes</i>	<ul style="list-style-type: none">- Lack of accessible alternative source of energy;- Uncontrolled wildfires triggered for charcoal production purpose;- Lack of alternative source of income for forest resources dependent rural population;
Energy (SO3): increasing access to alternative sources of biomass in urban areas and increasing the efficiency of production and use of biomass energy	ERI-D4: Promotion of sustainable charcoal production	of charcoal	<i>Plantation of fast growing trees for energy purpose</i> <i>Support to local producers for the creation of improved kilns for charcoal production</i> <i>Training of producers for the elaboration and implementation of forest management plans and for the creation of partnerships with private</i>	<ul style="list-style-type: none">- Lack of accessible alternative source of energy;- Wild production of charcoal to respond to high demand through informal market;

		<p><i>operators</i></p> <hr/> <p><i>Training to Assisted Natural Regeneration (ANR) techniques to limit the negative impact of charcoal production</i></p>	<ul style="list-style-type: none"> - Uncontrolled wildfires triggered for charcoal production purpose; - Low yields of charcoal production techniques; - Low income and poor social conditions; - Growing demography and increase of urban population;
<p>Conservation areas (SO4): Strengthening the system of protected areas and finding safe ways of generating income</p>	<p>ERI – D5: Valorization of the income generating potential of the GNR and sustainable livelihood around the GNR</p>	<p><i>Improvement of sustainable tourism in the GNR with support to a community sport hunting area</i></p> <hr/> <p><i>Sustainable use of NTPF</i></p>	<ul style="list-style-type: none"> - Poor benefits of conservation areas for local communities; - Limited exploitation of the revenue potential of conservation areas.

Table 17: ERIs related to development, coordination and monitoring

A- Development, coordination and monitoring	
(SO1): institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation	
(ERI - A1): Coordination and management of activities	
(ERI – A2): Institutional development and strengthening and intersectoral communication	
(ERI – A3): Community awareness and capacity building – ensuring stakeholders’ involvement and participation in the ER Program	
Drivers and underlying causes of deforestation and forest degradation and/or barriers to REDD+ that are addressed	<p>Poor inter-institutional and sectorial collaboration</p> <p>Lack of community organization and engagement</p>
Description	<p>The good implementation of the ER Program, with efficient coordination and management (ERI-A1), will require good relay at local scale, through improving both national and provincial government capacity and structures. Admittedly, institutional development and strengthening and intersectoral communication (ERI-A2) is a core objective of the ER Program. At local scale, capacity building will also be oriented towards communities, through participative mechanisms. Community awareness is crucial to ensure stakeholders’ involvement and participation in the ER Program (ERI-A3).</p> <ul style="list-style-type: none"> Activities comprised in ERI-A1 are related to the coordination and management of the ER Program. This set of activities is expected to enhance intersectoral communication and coordination with and within the government and agencies. They include the management and monitoring of contracts, oversight of field activities that service providers, technical assistants, and consultants may implement along the ER Program lifetime, oversight of compliance with the safeguards policies and the implementation of a grievance redress mechanism – <i>see section 14</i>. <p>As part of ERI-A1 activities, support will also be given to both UGFI and FNDS to coordinate and monitor the activities and manage financial and human resources in an efficient, results-oriented manner. Additional costs of FNDS related to activities management will especially be guaranteed by the MozFip program. This includes support for project coordination and management, including fiduciary and safeguards management and communications. In the same way, the “Landscape project” strongly supports local Program Implementation Units (PIUs) to oversee the implementation of the ER Program related activities in Zambézia.</p> <p>Activities of ERI-A1 also encompass support for monitoring, evaluation and reporting, including collecting baseline data, contracting service providers for data collection and reporting on indicators and conducting analyses when needed for supervision and evaluation. Financing of necessary audits and other</p>

studies according to the work plans and budgets, and any quality oversight needed through independent financial and technical audits, will be financed through the ERI-A1 component.

- Strongly linked to ERI-A1 are the activities related to institutional strengthening (ERI-A2). To ensure the sustainability of the ER Program activities, institutional development among relevant institutions is planned, for key public and private sector entities and in various aspects. As previously stated, this includes the establishment and operationalization of the UGFI and PIUs in Zambézia, but not only: the MozBio project focuses on the improvement of the capacities of ANAC, Biofund and CITES Secretariat.

Support to ANAC is based on the provision of equipment, technical assistance and training to improve the management of conservation areas and nature-based tourism development, in terms of staffing (including with the development of competitive human resources procedures and the provision of trainings), of administrative and internal management issues (planning, procurement, financial management, monitoring and evaluation, auditing and communication), for the elaboration and application of relevant regulations and policies and for its activities of awareness-raising (communication strategy, materials, events, etc.);

Support to Biofund is based on, *inter alia*: (a) the capitalization of the endowment fund for conservation areas (including the GNR, located in the ER Program area); and (b) the operationalization of Biofund with the provision of equipment, financing of operating costs and technical assistance, including the design and implementation of a fundraising strategy.

Support to CITES secretariat aims to adequate implementation of the CITES Convention in Mozambique, which is fundamental to improve wildlife management and has a direct impact on promoting tourism, especially for sport hunting - which is an important conservation-based income-generating activity (see *ERI-D6*).

- In order to ensure stakeholders' involvement and participation in the ER Program, various elements are planned, including land tenure regularization activities – see *ERI-B1*. The activities comprises in ERI-A3 are more related to local capacity building and consultation processes. Those are important element of MozFIP, which supports governance reforms at national level - including improved efforts on communication and consultations. In this way, support will be provided to the Government to develop a broad and strategic communication plan that focuses on strategic communication approaches, improving existing communication channels and capacities in the Government while improving and targeting communication materials aimed at the range of stakeholders involved. One of the main objectives of the communication efforts is to build trust and learning between government and national stakeholders, in particular local communities.

This will also be achieved through the support to the Multi-Stakeholders Landscape Forum (MSLF) in Zambézia, which offers a platform for communication and transparency between the various stakeholders, including at provincial level.

At local scale, capacity building will also be based on the communities living around conservation areas – in this case, around the GNR – and, especially, on the Natural Resources Management Committees (*Comité de Gestão de*

	<p><i>Recursos Naturais</i>, CGRNs) including through the MozBio and the MozDGM projects. Associated activities comprise the training of local communities on decision-making, accountability, transparency, local governance, business planning and management, use and management of funds, partnerships with the private sector and use of information technology. MozBio will also support the carrying out of capacity building programs for the design and implementation of subprojects. MozDGM will support capacity-building and institutional-strengthening activities for communities and civil society organizations. The activities to be financed aim to strengthen communities' knowledge and technical capacity on matters related to climate change and forest and land management, as well as their managerial and grant-making competencies.</p>
Activities	<ul style="list-style-type: none"> ▪ ERI-A1: Coordination and management of the ER Program (implementation of a grievance redress mechanism, oversight of field activities, fiduciary and safeguards management and communications, monitoring, evaluation and reporting, etc.); ▪ ERI-A2: Financing the additional costs of FNDS related to project management, including the costs of the LCUs at the provincial level; ▪ ERI-A2: Support to the International Funds Management Unit (<i>Unidade de Gestão de Fundos Internacionais</i>, UGFI) and provincial implementation units (PIUs); ▪ ERI-A2: Strengthening of ANAC, Biofund and CITES secretariat; ▪ ERI-A3: Capacity building for local communities and CGRNs (decision-making, accountability, transparency, local governance, business planning and management, use and management of funds, partnerships with the private sector and use of information technology); ▪ ERI-A3: Workshops, trainings, meetings, communication and consultation about ER Program and REDD+, including through the consolidating of Multi-Stakeholders Landscape Forum in Zambézia.

Table 18: ERIs related to land planning

B - Land Planning (SO1): Institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation (ERI – B1): Regularization of land tenure (ERI - B2): Improvement of districts land use planning & promotion of community level land use planning	
Drivers and underlying causes of deforestation and forest degradation and/or barriers	Lack of organized process for recognizing land tenure and zoning, including for communities Lack of community organization and engagement

to REDD+ that are addressed	
Description	<p>Land planning through land tenure regularization (ERI-B1) and the improvement of districts and community level land use planning (ERI-B2) - including the promotion of integrated landscape management tools - is a critical component of the ER Program. As explained in section 4.4 and 11, land tenure is a key element to ensure communities' involvement in the ER Program: stronger community land rights are expected to increase incentives for investments in long-term land use and for the adoption of sustainable land use practices. It is also likely to lead to greater benefits for local communities, including through win-win partnerships with the private sector. Accordingly, the ER Program provides for a significant component based on an integrated landscape management through securing land tenure regularization at the community and individual levels.</p> <ul style="list-style-type: none"> ERI-B1 is supported by both the Landscape and the MozFip projects, which provide for the issuance of individual DUATs and for community land delimitation: whereas the Landscape project aims to secure land tenure rights of 270 rural communities and 150,000 individuals, the objectives of the MozFip project are the land delimitation of approximately 160 communities (community delimitation certificates, community-level land-use plans, strengthening of CBOs) and the issuance of approximately 3,100 DUATs to small and medium landholders engaged in forest plantations and agroforestry¹⁵. <p>It should be noted that linking the delimitation process to business-oriented strengthening of CGRNs and CBOs actually is a key aspect of the Landscape project approach, in line with the ER Program. Capacity building 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 value-chains development (see <i>D – Sustainable production, livelihood and income generation</i>) and (b) negotiate and implement mutually beneficial partnerships with investors interested in land or other resources available in the area. 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. All in all, land tenure regularization will improve local communities' capacity to plan the use of natural resources over which they have rights and to enhance the capacity of local actors on land-use planning and on multi-stakeholder planning.</p> <p>In the ER Program area, this action is reinforced by (i) the Mozbio project that includes the provision of technical advisory services and equipment to conduct land demarcations, natural resource mappings and legal registration in order for communities to be able to engage in sustainable management of natural resources; (ii) MozDGM, which supports local communities and community-based organizations through grants for implementing subprojects, including micro-zoning for territorial management plans.</p> <ul style="list-style-type: none"> The ER Program also provides for the improvement of districts and community level land use planning (ERI-B2). This is partly based on the strengthening of land administration services. With this regard, the Landscape project comprises

¹⁵ Those objectives are for the entire areas cover by the two programs, in Zambézia and Cabo Delgado (Landscape project) and national level (MozFip).

	<p>the strengthening of the capacity of provincial and district offices with the following objectives: (a) to improve the competencies of the provincial and district cadastral officers and national-level DINAT staff and (b) to strengthen the capacity in land administration services to issue community delimitation certificates and DUATs. This will be based on the provision of trainings to relevant staff at the recipient's district and provincial level.</p> <p>The promotion of the use of spatial tools that can inform land-use planning is also relevant, as spatial planning allows trade-offs over land allocation to be discussed among stakeholders in a transparent manner. Spatial tools include new technologies (use of geographic information systems, for instance) and participatory approaches. Precisely, the Landscape project and the MozFip project will finance capacity-strengthening interventions and equipment. Efforts will also be devoted to the development of spatial planning capacity (including GIS).</p> <p>In the same way, the MSFL, supported by the Landscape project (see A – <i>Development, coordination and monitoring</i>), will be a useful means to foster a common vision for management of the landscape across stakeholders.</p> <p>Another important tool provided for the ER Program is Mozambique's National Land Use Plan (NLUP). Supported by MozFip, it will enable national land use plan aiming to promote long-term sustainable land use decisions, including in the ER Program area. The NLUP will include a dynamic modeling platform for evaluating interventions for improved land-use management.</p>
Activities	<ul style="list-style-type: none"> ▪ ERI-B1: Community land delimitation with community delimitation certificates, community land use plans and strengthening of community-based organizations (MozFip: 160 at national scale; Landscape: 270 at landscape level – Zambézia and Cabo Delgado); ▪ ERI-B1: Issuance of individual DUATs (MozFip: to small and medium landholders engaged in planted forests and agroforestry at national level; Landscape: 150 000 at landscape level – Zambézia and Cabo Delgado); ▪ ERI-B1: Provision of technical advisory services and equipment to conduct land demarcations, natural resource mappings and legal registration (for communities to be able to engage in sustainable management of natural resources); ▪ ERI-B1: Availability of grants for implementing subprojects, including micro-zoning for territorial management plans; ▪ ERI-B2 (& ERI-A3): Consolidating of Multi-Stakeholders Landscape Forum in Zambézia; ▪ ERI-B2: Strengthening of land administration services and upgrading of the land administration system (training, equipment); ▪ ERI-B2: Implementation of geospatial tools at the provincial and district levels to improve land-use planning (equipment acquisition and training), including the operationalization of a GIS platform; ▪ ERI-B2: Developing the National Land Use Plan (NLUP) to promote more sustainable long-term land-use decisions.

Table 19: ERIs related to law enforcement and governance in the forest sector

C- Law enforcement and governance in forest sector and forest areas

(SO4): Strengthening the system of protected areas and finding safe ways of generating income

(SO6): Establishing a favorable environment for the increase of plantations areas, forestry businesses, restoration of natural forests and planting of trees for various purposes

(SO5): Promoting the system of forest concessions and community management and strengthening forest governance

(ERI – C1): Protection of conservation areas and restoration of natural habitats

(ERI – C2): Strengthening of forest governance, transparency and forest management

Drivers and underlying causes of deforestation and forest degradation and/or barriers to REDD+ that are addressed	<p>Lack of effective control of conservation areas and of their boundaries (illegal logging, small scale agriculture)</p> <p>Poor benefits of conservation areas for local communities</p> <p>Illegal logging on selected species of precious timber and limited cost of “being illegal”</p> <p>Lack of efficient control of licensing and management plans</p> <p>Non sustainable exploitation practices in licensed areas</p>
Description	<ul style="list-style-type: none"> ▪ The protection of conservation areas and restoration of natural habitats (ERI-C1) in the ER Program is based on support to the restoration of specific areas and on the improvement of the management of the GNR (conservation area). <p>The development of Assisted Natural Regeneration (ANR) techniques on deforested or degraded areas is crucial, as it enables to restore natural forest cover after ancient or recent cut. Given the regenerative capacity of Miombo forest, it is well suited for the ER Program area and will be applied in specific, targeted, zones of the ER Program area. It is part of the activities comprised in the Mozbio project, in which it is linked to the promotion of sustainable techniques for charcoal production (<i>see ERI-D4</i>) around conservation areas (in this case, around the GNR). The Mozbio project entails: (i) the promotion of ANR on 200 ha of degraded areas around the GNR; (ii) the management of 300 ha of forested fallows around the GNR with improved techniques for regeneration and (iii) the creation of 10 nurseries around the GNR for the production of Miombo autochthone trees plants to enrich forested fallows or to restore degraded areas. Local communities’ and community-based organizations’ projects linked to the restoration of degraded area could also be financed by MozDGM within the ER Program area.</p> <p>In addition, the Landscape project includes the restoration of 1600 ha of degraded areas that are critical for specific value chains¹⁶. The 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 in order to select the most viable and effective areas. It should be noted that in the Landscape project, restoration of degraded land includes ANR but also active enrichment planting with native and exotic species for conservation and domestic and commercial uses. Especially, enrichment planting is needed in highly degraded</p>

¹⁶ Those objectives are for the entire areas cover by the program, in Zambézia and Cabo Delgado.

areas or to ensure that certain species are part of the new emerging forests.

The improvement of conservation areas' management (in this case, of the GNR) is another component of ERI-C1. Institutional strengthening for conservation area and for the GNR management is an important issue for the ER Program, which will be supported by the Mozbio project¹⁷. This component has been subdivided into two sub-components: i) improved management of the conservation area and ii) wildlife surveys and monitoring. Planned activities in the ER Program and supported by Mozbio comprise local measures such as the provision of specific training and field and office equipment (including communication hardware and software) and operating costs. Support to wildlife survey and monitoring will be provided to ANAC, responsible for monitoring key wildlife populations, especially those in the hunting areas. This subcomponent will develop various survey techniques and includes conventional stratified aerial surveys, road strip count surveys and abundance index techniques, and community-based monitoring systems. In addition, the Mozbio project is also supporting activities of law enforcement and protection of biodiversity around the GNR by strengthening rangers' capacities to reduce illegal activities such as logging and poaching. Wildfires, triggered for agricultural or hunting purpose around the GNR, will also be subject to specific measures.

- The protection of conservation area also depends on the **strengthening of forest governance, transparency and forest management (ERI-C2)**, both at local and national scale. Forest governance and forest management are strongly linked, especially with regards to benefits associated to the use of forest resources, which also plays a key role in the protection of conservation areas and of forest in general. Admittedly, the maintenance of illegal logging in the GNR and the possible spread of "slash and burn" agriculture from outside to inside of the GNR can be explained by various factors, among which the poor benefits associated to conservation areas for local population. The ER program has to offer incentives for local communities, who are used to engage in activities responsible for deforestation and forest degradation, to change their behavior and respect conservation area protection status. ER Program activities related to the sustainable use of forest resources and income-generating activities is addressed in table D, but, in addition to those, forest governance should rely on transparent mechanisms and efficient forest management, described below:
 - *Forest governance and transparency.* Improved forest governance is crucial to reduce forest-related crimes and illegal activities in the sector, to increase benefits to government and local communities from forest management and to ensure compliance with sustainable forest management practices. The improvement of forest governance and transparency at the national scale is a key component of the ER Program, as the control of illegal activities in the ER Program area is strongly linked to better management of the forestry sector at broader scale. In the case of the GNR for instance, this issue is very relevant: although the GNR staff has been working hard on limiting illegal logging in the GNR, it is still

¹⁷ With this regards, it should be noted that an assessment was undertaken during preparation to establish the management needs of all conservation areas in Mozambique. Needs were also prioritized, using selection criteria through a participatory process with key conservation stakeholders in the country. The main needs of the GNR are: operating costs, game translocation, staff accommodation, check points and outposts, electrification, game fence construction, new tourism facilities, communication (radios, etc.), rehabilitation of roads, construction of bridges, building of drifts/river crossing, construction of airstrips.

prevalent on specific rare species such as pau-ferro (*Swartzia madagascariensis*). Beyond local difficulties to prevent poachers from entering the GNR, illegal logging is eased by management weaknesses at provincial and national level. Accordingly, and as previously explained, the Mozbio project includes institutional strengthening at national scale, including the strengthening of the ANAC that is in charge of the GNR management (see A – development, coordination and monitoring).

In the same way, MozFip aims to support enabling and governance reforms in the forest sector, including through: (i) legal and institutional reform (technical assistance on the reform process); (ii) improvement of legality and transparency in the forest sector (better performance of national monitoring and detection systems, increase of the functionality of forest, environment and land information and monitoring systems, better coordination mechanisms amongst relevant institutions); and (iii) supporting enabling conditions for sustainability in the private sector (sustainable management of forests and promotion of planted forests).

Actually the ER Program, through MozFip, will address the main forest governance constraints in the forest sector by improving information management, monitoring and law enforcement in the forest sector, increasing institutional transparency and accountability across relevant institutions, creating the mechanisms for improving participatory decision-making in the sector and building the skills base and capacity of forest stakeholders around sustainability principles. Planned activities include support to the newly created National Agency for Environmental Quality and Control (AQUA) at the national level and in Zambézia. This will also comprise forest patrolling and increased surveillance, training and technical assistance on planning and monitoring for AQUA and, especially, establishment of AQUA's provincial delegations in Zambezia (equipment, staff financing and training and operational costs).

Transparency will also be enhanced with support to the National Forest Forum¹⁸ and regular and participatory evaluations of the forest sector, promoted by MozFip in order to improve decision-making in the forest sector by promoting citizen engagement. In addition to support to the Forum, support will also be provided for a forest information system (equipment, data management infrastructure acquisition, capacity building) to increase transparency and accountability in the sector system by providing updated geo-referenced information on forest licensing, forest management plan implementation, inspection, and law enforcement.

From a more general point of view, it should be noted that transparency and the accountability to the law by private sector entities and government officials is an important topic for the ER Program, but this component is primarily handled at governmental level, including independently from the ER Program. Currently, there is a strong political will to reform the forest sector, with the recent endorsement of a new policy package including law enforcement elements, *inter alia*:

- Review of all forest operators in Mozambique;

¹⁸ The National Forest Forum is an entity formally created and steered by DINAF. It is composed of different forest stakeholders, including government, private sector, CSOs and academia. It has the objective to facilitate policy dialogue amongst stakeholders to reach consensus and serve as a national consultative platform on key forest-related issues.

Activities	<ul style="list-style-type: none"> • Moratorium from the 1st of January 2016 on the attribution of new concessions and licenses; • Moratorium from the 1st of January 2016 on <i>pau-ferro</i> harvesting; • Moratorium from the 1st of January 2016 on exportation of unprocessed logs, whatever the wood type. <p>○ <i>Forest management.</i> The ER Program also promotes the strengthening of natural forest management to ensure sustainable use of forest resources, to increase benefits to local communities and government and to add value to forest products. Section 4.1 already set the underlying causes of deforestation linked to the forestry sector that need to be addressed in the ER Program area. Through the MozFip project, the ER Program will support forest operators who are committed to sustainable forest management in obtaining forest certification and in adding value to forest products. It will also support the forest administration, particularly at the provincial level, on different aspects of forest management, including forest management plan implementation and piloting new forest concession allocation systems. Planned activities comprise the improvement of forest concessions and the promotion of small scale forest business and of community enterprises and micro, small and medium enterprises (MSMEs) involved in sustainable forest management and forest products transformation (timber and non-timber) – through training and technical assistance on sustainable forest management practices and timber processing, equipment, consultancy and operational costs for selected small-scale sustainable forest businesses.</p> <ul style="list-style-type: none"> ▪ ERI-C1: Restoration of natural habitats through Assisted Natural Regeneration (ANR) activities and enrichment planting; ▪ ERI-C1: Improvement of the management regime of the Gilé National Reserve (improved management of the conservation area and wildlife surveys and monitoring); ▪ ERI-C1: Law enforcement and protection of biodiversity around the GNR ▪ ERI-C2: Support to the government's forest law enforcement institutions (particularly AQUA and ANAC); ▪ ERI-C2: Improvement of national monitoring, detection and land information systems, including with support to a forest information system; ▪ ERI-C2: Support to the National Forest Forum; ▪ ERI-C2: Training to forest operators and to forest administration; ▪ ERI-C2C2: Support to small-scale forest businesses.
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Table 20: ERIs related to sustainable production, livelihood and income generation

D - Sustainable production, livelihood and income generation

(SO2): Promoting alternative technique to shifting agriculture to ensure increased productivity of subsistence and cash crops

(SO6): Establishing a favorable environment for the increase of plantations areas, forestry businesses, restoration of natural forests and planting of trees for various purposes

(SO3): Increasing access to alternative sources of biomass in urban areas and increasing the efficiency of production and use of biomass energy

(SO4): Strengthening the system of protected areas and finding safe ways of generating income

Agriculture and value chains

(ERI-D1): Promotion of conservation agriculture and agroforestry system

(ERI-D2): Structuring of key sustainable supply chains (forestry-based value chains) for cash crops and support to the establishment of commercial agriculture in areas with no forest cover

Plantations and charcoal production

(ERI-D3): Promotion of multipurpose forest plantations

(ERI-D4): Promotion of sustainable charcoal production

Conservation areas

(ERI-D5): Valorization of the income generating potential of the GNR and sustainable livelihood around the GNR

<p>Drivers and underlying causes of deforestation and forest degradation and/or barriers to REDD+ that are addressed</p>	<p>Low income and poor social conditions</p> <p>Growing demography and increase of urban population</p> <p>Poor soil fertility associated with labor constraint</p> <p>Small scale agriculture based on “slash and burn” practices and uncontrolled wildfires</p> <p>Lack of alternative source of income for forest resources dependent rural population</p> <p>Poor access to markets for smallholders with limited information and infrastructure</p> <p>Lack of accessible alternative source of energy</p> <p>Wild production of charcoal to respond to high demand through informal market</p> <p>Low yields of charcoal production techniques</p> <p>Uncontrolled wildfires triggered for charcoal production purpose</p> <p>Poor benefits of conservation areas for local communities</p> <p>Limited exploitation of the revenue potential of conservation areas</p>
<p>Description</p>	<p>▪ The promotion of conservation agriculture and agroforestry system (ERI-D1) should be considered as one of the core components of the ER Program. As stated before, the increase of maize and cassava cultivation - and the subsequent increase of land use - is the main driver of deforestation at national scale and in the ER Program area - <i>see section 4.1</i>. Given their strategic role in the population’s diet, improving agricultural practices, on the basis of agro-ecology and taking into account the constraints related to low labor productivity, is one of the most strategic options to reduce deforestation in the ER Program</p>

area.

Classic options to overcome fertility and weeding issues in a labor-constrained smallholding are the use of external inputs for fertility (from livestock and/or mineral fertilizers) and for weeding (chemical control or mechanical control of weeds). As shown in (Mercier et al., 2016): (i) cattle cannot be introduced in the ER Program area due to trypanosomiasis prevalence; (ii) mineral fertilizer in Mozambique are only imported and, therefore, very expensive for smallholders and (iii) chemical control of weeds is difficult due to the high cost of chemical inputs and the environmental risk (loss of biodiversity, loss of nutrients cycles, toxicity). With no access to external inputs, intensification with the dissemination of agro-ecological practices for food production is the only response to fertility needs and weeding problems.

As stated in the SESA (FUNAB, 2015), the FAO defines three broad principles that make up conservation agriculture: minimum or reduced soil disturbance, maintaining a permanent soil residue or vegetative cover, and crop rotations or intercropping with legumes (FAO, 2002). Conservation agriculture results in a reduction in labor needed for land preparation, improved soil fertility and a reduction in water stress, making it especially important to Mozambique in the context of regional impacts of climate change - which is marked by increased temperatures and increasingly erratic rainfall (see section 3) – and with regards to the previous explanation of the role of labor constraint in the appeal of “slash and burn” practices (see section 4.1). It should nevertheless be noted that in the case of agro-ecology, to date, there is no “one size fits all” solution. Progressive adoption of “good practices” by rural households requires the operators to adopt a pragmatic approach, close to households’ concerns, while integrating local and international economic dimensions. Refinements will be added according to the demographic and agro-ecological contexts of the various areas of the ER Program.

Those actions are especially supported by the MozFip project, which is promoting climate smart agriculture and conservation agriculture in order to increase productivity and income and to reduce the need for clearing new land. Extension services will be provided alongside financing. MozFip comprises the promotion of agro-forestry systems on approximately 1,500 ha by smallholders. Implemented as a pilot, this activity targets individual smallholder producers and informal and formal producer groups – including associations and cooperatives – with an initial goal of reaching approximately 3,000 producers¹⁹. The project will finance agroforestry system inputs (seeds, tree seedlings, tools, fuel) and technical assistance to the targeted beneficiaries. A small number of nurseries identified near agroforestry system clusters will receive technical assistance to ensure that they meet the needs of agroforestry beneficiaries.

In the same way, the Mozbio project includes activities for sustainable forest management through the carrying out of activities related to agroforestry and conservation agriculture around the GNR, with direct support and training of 300 smallholders and indirect support of 900 smallholders (through the diffusion of the techniques by the 300 directly supported smallholders) for the adoption of agro-ecology techniques around the GNR and the distribution of 45 000 fruit trees to support agro-forestry systems.

- Among them, cashew trees hold a significant place that is enhanced in the ER

¹⁹ Those objectives apply at national level.

Program set of activities aiming at **structuring key sustainable value chains for cash crops (ERI-D2)**. Admittedly, the promotion of specific cash crops in the ER Program area is key to the ER Program activities. As stated in the SESA (FUNAB, 2015), the socio-economic benefits of perennial crops (employment, increased income, food security) have resulted in many developing countries choosing to create perennial crop plantations along the implementation of afforestation and reforestation projects. Perennial crops are particularly important for the smallholder-based system where local people have control over the production process. In the case of the ER Program, securing farmers' incomes in the ER Program area is also expected to facilitate risk taking and the adoption of new agro-ecological practices. Cash crops are still not valorized enough in the ER Program area and, currently, producers' commercial strategies are based on minimum risk taking due to significant prices volatility, depending on global market and of the local structure of the value chain: they sale the majority of their products immediately after harvesting, in the numerous outlets on the roads that serve the area. This strategy is coherent with local constraints: limited market information and limited time for selling in certain parts of the ER Program area, which can quickly be landlocked during the rainy season (Mercier et al, 2016).

The planned activities of the ER Program with regards to cash crops and value chains valorization aim to address the constraints that currently prevent value chains from further developing and expanding. This includes the need to (i) strengthen technical capacity and skills among farmers to produce improved quality and increased quantity of selected commodities and to aggregate production for onward marketing; (ii) facilitate knowledge flow and the adoption of new technologies; (iii) strengthen other important value chains functions, such as financial services and risk management mechanisms; and (iv) invest in critical infrastructure to enhance market access and improve yields.

Those activities are supported by MozDGM (which will help financing sub-projects linked to sustainable agro-ecological production and the production and commercialization of artisanal and non-timber forest products) as well as the Mozbio and Landscape projects. With this regards, the Mozbio project will, notably - and around the GNR: (i) provide for the training of 5 000 cashew producers on quality issues for their cashew nuts to meet specific quality standards and on the maintenance of orchards in combination with other crops; (ii) support the creation of an SMS platform to inform producers on a weekly basis on the cashew market dynamics and prices; (iii) finance a market study on the economic potential of the sesame and peanut commodities as other potential cash crops.

The Landscape program also aims to increase smallholders and Small Emerging Commercial Farmers' (SECF) participation in key agriculture and forest-based value chains. The agriculture value chains that have been identified include poultry, maize, soya, sesame, cashew nuts, beans, oilseeds, horticulture, and non-timber forest products (honey). The natural and planted forest value chains include honey, natural oils, and planted forest products such as timber and pulp. In average, in the Landscape project, 10 SECFs per district will be supported – that is, 50 in the ER Program area. Planned activities for the ER Program include:

- (i) *Training and technical assistance to SECFs and key rural micro, small, and medium enterprise in agribusiness:* value chains actors will be trained to on

good agronomic practices and business and marketing skills. It should be noted that in the Climate Smart Agriculture (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. SECFs will also be trained and supported to develop business plans and are expected to facilitate market linkages between rural households and larger agribusinesses in key commodities. In addition, support will be given to the growth of Micro, Small, and Medium Enterprise (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. 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 value chains system.

- (ii) *Agribusiness finance to value chains actors* with support to access credit, support to lowering the risk of exposure for participating financial institutions, 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. The activities comprise support for acquisition of assets, working capital to SECFs and MSME agribusinesses that will enable the financing of additional and improved inputs and operating costs of machinery, and the availability of specific financing schemes for agribusinesses (matching grant and partial credit guarantee).
 - (iii) *Improving rural infrastructure* including through feasibility and design studies for irrigation and feeder roads, rehabilitation of irrigation schemes and rehabilitation and maintenance of rural roads. The objective of this activity is to improve agriculture and forest-based value chains by enabling factors related to key rural roads and irrigation infrastructure.
- Forest plantations are increasingly recognized for their important role in supplying the growing global demand for wood and wood products, including hardwood timber for furniture, general purpose and construction timber, transmission poles, and other products such as sustainable charcoal. **Multipurpose forest plantations (ERI-D3)**, established by local communities and small and medium landholders, will be supported by the ER Program (sawn wood, poles, wood chips, charcoal). In addition to contributing to restoring degraded areas (see table C and ERI-C1) and promoting agroforestry systems among small landholders (see ERI-D1) plantations are expected to contribute to the sustainable production of charcoal (ERI-D4). Plantations will especially be supported by the MozFip project with a dedicated planting forest grant schemes of which the objective is, precisely, to generate economic opportunities by promoting commercial tree plantations, to restore degraded areas and to link wood producers and markets. Within MozFip, the scheme aims to establish, in total, approximately 3,000 hectares of sustainable, multipurpose plantations and to restore around 500 hectares of degraded land through a performance-based grants scheme, technical assistance to small and medium landholders

and inputs to communities²⁰. All in all, multi-purpose forest interventions will focus on supporting community out grower schemes in partnerships with the private sector and tree-planting to meet commercial, energy, conservation, restoration and community livelihoods needs. Notably, energetic plantations with high growing rate species, in order to ensure the sustainable production of charcoal and reduce the pressure on natural forest, will be part of this intervention.

- Admittedly, the **promotion of sustainable charcoal production (ERI-D4)** is significant in the ER Program and is based on the increase wood transformation efficiency and the reduction of the overall use of wood for biomass fuel. The ER Program provides for specific actions in order to reduce the impact of charcoal production and consumption on forests.

With MozFip support, the ER Program will promote charcoal producers organizations to adopt forest management plans, promote higher efficiency in charcoal production, and build partnerships between producers and private operators in the forest sector to integrate charcoal production into forest operations. As the majority of producers also have another economic activity, they are settled in their area of production. Consequently, it is easier to identify them and to work with them on the adoption of sustainable practices. In order to meet market demand and achieve the same level of production for the use of less wood, the ER Program provides for the improvement of traditional kilns, currently characterized by low yields, without any additional investment and thanks to various techniques - management of humidity rate, temperature, duration of the pyrolysis, shape of the oven (Mercier et al., 2016). These kilns would be constructed of materials that are accessible in the area. In the same way, with support of the Mozbio project, around the GNR, the ER Program will comprise the training of 165 charcoal producers to improved charcoal production techniques in the districts of Gilé and Pebane. 10ha of plantations for energy purpose are also planned.

- Finally, t **valorizing the income generating potential of the GNR and sustainable livelihood around the GNR (ERI-D5)**. This set of activities will mainly be supported by the Mozbio project, which includes a component aiming to increase revenues and the number of beneficiaries from tourism-related economic activities in conservation areas in Mozambique by addressing several barriers to nature-based tourism development, including: i) policy and regulations; ii) institutional challenges; iii) weak marketing; iv) inadequate planning; and v) lack of investments in tourism infrastructure. In addition to support to ANAC (*see table A – Development, coordination and monitoring*), planned activities in Mozbio include the provision of technical assistance for the establishment of a management system for the revenues collected by the conservation areas and for tourism and sport hunting statistics; the marketing and promotion of activities; the development of hunting areas plans; the organization of public-private partnership to manage and coordinate tourism and sport hunting.

Although tourism is not expected to be very significant in the GNR, the promotion of sport hunting is relevant for the ER Program and the creation of a sport hunting area is already ongoing. With this regards, planned activities include: (i) the strengthening of the relationships with communities

²⁰ Those objectives apply at national level.

(implementation of a continued dialogue and strengthening of community associations, identification of potential benefits and options available to communities to utilize the revenue generated from the use of wildlife resources in the hunting area, etc.); (ii) support to regulatory framework (review of existing hunting contracts to establish the responsibilities of both parties, assessment of the revenue sharing modalities, support for drafting new/revised contracts that incorporate safeguards for all stakeholders, etc.); (iii) institutional and human capacity strengthening (development of standards for professional hunter licenses and of best practice standards, setting of sustainable quotas linked to monitoring and evaluation systems, development a database on trophy hunting data, etc.).

The income generating potential of the GNR will also be valorized through the promotion of sustainable community livelihoods around the GNR. The objective of this component is to improve and strengthen natural resource-based livelihoods of communities around the GNR. It includes the promotion of non-timber forest products for local communities to diversify their use of forest resources, with the development of community management plans for non-timber products, such as mushrooms, to be implemented by the CGRNs around the GNR. *The interventions to be promoted will cut across different sectors such as agriculture, forestry and energy, and will promote inter-sectorial coordination at the local level. They are therefore fully integrated in the previous ER Program planned interventions related to the sustainable production of charcoal (see ERI-D4), conservation agriculture (see ERI-D1) and the strengthening of key value chains (such as cashew nuts – see ERI-D2).* It should be noted that these initiatives also contribute to the overall management of the GNR and are therefore also linked to ERI-C1 and ERI-C2.

Activities

Promotion of conservation and climate smart agriculture including:

- **ERI-D1:** Trainings with extension services, support and monitoring of smallholders' activities;
- **ERI-D1:** Support to agroforestry systems through technical assistance, provision of inputs, distribution of fruit trees and assistance to targeted nurseries;

Structuring of key sustainable supply chains for cash crops, from production to transformation, selling and marketing with:

- **ERI-D2:** Study and analysis of the commercial potential of various cash-crops around the GNR;
- **ERI-D2:** Provision of technical assistance for cash crops production, training on quality standards and on the maintenance of orchards, provision of inputs for smallholders around the GNR;
- **ERI-D2:** Provision and training of technical assistance to small emerging commercial farmers and other key rural micro, small and medium enterprise agribusiness, including on business plans;
- **ERI-D2:** Implementation of a market information platform to support cash-crops producers, with the diffusion of information on markets dynamics and prices through SMS around the GNR;
- **ERI-D2:** Agribusiness finance to value chains actors, including support to access credit and financing schemes for agribusinesses (matching grant

	<p>and partial credit guarantee);</p> <ul style="list-style-type: none"> ▪ ERI-D2: Improvement of key selected rural infrastructures for commercialization of cash crops; <p>Development of multi-purpose plantations with:</p> <ul style="list-style-type: none"> ▪ ERI-D3: Plantation of fast growing trees for energy purpose; ▪ ERI-D3: Implementation of a planted Forests Grant Scheme and support to community out grower schemes; <p>Improvement of charcoal production through:</p> <ul style="list-style-type: none"> ▪ ERI-D4: Trainings of and assistance to local producers for the creation of improved kilns for charcoal production; ▪ ERI-D4: Training of producers for the elaboration and implementation of forest management plans and for the creation of partnerships with private operators; ▪ ERI-D4 (& ERI-C1): Training to assisted natural regeneration techniques to limit the negative impact of charcoal production; <p>Valorizing the income generating potential and sustainable livelihood around the GNR with:</p> <ul style="list-style-type: none"> ▪ ERI-D5: Improvement of sustainable tourism in the GNR with support to a community sport hunting area; ▪ ERI-D5: Sustainable use of NTFP.
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4.4 Assessment of land and resource tenure in the Accounting Area

This sub-section aims at presenting the land and resource tenure regimes in the ER Program Accounting Area. It is based on the assessment carried out during the Readiness phase, including in (i) the legal and institutional study done by (Nemus and Beta, 2015); (ii) the Strategic Environment and Social Assessment (SESA); and (iii) the ER-PIN (UT REDD+, 2015a). An additional assessment was led by (Tanner, 2017a) for the purpose of this ER-PD. It constitutes an ad-hoc report assessment (Land and Resource Tenure Assessment). *This sub-section is composed of various extracts and summaries from this document.*

It should be noted that this additional Land Tenure Assessment has not yet been publicly vetted and endorsed by stakeholders. As the ER-PD development proceeds, the ER team might consider having the ER Program include it in the agenda of the next Consultative Forum on Land (Tanner, 2017a).

Legal framework of land tenure in Mozambique and relevance for the ER Program

An overview of the existing legal texts covering land issues in Mozambique is provided in section 4.5 – Table 24.

The defining parameter of the policy and legal framework is that since Independence, and right through to the most recent 2004 Constitution of the Republic of Mozambique (CRM), land is the property of the State and cannot be bought and sold, mortgaged or otherwise alienated. In its Article 110 however, the CRM confers a land use and benefit right (DUAT) to all who want to use land, “taking into account their social or economic purpose”. Furthermore, Article 111 of the CRM states that already acquired rights must be taken into account when new rights are being allocated - to investors for example.

The DUAT in fact dates back to the original post-Independence 1975 constitution. The big advance in turning it into a stronger private right took place in the 1990 revision, which ushered in the major shift to a market economy and political pluralism. Later research into local land use systems established a much broader understanding of “occupation” than a simple analysis of visible plots and other active evidence of use (deforested areas, fenced in grazing, etc.) and established that customary structures were still largely responsible for managing the land rights and use of the majority of the rural population (Tanner, 2002). This resulted in the formulation of a new National Land Policy (NLP) in 1995 and a new Land Law in 1997, which gave full recognition to rights acquired through these customary systems. Both instruments are still in place.

The 1995 National Land Policy - The 1995 NLP addressed the key challenge of securing largely customarily acquired land rights, while also promoting the entry of new investment into the countryside. It did this not by identifying separate areas for each kind of land user, but by providing a policy framework that integrates customary and formal land rights and land use within a single and shared territory - or landscape. The key principles established by the NLP are: (i) Maintain land as the property of the State; (ii) Guarantee the access to and use of land for the population as well as for investors - in this context the customary rights of access and management of land by the population are recognized, promoting social justice in the countryside; (iii) Guarantee the right of access to and use of land for women; (iv) Promote national and foreign private investment without prejudice to the resident population and ensuring benefits for this [population] and the national treasury; (v) Active participation of nationals as partners in private enterprises [that use land]; (vi) Definition and regulation of basic principles and guidelines for the transfer of use and benefit rights (DUATs) between citizens and or national enterprises, whenever investments have been made on the land; (vii) Sustainable use of natural resources in such a way as to guarantee the quality of life of future generations (Resolution 10/95 of 17 October, paragraph 17).

The NLP also provides for a process of negotiated access to local land by investors and others who want land for new projects – “the agrarian use of land”. This process involves two steps: (i) a “cadastral identification, demarcation and registration” process of the areas that may fall, under customary law and cultural rules, under the management of a Local Community and (ii) a negotiation process with the Local Community who can enter as a partner in the investment.

This principle underpins the later mandatory requirement in the 1997 Land Law that any new land access by a private investor or by the State (for public projects) must be preceded by a community consultation. It was then extended to new environmental legislation in 1997, to the new Forests and Wildlife Law in 1999 and to all subsequent laws that deal with natural resources in one form or another.

The idea of establishing partnerships between local land rights holders and other actors appears in many places in the 1997 Land Law and in the regulatory instruments to

implement it. The terms of partnership are to be established by the mandatory community consultation process established by Article 13 of the Land Law and Article 27 of its Regulations. Resolution 70/2008 of 30 December, which sets out the requirements for investors seeking large areas of land (defined as over 10,000 hectares) – see **Table 24** – also requires them to include the partnership terms with the “holders of the DUAT by occupation” with their submissions. This principle of partnership is most recently developed further, and significantly for the ER Program, in the 2014 Law for Conserving Biodiversity, which opens the way for the State “celebrating contracts with the private sector and the local communities for the generation of income” (Beta and Nemus, 2015). The recently approved National REDD+ Strategy also makes reference to the need for the State to work closely with local communities in developing and implementing REDD+ programs.

These fundamental features of the 1995 land policy framework remain in place and provide a powerful platform for the ER Program that is participatory and inclusive, and which can enable local communities – as rights holders and as users of the resources in question – to share in the benefits generated through improved natural resources management techniques and triggering ER payments as a result. Together with provision in other legislation, they also have implications for how the GoM addresses the question of negotiating the sale of ERs with third parties such as the World Bank - see *section 17.2*.

The 1997 Land Law – The 1997 Land Law defines how to acquire a State-allocated DUAT. According to its article 12, this can be done in three ways: (i) through customary occupation according to customary norms and practices; (ii) through “Good faith” occupation over ten years (uncontested use of land which the occupant settles on and begins to use); through formal application to the State through its land agencies at provincial and central level, and municipalities. The right that results in each case is precisely the same in legal terms although, in the case of rights by occupation, it is likely that the vast majority will be unrecorded. The law makes it clear however that the lack of registration of a right by occupation does not prejudice that right (Article 14).

There are differences in the conditions attached to DUATs that are acquired by occupation or by request. The most important of these is that a DUAT by occupation, which is for subsistence and household reproduction purposes, is indefinite, whilst a DUAT by request has a fixed term of 50 years. This fixed term is however renewable for a further 50 years, making the DUAT a very long state lease that is easily enough for investing and securing a return. Moreover, the DUAT is inheritable in either circumstance, whether acquired by occupation or by request.

The 1997 Land Law also created the concept of Local Community, also serving as the basic unit of natural resource occupation and use in the 1999 Forest and Wildlife Law. The “Local Community” is defined in Article 1(1) of the Land Law as follows:

“A grouping of families and individuals, living in a circumscribed territorial area at the level of a locality [the lowest official unit of local government in Mozambique] or below, which has as its objective the safeguarding of common interests through the protection of areas of habitation, agricultural areas, whether cultivated or in fallow, forests, sites of socio-cultural importance, grazing lands, water sources and areas for expansion”.

The definition derives from an understanding of occupation as a land use system that includes not just currently used resources – fields of crops and fenced in grazing for example – but also the extensive other resources that are essential for a sustainable land use

strategy. These might include forests as well, used and managed on a collective basis by a group of households or villages, and extensive areas reserved for future use as current fields lose their fertility. Such a definition with its various elements of common interest centered around a coherent resource use strategy and system, provides an ideal vehicle through which to implement REDD+ initiatives. These include the ER Program with its focus on altering the system to make it more sustainable, with behavioral change, new income sources and benefit-sharing activities, and appeals to common interests.

The law and its regulations lay out how to identify the extent of Local Community “occupation” and establish limits around the territory so defined. The land rights delimitation methodology is well summarized in (World Bank, 2016) and (Tanner, Norfolk and de Wit, 2009). It should be noted that delimitation is community-driven – local people who occupy and use land do it with *support from* external technical teams trained in the methods employed. Community delimitation is not mandatory, but is “a priority” in certain contexts where there are conflicts over land, when an investment project is proposed and when the community itself requests it.

The CRM (2004 revision) also introduces the figure of community public domain, in relation to property held in public domain areas (Article 98, State Property and Public Domain). Thus, “The law shall regulate the legal regime of property in the public domain, as well as its management and conservation, and shall distinguish between the public domain of the State, the public domain of local authorities and the public domain of communities, with due respect for the principles of imprescriptibility [*something that cannot rightfully be taken away, lost, or revoked*] and immunity from seizure”(Article 98(3),

This principle has important implications for the discussion over the right to transact title over ERs - *which is covered in more detail in section 17.1*. At this point, it is important to point out that while the CRM established this important principle, its functionality in practice has been little tested and still requires considerable clarification in appropriate regulations.

Individual rights at sub-community level – In the ER Program Accounting Area, it is expected that the majority of individual land rights at the sub-community level will be DUATs acquired by occupation, either through customary norms and practices, or by so-called “good faith” occupation. From article 12(a) of the Land Law it can be inferred that all sub-community rights that are acquired and managed through the prevailing system of the particular community – see below – are also equivalent to DUATs in law.

Like the collective DUAT, this more individual DUAT is very unlikely to have any form of documentation attached to it. “Records” of occupation and possession of land by a specific person or household will be held (i) in the verbal or collective memory of the customary leaders and land chiefs and (ii) in the shared “social register” of neighbors and others, who can verify and support any land claim and intervene in small disputes over boundaries, etc. - this form of proof is provided for in Article 14 of the Land Law.

“Good faith” occupation refers to instances where someone has occupied a piece of land without seeking formal approval from anyone, and has lived on and used the land for more than ten years. If they have done this without any other person contesting the occupation, then after 10 years have passed the occupant also has a DUAT by occupation. Such occupation will also likely depend upon verification by local structures and neighbors.

It is highly likely that in the accounting area of the ER program, all individual DUATs will be derived from one of these two channels. The consequences are twofold:





- Proving them, recording them and then issuing a formal DUAT title document will require working with local leaders and others in the community to secure the necessary proof;
- Any process of land titling regularization involving individually held DUATs should be preceded by the delimitation of the local community in which they exist. This will establish which local structures manage land, and underline the legitimacy of the acquired right. This is also in line with Article 24 of the Land Law, which gives the local community powers to manage natural resources, resolve conflicts, and participate in titling.


Community land use plan (CLUP) - The CLUP does not yet exist in formal terms, although it is now firmly established as a key output of the delimitation process. In the course of the delimitation, local community members are encouraged to analyze how they use their land resources, and to consider their long-term needs and priorities. This may result in some areas being identified as available for investors through properly negotiated agreements, and others being clearly set aside as conservation areas or reserves. The result of this process is the CLUP, which then provides a platform for attracting new investment in a more orderly and negotiated fashion, for developing more sustainable and productive local agriculture, and for developing a program of community-based natural resources management and conservation – see the next figure. When linked to the rights securing and empowerment impact of delimitation, the CLUP can create the conditions for a shared and equitable use of a particular landscape. This can also include the development and implementation of conservation activities as part of the ER Program. This is shown in the next figure - extracted from (Tanner, 2017a). Several local communities are delimited in a given landscape; the CLUP identifies areas for fixed, improved agriculture, incoming private investment with negotiated partnerships, and for natural resources management activities.

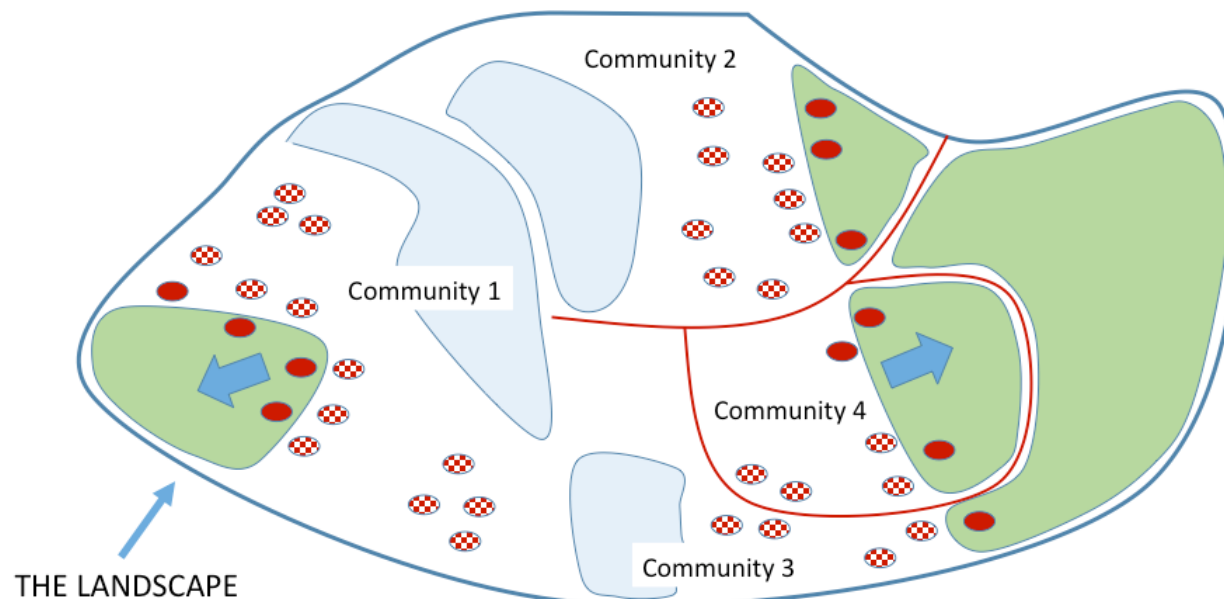
Linking land rights to natural resources and the issue of “DUAF” – Although the possession of a DUAT does not give an automatic right of ownership over the resources found on a given piece of land, various elements of the legal framework do give local people – organized and recognized as Local Communities – significant use rights over “their” natural resources, and a say in how these resources are used by others.

The Local Community as defined in the 1997 Land Law – a land holding unit based around the customary use of a range of natural resources - is replicated exactly not only in the 1999 Forest and Wildlife Law, but in all other natural resources legislation. This precise overlap is of fundamental significance for making the link between land tenure rights, rights over forests, and the development of the ER Program that includes a benefits-sharing mechanism. Local Community delimitation establishes the spatial dimension of the *right of use and benefit of land (i.e. the DUAT)*. Through the NLP and specific articles in the Land Law (Article 24) and elsewhere, this right extends over the natural resources that are found on the land covered by the DUAT. Therefore, while there is no legal equivalent to the DUAT when it comes to forests – a “DUAF”, the Legal rights to use and benefit from land and forests – the right to use and benefit from forests and other natural resources within the area of a Local Community is clear in all the relevant sectorial laws. The DUAF is there in all but name only. And as with land, if the community wants to move out of subsistence-based production into more commercial activities, the approval of the land-owner (the State) must be sought. Licenses are granted, and the community or a sub-set of it can proceed to exploit their resources commercially.

Delimited Communities with Basic Land Use Plans

- Forest (commons, forest products) 
- Areas for investment (partnerships) 
- Traditional agriculture rotates through landscape (and forest)
 - current plots 
 - abandoned plots 

 DEFORESTATION



ER Program with the Landscape approach

- Sustainable local agriculture 
- Large investment using available land 
- Community-based investors with new individual DUATs 
- Standing forest (conservation) 
- Degraded area to restore 

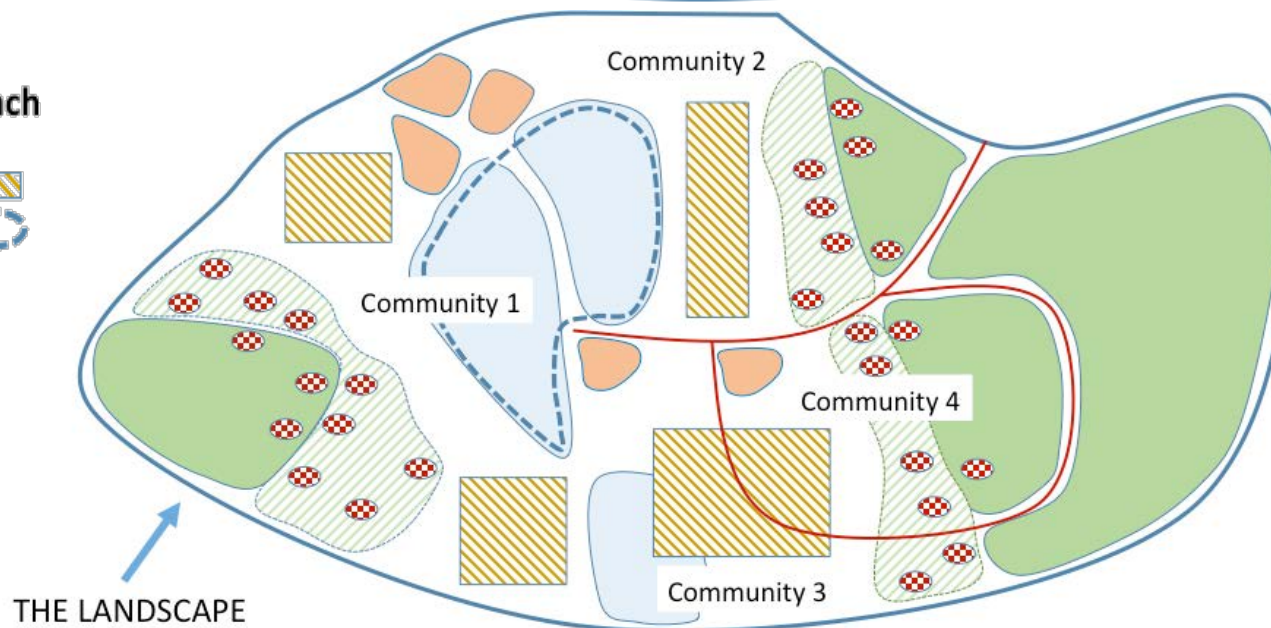


Figure 14: Example of CLUP
Tanner, 2017a

The Readiness phase studies note that it is difficult for local communities to do this in practice. However, this is not principally due to legal constraints, but to practical problems to do with capacity, documentation (most rural people do not have ID documents for example), and material constraints. Evidently, communities need support to navigate through the process; working with experienced NGOs can overcome these obstacles.

Further affirmation of the basic rights that local communities have over the natural resources in their areas is given by the provision in the Forest and Wildlife law, that 20 percent of State revenues from commercial forest and wildlife revenues is distributed to the communities where the resources are located – *see section 15 for more details on this mechanism*. Further, as previously stated, all the natural resources laws require that a community consultation be carried out between commercial enterprises seeking to extract timber and the Local Community. As with the Land Law, the objective here is not merely to get a local “no-objection” so that the investment can proceed; it is to secure an agreement between the two sides which in principle will allow the community to gain from the commercial exploitation of “its” resources by an external third party.

Implementing the basket of laws that are currently available in Mozambique, with the starting point being the link between delimited acquired land rights and the accompanying management and jurisdictional right that communities have over “their” natural resources, is the best way at the present time to give concrete meaning to the implicit “DUAF” that exists in the forest and other relevant natural resources legislation.

Range of land and resources tenure rights in the ER Program area

Legal and customary rights - As stated above, legally, there is just one land right in Mozambique, the DUAT, allocated by the State to all land users irrespective of how they have acquired this right. This is the case in the ER Program accounting area and it would be incorrect to think in terms of “customary rights” being distinct from or different to “private rights” over land. The key distinction is over *how* the right (DUAT) is acquired, taking into consideration the three ways detailed above and in the 1997 Land Law. In the case of natural resources, ownership is retained by the State, as is the case with land. And as with land, Local Communities and their members enjoy automatic subsistence use rights over all natural resources - subject to various regulations on protected species, hunting seasons, etc. Local Communities and their members are free to apply to the State for permission to use the natural resources in their area for commercial purposes, through a system of licenses that are issued by the provincial authorities, as explained above.

The issue of DUAT harmonization in the ER Program – In the context of the ER Program, land tenure regularization is being addressed by the land component of the “Landscape project”, which supports the ER Program – *see section 4.1*. All other aspects of the DUAT are clear but there is still political and interest-group resistance to the more progressive elements of the Land Law and the devolution of land and natural resource management that is inherent in the joint-application of the Land and 1999 Forest and Wildlife laws; “harmonization” in relation to rights over natural resources is another matter, and is open to interpretation of how the Land Law and other natural resources laws intersect and together provide for a strong level of local control over resources use by outsiders. The concept of DUAF, already addressed, is here relevant – *see above*.

Categories of right holders present in the Accounting Area - Officially, there are no indigenous peoples in Mozambique using the official guidelines provided by the UN

Permanent Forum on Indigenous Issues (United Nations). It could however be argued that many local communities have elements of “indigenous” peoples, in the sense that they are the descendants of the original historical occupants, are still governed by customary rules and structures and have “strong links to territories and surrounding natural resources” (United Nations).

The more usual view in Mozambique is one of cultural diversity within a unified polity of state and people. The legitimacy of the many normative and legal systems that accompany this diversity is formally recognized in Article 3 (Legal Pluralism) of the 2004 Constitution. The legitimacy of customary land systems was also recognized in the 1995 NLP and formalized in the 1997 Land Law. This was achieved not by incorporating written or codified versions of the different normative systems, but by the simple device of the Local Community within which land and other natural resources are managed using the “customary norms and practices” of each specific area and its people. However, while there are no “indigenous people” with specific rights that are distinct from other those of other Mozambicans, most people get their land rights through a customary (indigenous) system of one sort or another (by either customary or “good faith” occupation). The way these rights are managed may vary from region to region, but they are all legally DUATs.

In the specific context of Zambézia Province, there are five major ethnic groups present: Chuabo, Macua-Lomué, Manhaua, Marengue and Senas (making it the most ethnically diverse in Mozambique)²¹. In the ER Program area, the predominant groups are Macua – Lomué, with Chuabo to the west (Mocuba) and Manhaua in the central part to the northwest of the Gilé Reserve – see Table 21. This diversity does not present a problem for the ER Program in land tenure terms: all the rights acquired by any of the systems are legally recognized as DUATs. Within the Local Community, the indigenous land management and administration procedures are legitimate provided that they do not contravene constitutional principles - in this way, rural women gain strong formal protection against discriminatory treatment by customary norms and practices. Thus there is one kind of land right, the DUAT, no matter which customary system has produced it. Any further categorization is according to the type and form of the land use in question – private sector, commercial, subsistence, etc.

Table 21: Main ethnic groups in the ER Program area

ZILMP Districts	Main Ethno-Linguistic Group
Alto-Molocué	Macua / Lomué
Gilé	Macua / Lomué
Ilé	Macua / Lomué
Maganja da Costa	Manhaua
Mocubela	Manhaua / Macua / Lomué
Mulevala	Macua / Lomué / Chuabo
Pebane	Macua / Lomué
Mocuba	Chuabo
Gurué	Macua / Lomué

²¹ <http://zambezia-cultura.blogspot.com/>

The extent and location of rights acquired by occupation or by formal request in the ER Program Accounting Area

All delimitation work carried out to date underlines the fact that most Local Communities have contiguous boundaries. It is also clear that DUATs acquired by formal request exist and are registered *inside* and/or *between* different Local Communities. In other words, it is reasonable to say that there is no “free land” in Zambézia Province and in the nine districts of the ER Program area: all land is already covered by some form of DUAT, either customarily acquired or by formal request - with the exception of reserves and other areas of public domain.

It has not been possible to get data on the number of awarded DUATs, or their area and exact location, in the ER Program accounting area. Recent data on the number and extent of delimitations already carried out is also not yet available for the nine districts. Official provincial level data used in a 2016 study shows that up to the end of 2014, a total of 223 Local Community delimitations had been carried out in Zambézia, with a total area of 4,776,351 hectares (Tanner, 2016). This gives an average area per Local Community of just under 21,500 hectares. Other data from the ITC project in Zambézia suggests that the average population per delimited community is just over 3,200 (Tanner, 2016) – see **Table 22** and **Table 23**.

Legal status of rights and potential ambiguities or gaps

All rights acquired by occupation – customary and “good faith” – are formally recognized in law by the 1997 Land Law, and enjoy strong Constitutional guarantees as well - for example, when new land rights are being issued. All new rights, such as those given to new private enterprises, are also formally recognized and protected by the same Land Law, and in legal terms are no different to the DUATs acquired by occupation.

There are no ambiguities in the legal framework in this context, although there are some grey areas in relation to what happens to rights in specific circumstances - when DUATs expire, or when a privately-held DUAT is annulled, for example. Practical (operational) ambiguities occur because: a) many senior policy and decision makers do not accept this reality and adhere to the idea that radical title in the State somehow over-rides the provisions of the Constitution and the Land Law regarding acquired rights; and b) to date, the vast majority of rights acquired by occupation have not been formally identified on the ground and consequently still not registered in formal archives. This can give the false impression of free land when in fact it is occupied and used by extensive, customary land use systems. These systems of course include the itinerant agriculture that has been identified as major driver of deforestation.

Legal recognition of community land rights - This may still be an issue given continuing resistance in some quarters to the implications of the progressive legal framework as discussed above. However, Zambézia has been the focus of significant bilateral support for community land rights delimitation since the early 2000s and local NGOs are much experienced in both the delimitation methodology and in defending the idea that even apparently “free” land is occupied and therefore covered by a DUAT.

Table 22: Community delimitations up to 2014

PROVINCE	To end 2008		2009		2010		2011		2012		2013		2014		Total	
	#	Area	#	Area	#	Area	#	Area	#	Area	#	Area	#	Area	#	Area
Maputo	22	154,123.00	0	0.00	1	18,000.00	4	36,473.52	0	0.00	3	3,000.00	0	0.00	30	211,596.52
Gaza	20	472,484.00	4	27,658.73	16	3,824.60	23	51,869.47	16	58,202.17	0	0.00	27	852,030.00	106	1,466,068.97
Inhambane	11	575,712.00	0	0.00	5	5,238.55	5	80,739.94	2	11,443.55	0	0.00	1	6,158.00	24	679,292.04
Sofala	14	1,426,987.00	5	1,040,801.35	7	130,358.04	17	1,018,058.97	4	119,041.99	12	223,402.45	3	127,313.21	62	4,085,963.01
Manica	14	780,030.00	6	223,451.80	4	132,384.70	3	70,849.13	1	14,406.00	18	118,021.43	6	26,870.08	52	1,366,013.14
Tete	27	3,928,912.00	1	105.43	0	0.00	0	0.00	0	0.00	8	38,790.00	17	62,412.24	53	4,030,219.67
Zambézia	91	4,205,012.00	9	2,241.06	10	26,954.48	13	6,824.85	27	61,234.20	63	416,036.00	10	58,048.00	223	4,776,350.59
Nampula	95	747,936.00	2	36,765.75	1	44,461.00	18	89,649.42	6	87,433.17	23	141,509.34	0	0.00	145	1,147,754.68
Cabo Delgado	0	0.00	4	112,648.78	7	54,626.45	9	42,360.00	4	29865.7	24	167273.2	18	216607.95	66	623,382.08
Niassa	9	357.23	0	0.00	0	0.00	12	671,029.10	48	1,217,081.66	75	725,084.00	10	218,296.93	154	2,831,848.92
Total	303	12,291,553.23	31	1,443,672.90	51	415,847.82	104	2,067,854.40	108	1,598,708.44	226	1,833,116.42	92	1,567,736.41	915	21,218,489.62

Tanner, 2016

Table 23: Community delimitations funded by ITC since 2006

Province	# communities	Area delimited	% area total	Sum of Pop ⁿ (Total)	% of total Pop ⁿ
Cabo Delgado	50	461,832.87	8.50%	148,376	9.94%
Gaza	18	69,852.39	1.29%	15,454	1.04%
Manica	53	788,023.09	14.51%	170,300	11.41%
Nampula	111	587,066.35	10.81%	359,103	24.06%
Niassa	123	2,456,104.94	45.21%	179,332	12.02%
Sofala	12	227,560.41	4.19%	135,389	9.07%
Tete	34	104,620.36	1.93%	91,727	6.15%
Zambézia	122	737,315.48	13.57%	392,857	26.32%
Grand Total	523	5,432,375.89	100.00%	1,492,538	100.00%

Tanner, 2016

A shift in GoM policy to include delimitation in its key “Terra Segura” (see *section 4.1*) project is also a good indicator of an official acceptance of the legal situation, although it is evident that the individual titling element of “Terra Segura” receives far greater priority. The inclusion of 270 Local Community delimitations in the “Landscape project” is a significant departure from the usual lack of official support for delimitation work. It also offers the prospect of creating an essential land rights platform and related local governance structures for the ER Program, working in tandem with the “Landscape project”.

The possibility to create a Land Registry and to register community area is a possibility for the ER Program, which was also suggested in ER-PIN (UT REDD+, 2015a). According to (Tanner, 2017a), this issue needs to be looked at in the context of the GoM land administration program. There is already a Cadaster and a Registry in the MITADER and Ministry of Justice respectively; and the National Land Policy implementation strategy has called for a “Single (Unified) Cadaster” to be created, integrating data from the sectors that use land and natural resources (mining, energy, etc.) (National Land Policy, Resolution 10/95 of 17 October. Part B (i), paragraph 67). Another issue is that “Community Area” is not a formal concept in the Land Law or anywhere else. Delimited Local Communities are land rights holders like any other and should be on the same cadastral register and system; and private sector DUATs awarded by request can and do exist inside them. The whole point of the NLP and 1997 Land Law was to end the dualist separation of the countryside into “modern” or commercial areas and “communal” or “community area”. Creating a register for “Community Areas” would reintroduce the dualist approach and undermine the inclusive, negotiated agrarian transformation that is facilitated by the titling policy and legal framework with its legal instruments that seek to integrate local and investor activities within a shared landscape to achieve economic and social development objectives. This approach is also essential for a successful ER Program. Therefore, **the Land Tenure Assessment conducted by (Tanner, 2017a) does not support the proposal to create a Land Registry and Registration of Community Areas: the current set up is adequate and must be made to work.** This should be taken into consideration for the final design of the ER Program.

Disputes related to contested claims or rights and resolution mechanisms

Conflicts between neighbors always occur and are typically resolved by customary tribunals and resolution mechanisms (Trindade and dos Santos, 2004). NGOs report many cases of conflict between local communities and private investors of various sizes and types. These normally involve relatively small national investors who secure their new DUAT with the help of provincial land services. Field evidence and research shows that consultations with communities are usually cursory and held only with traditional leaders who can be corrupted by the land requestor. Disputes are usually taken first to the local District Administrator, who then calls in the technical teams for land and any other sector that might be involved. If this does not work, the dispute passes up to provincial level, where the Governor frequently assumes a quasi-judicial role as representative of the State.

An increasing number of land and related disputes are finding their way into the formal tribunal structure, which begins at District level. Land and natural resources issues are now included in the formal professional training for judges and public counsels at the Ministry of Justice Center for Legal and Judicial Training (CFJJ), after a FAO supported program to train provincial and district level judicial officers in the new Land, Environment, and Forest and Wildlife laws.

More recently, a corps of paralegals has been created through a training program developed and implemented by the CFJJ with FAO support (Tanner and Bicchieri, 2014). The paralegal program was expanded in Zambézia with funding from the ITC program, and many paralegals now work in organizations and CBOs in Zambézia province. Part of their training includes mediation skills and taking on a role as go-between in relations between local communities and new investors seeking local land and resources. Anecdotal evidence suggests that many have become effective resources for conflict resolution in the complex context of community-external actor relations. The nature of their work also makes them effective educators and communicators, a useful resource for the ER Program, which seeks to change un-sustainable local behaviors.

At the larger scale, projects such as the Portucel forestry plantation follow the lead of central government, which approves DUATs over large areas of land. It is evident that these DUATs are awarded with little real regard for the existence of other DUATs acquired by occupation. cursory and poorly conducted consultations are intended to give a gloss of legitimacy to the land allocation, and are aimed at facilitating the land grant rather than producing a mutually beneficial, negotiated outcome (Tanner, 2010).

Bypassing key elements of the Land Law in this way results in significant levels of conflict. Very few if any of these conflicts enter the formal tribunal system; most are politically very sensitive and can remain unresolved for years. The best solution is to go back to the principles of the Land Law and retroactively conduct a proper consultation exercise, preceded if possible by a full delimitation of pre-existing acquired rights - this is currently being tried by Portucel with support from the NGO ORAM and a national consulting firm.

Grievance Redress Mechanism – There is no Grievance Redress Mechanism designed for the specific topic of land tenure rights. A Grievance Redress Mechanism for the ER Program is described in section 14 – it will also apply to any grievances related to land tenure rights. In addition to the provisions detailed above and to the Grievance Redress Mechanism for the ER Program, (Tanner, 2017a) suggests that the Zambézia Multi-Stakeholders Landscape Forum also help address grievances that cannot be resolved at District level, in accordance with its mediation-based functions.

Implantation risk for the ER Program

Land tenure is a major risk to the ER Program if it is not adequately dealt with. It is the bedrock of a successful rural development strategy to diversify incomes and reduce pressures on forests due to itinerant agriculture and inappropriate other practices. In this context the land component of the “Landscape project” is a critical element in the wider integrated ER Program strategy. There is an evident focus on achieving the ambitious target for individual DUATs but, according to (Tanner, 2017a), priority should be given to the Local Community delimitation work. It is critically important that this process be well implemented by a competent and experienced contractor and that the delimitation work includes all the necessary “extras” – a Community Land Use Plan, creating and training a local CGRN or equivalent, developing a Local Community development vision/agenda, etc. Once all this is done, attention can then turn to identifying and certifying individual DUATs through the Local Community structures/CGRN, in line with the existing provisions of the Land Law for “de-annexing linking” from the Local Community DUAT. *The implementation risk linked to land tenure is also treated as a risk of Reversals in section 11.*

Box 5: Proposition of ER Program interventions with regards to land tenure (Tanner, 2017a)

Based on those elements and on the Land Tenure Assessment carried out for this ER-PD, a series of interlinked activities are proposed as follows (Tanner, 2017a):

- **Delimitation of collectively-held Local Community DUATs**, following the methodology laid out in the Technical Annex of the Land Law Regulations, to include the extensive natural resources systems, including standing and degraded forests that are part of the long-term production system base of the delimited community.
- **Development of Community Land Use Plans (CLUPs)**, as part of the delimitation process, to identify: (i) areas for conservation purposes; (ii) areas to be allocated to agricultural investors on the basis of negotiated partnerships; (iii) areas for community agricultural and livestock use, including areas for expansion in improved rotation systems and/or to allow for population growth.
- **Strengthening and/or creation of CGRNs and/or other community structures** that can be charged with basic land and natural resources management functions, and which form the channel through which the following ER-mitigating activities can be implemented:
 - a) Distribution of community shares in ER payments;
 - b) Transmission and promotion of new measures to enhance local agriculture;
 - c) Transmission of messages on environmentally sustainable practices including SFM;
 - d) Negotiating with new investors on behalf of the Local Community and its members, to achieve a more diversified agriculture based around new value chains and/or partnership agreements with the investors.

Potential impact of ER Program on land and resource tenure

There are no identifiable negative impacts of the ER Program on existing land and resource tenure rights in the Accounting Area; there should be a positive impact that will enhance local rights if the land tenure element of the ER program is fully implemented, in conjunction with land activities in the “Landscape project”.

4.5 Analysis of law, statutes and other regulatory frameworks

Since the Rio Conference on Sustainable Development in 1992, the GoM has been undertaking a significant legal and institutional reform movement to improve the country ability to manage the environmental issue (MITADER, 2016d). Those efforts can be observed in local, regional and national laws and regulatory framework as well as in the GoM's commitment to international treaties and conventions. The very 2004 Constitution of Mozambique includes two fundamental environmental pylons, namely (i) the right of every citizen to live in a clean environment and the responsibility to protect this right and (ii) the recognition of environmental protection as a public interest. It contains a series of general legal provisions aimed at: (i) preventing and controlling pollution and erosion; (ii) integrating environmental concerns into sectorial policies; (iii) promoting the integration of environmental values in educational policies and programs and (iv) ensuring the rational use of natural

resources while maintaining their capacity for renewal, ecological stability and human rights of future generations. It is also concerned with the promotion of land use planning with a view to ensure an adequate location of activities and a sensible socio-economic development (MITADER, 2016d).

A complete analysis of the legal framework related to REDD+ has been provided in (Beta and Nemus, 2015) during Readiness phase. It is also a significant component of the current being developed SESA and ESMF documents. This section provides an overview of the most important acts with regards to the ER Program design and implementation but does not pretend to offer an exhaustive analysis of the Mozambican legal framework. For more details please refer to (Beta and Nemus, 2015; MITADER, 2016d and FUNAB, 2015).

Relevant local, regional and national laws, statutes and regulatory frameworks

The most important legal acts with regards to land and forest management in Mozambique are the Law on Forests and Wildlife (1999) and the Land Law (1997). MITADER is the lead agency for the implementation of these two laws and has dedicated National Directorates focusing on these legal mandates. The laws are implemented through regulations and ministerial decrees, which provide some leeway for adjustment and improvement without further legislative action (UT REDD+, 2016). This is coherent with MITADER being also responsible for the overall National REDD+ Strategy. Under this legal framework, the GoM has created specific ministerial decrees that influence the way benefits are shared in the sector. Two in particular can be highlighted: i) the establishment of mechanisms to share 20% of revenues from wildlife and forestry exploration with local communities; ii) the establishment of a return of 40% taxes to private forestry operators that undertake secondary processing of wood domestically. A third decree lays out the framework for REDD+ implementation and responsibilities (UT REDD+, 2016).

Table 24: Summary of the main national regulatory acts relevant for the ER Program

Acts	Description and relevance for ER Program
Environment and biodiversity	
The Environmental Law (nº 20/97)	The Environmental Law acts like a framework law, establishing the pillars of the system of legal protection of the environment. It aims at defining the legal basis for the improved use and management of the environment and its components to achieve a system of sustainable development in the country. The legislation prohibits the pollution of all environmental components (air, soil and water) as well as practices that may accelerate erosion, desertification and deforestation. Article 4 is especially meaningful with regard to the ER Program. It establishes a range of basic legal principles, including the principle of rational use and management of natural resources, with a view to further improve the quality of life of the population and the maintenance of biodiversity and ecosystems. It also provides for the participation of local communities in the formulation of policies and laws related to natural resource management and the management of protected areas.
Pesticides Regulation (Ministerial Diploma)	This is a joint regulation between the ministries of agriculture, health and environment that aim at regulating the importation, distribution, production, disposal and use of agrarian pesticides for the protection of animal and

<p>nº 153/2002)</p>	<p>public health purposes. It requires all operators active in the importation, distribution, and production of pesticides to be registered and classifies the various pesticides in three major categories according to their estimated danger.</p> <p>Although the ER Program does not provide for the introduction of any pesticide in the ER Program area, agriculture is one of its core component; should any product be introduced later on, this regulation will have to be fully considered.</p>
<p>Regulation for the Control of Invasive Alien Species (Decree N°25/2008)</p>	<p>This regulation provides for: (i) the protection of vulnerable and threatened species and ecosystems; (ii) the impeding of unauthorized introduction and dissemination of alien species and invasive alien species; (iii) the management and control of invasive alien species in order to prevent or minimize their damage to the environment and biodiversity; (iv) the eradication of alien species and invasive alien species that may damage ecosystems and habitats; (v) the carrying out of environmental impact studies under Decree No 45/2004 of 29 September prior to the introduction of exotic species.</p> <p>Although the ER Program does not provide for the introduction of any invasive species in the ER Program area, plantations are part of the ER Intervention and should, if necessary, respect this regulation.</p>
<p>The Environmental Impacts Assessment (EIA) Regulation (Decree n°54/2015)</p>	<p>Mozambique has developed a comprehensive regulation to cover the EIA process, which is included in the Regulation of the Process for Environmental Impact Assessment. The regulations are in line with the international environmental and social management best practices, including World Bank recommendations and procedures. The regulation details the procedures and criteria for ESIA and ESMP and implies the categorization of projects and subprojects (A+, A, B or C). Although the MITADER is responsible for regulating the EIA in Mozambique, it is the project proponent's responsibility to ensure that standards and identified mitigation measures are met.</p> <p>In the design of the ER Program, safeguard plans were accordingly developed, including SESA and ESMF.</p>
<p>The Physical Planning Law and its regulations (nº 19/2007)</p>	<p>The Physical Planning Law establishes key principles for environmental protection in the context of regional planning and establishes hierarchical responsibilities among central, provincial, district and local governments in land use planning processes. It also stipulates that expropriation for public interest will give rise to the payment of fairly calculated compensation in order to compensate for the loss of tangible and intangible goods and productive assets as well as the disruption of social cohesion.</p>
<p style="text-align: center;">Forest</p>	
<p>The Forests and Wildlife Law (nº 10/99) and its regulations</p>	<p>The objectives to be pursued under this act are to protect, conserve, develop and rationally use sustainable forest and wildlife resources for the economic, social and ecological benefit of current and future generations of Mozambicans. It promotes, <i>inter alia</i>, the protection and conservation of specific biodiversity components as well as specific flora and fauna species found in certain places. The law also identifies the principles of local community participation in sustainable natural resources management in and outside protected areas. It introduces Local</p>

	Participatory Management Councils (COGEPS). The ER Program is fully aligned with this key Law and has been designed in full knowledge of it.
Requirements for Simple License Regimes, and the terms, conditions and incentives for the establishment of Planted Forests (Decree 30/2012)	Definition of the requirements for logging including the scheme, terms, conditions and incentives for the establishment of forest plantations, which are part of the ER Program interventions.
Land²²	
National Land Policy (Resolution n°10/95)	The Land National Policy defines the Land as the property of the State in compliance with the guarantee of access and use for population and investors, in full recognition of customary rights of access and management of land for rural population.
The Land Law (n° 19/97) and its regulation	<p>The Land Law defined the regulatory procedures for land management. It provides the basis to define access rights, land use rights and procedures for the acquisition and use of land title by communities and individuals. The same law and its regulation embody key aspects defined in the Constitution in relation to the land, such as the maintenance of the land as state property, which cannot be sold. It introduces <i>Direitos de Uso e Aproveitamento da Terra</i> (DUATs), which can be acquired by occupation according to customary norms and practices, the uncontested occupation of a land over a period of ten years or the attribution of discretionary concessions by the State. The law allows local communities to hold a collective DUAT over the area within which they have jurisdiction.</p> <p>The Land Law is an important component for the ER Program to take into account as it can have an impact on the way the ER interventions are implemented, on the involvement of stakeholders in the ER Program and on the benefit sharing mechanisms. <i>It is fully analyzed in section 4.4.</i></p>
Technical Annex to the Regulation of the Land Law (Ministerial Diploma n°29-A/2000)	This Annex defines the requirements for the delimitation of the areas that are occupied by Local Communities and individuals in “good faith”, as well as for land demarcation in the context of the issuance of titles related to the right to use and benefit from the land.
Procedures for the Presentation and Appreciation of Projects involving more than 10 000 hectares (Resolution n°70/2008)	These procedures define the approval mechanisms for the presentation and assessment of private investment projects involving land extensions of more than 10 000 hectares.

²² The legal framework associated to Land management is analyzed in section 4.4.

Specific procedures for the Community consultation (Ministerial Diploma n°158/2011)	This act provides for the adoption of specific procedures for consultation with local communities for the use of lands, recognizing their rights, in accordance with Regulation of the Land Law.
Creation of the Consultative Forum on Lands (Decree n°42/2010)	This acts establishes the Consultative Forum on Land as a consultation mechanism for the GoM to discuss land and related matters.
Benefit-sharing	
Ministerial Diploma 93/2005	This key ministerial diploma established the mechanisms for channeling the 20% revenues from wildlife and forestry exploration, towards the benefits of communities that inhabit the areas where the exploration of such resources is taking place. Its stipulated that beneficiaries can only receive money if their community is organized in a legalized association with a bank account. This act is crucial in the designing of the benefit sharing mechanisms of the ER Program and was fully considered – see <i>sections 4.4 and 15</i> .
Conservation areas	
Conservation Areas Law (n°16/2014)	<p>The 2014 Law on Conservation Areas provides for the legal establishment of Conservation Area Management Boards (CGAC), which advisory bodies covering one or more CA composed of representatives of local communities, the private sector, associations and local state bodies for the protection, conservation and promotion of sustainable development and use of biological diversity. It also legalizes public-private partnerships for CA management and for concession contracts and definiend specific criteria and principles for CAs' management plans. It promotes the involvement of communities legally living inside CAs and their buffer zones, in income generating activities that promote biodiversity conservation.</p> <p>The effects of this law are likely to be felt in various components of the ER Project. The communities living around the GNR will be engaged in the ER Program that promotes new income-generating activities. The future RPF (on going preparation) and its elements of the Process Framework (<i>see section 14 on safeguards</i>) will deal with the consequences related with restrictions to access and use of natural resources in and around the GNR.</p>
REDD+	
Regulation on procedures for approval of REDD+ projects (Decree 70/2013)	The purpose of this Regulation is to establish the procedure for the approval of REDD+ projects and studies, as well as the setting of the institutional framework and competences. It deals, <i>inter alia</i> , with the institutional framework, approbation and issuing of license for the marketing of carbon credits. It also discusses the procedures for the approval of REDD+ projects and place emphasis on community consultations. The REDD Regulation states that the REDD+ projects should clearly contain measures

to promote and support compliance with the safeguards guidelines. All projects should provide for the distribution of benefits, including local communities under terms to be set by ministerial decree. It also creates the CTR for REDD+ and the UT REDD+ (now designated as the Landscape Management Unit). It provides for all the principles and procedures to be respected for the design and implementation of the ER Program.

International conventions and agreements

Mozambique has also ratified various international conventions and regional protocols related to the management of the environment. It should be noted that, under line 2 of article 18 of the GoM's Constitution, the rules of international law have the same value in domestic law and once ratified by the Parliament and Government they become constitutional normative acts. As per point 1 of article 18 of the Constitution, the *"treaties and international agreements duly approved and ratified, are enacted in the Mozambican legal order"* (MITADER, 2016d). The most important acts are summarized in the table below.

Table 25: Summary of the main international agreements relevant for the ER Program

Acts	Description and relevance for ER Program
Ramsar Convention on Wetlands, 1971 - ratified by Resolution No. 45/2003 of 5 November	<p>The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. In this Convention, party countries, including Mozambique, commit themselves to the protection of pre-identified Wetland of International Importance within their territory, including through effective management of such areas.</p> <p>Although it is not directly part of the ER Program area, it should be noted that the Zambezi Delta is a Wet Land of International Importance under the Ramsar Convention ratified by the GoM²³.</p>
International Convention on International Trade in Endangered Species (CITES, 1979)	CITES is a multilateral treaty to protect endangered plants and animals, aiming to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild. It accords varying degrees of protection to more than 34,000 species of animals and plants, several of which can be found in Mozambique.
African Convention on Nature and Natural Resources Conservation - ratified by the Parliament's Steering Committee through Resolution nº 18/81, of 30 December	The Convention aims at ensuring the conservation, use and development of land, water, forest and wildlife resources of SADC Member States, bearing in mind not only the general principles of nature conservation, but also the best interests of the communities themselves.

²³ The other important Ramsar site in Mozambique is the Lake Niassa, in Niassa province.

<p>United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, 1992 (amended 1997)</p>	<p>The Kyoto Protocol (1997) is an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC, 1992). It is binding for countries that have ratified the protocol to reduce and ultimately cap their greenhouse gas emissions (GHGs).</p> <p>Mozambique signed the UNFCCC on 3 November 1992, and ratified the Kyoto Protocol on 18 January 2005, and entered the protocol into force on 18 April 2005. It should be noted that Mozambique being a developing country, those acts are not binding for the country to reduce GHGs. It nevertheless demonstrates the GoM's political commitment to the reduction of carbon emissions.</p>
<p>UN Convention on Biodiversity - ratified by Resolution n° 2/94, of 24 of August</p>	<p>This international instrument advocates the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings. It is an essential foundation for the creation, development and protection of conservation areas in Mozambique. It is significant for the ER Program, given that forests in Mozambique and elsewhere are the most biologically diverse systems. Forest biodiversity is increasingly threatened as a result of deforestation and forest degradation.</p>
<p>Protocol related to Wildlife Conservation and its application in the SADC - Ratified by Resolution n° 14/2002, of 5 of March</p>	<p>This protocol establishes common approaches to conservation and sustainable use of wildlife resources relating to the effective enforcement of laws in the region and within the domestic laws of each Party State.</p>
<p>United Nations Convention to Combat Desertification (UNCCD), 1994</p>	<p>The objective of this Convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification. Achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.</p>
<p>COP 21 Paris Agreement on Climate – December 2015</p>	<p>Mozambique is one of the 196 countries that signed and ratified the agreement to reduce greenhouse gas emissions to contain global warming to 2°C.</p>

Identification of potential gaps

It should be reminded that the land legal framework raises some issues that have to be taken into account for the ER program: they were already identified and describes in section 4.4. No additional meaningful legal and regulatory gap has been identified for the implementation of the ER Program. Admittedly, Mozambique is considered to have a progressive legal framework for the promotion of sustainable forest management. However, its implementation has had mixed success, indicating a need for review and assessment of the implicit and explicit incentives in the current system (UT REDD+, 2016). **On this matter, the GoM is currently engaged in a comprehensive revision of its forest law, which should be completed in by the end of 2017.**

In the same way, it should be noted that the above set of legislation and agreements, as stated earlier, is not exhaustive. The GoM is committed to other regulatory texts and statutes at national and international level that are detailed in the documents prepared for the FCPF in Readiness Phase. In addition, the GoM’s commitment to REDD+ and to the reduction of carbon emissions can be observed in non-regulatory initiatives, which were described in section 2. They include Mozambique’s Intended Nationally Determined Contribution (INDC) that was presented to the UNFCCC in 2015 and in which the GoM had pledged for the reduction of 76,5 MtCO₂ between 2020 and 2030 (MITADER, 2015). Mozambique has also developed a number of relevant policies, strategies, plans and projects with the vision of aligning the development of the country with economic, social and environmental benefits. Some of these have significant weight in guiding the country towards a reduction in deforestation and forest degradation rates. *They have been evoked in section 2.* Of note is Mozambique’s National Climate Change Adaptation and Mitigation Strategy approved in 2012, which integrates disaster risk management actions, and consolidates priorities and targets for action on climate change into national socio-economic planning. Mozambique is drawing on technical and financial support from development partners, including the World Bank, to strengthen its national legal, policy and institutional frameworks for climate action and mainstreaming climate resilience at sector level in key productive and social sectors (UT REDD+, 2016).

4.6 Expected lifetime of the proposed ER Program

The lifetime of the ER Program is 10 years, from 2016 to 2025. The implementation of the program has started in 2016 through various projects that have already been mentioned earlier, including the MozBio and “Landscape” projects that, along with the MozFIP, provided for early financing of the ER Program activities. Between 2016 and 2025, the ER Program is expected to generate the equivalent of 11,1 MtCo₂ of emission reductions, of which 80% will be offered to the FCPF, which equals to 8,9 MtCO₂. The ERPA and FCPF payments are expected to run until 2025, but the program should extend beyond these dates if the activities implemented are to generate a long-term sustainable and durable transformation of the use of forest and forest resources. In addition, the implementation of the ER Program will be consistent with the action plan of Mozambique’s REDD+ strategy, in which it fully fits, as a broader frame.

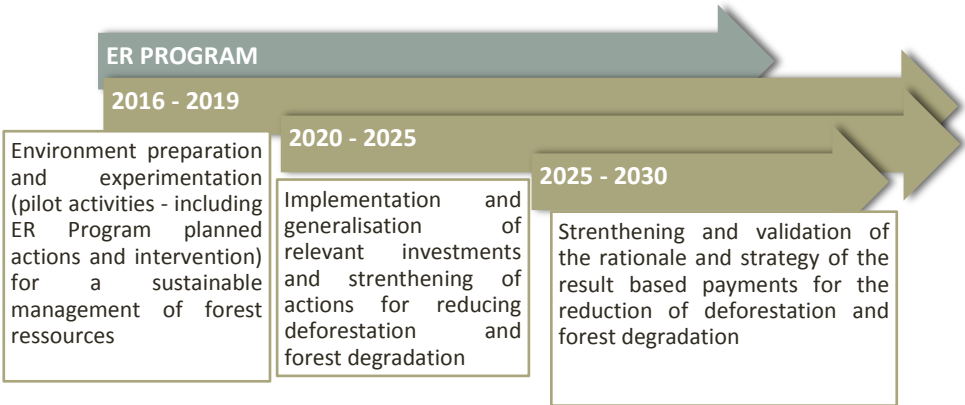


Figure 15: Implementation of the Actions Plan of Mozambique REDD+ Strategy

5. STAKEHOLDER CONSULTATION AND PARTICIPATION

5.1 Description of stakeholder consultation process

In Mozambique, the necessity to consult with stakeholders is embedded in its very legal framework: both the Mozambican Constitution and Environment Law establish the rights of citizens to have information about and to participate in decision-making about activities which may affect them and the environment (FUNAB, 2015). One of the objectives of the Forestry and Wildlife Law (1999) actually is to increase the participation of rural communities in integrated management, fire protection, use and conservation of forest and wildlife resources. In the same way, according to the Land Law (1997) and its regulations (1998), local communities shall participate in the management of natural resources, conflict resolution and land titling processes (FUNAB, 2015). This is even more important in the light of the possible partnerships between local communities and forest operators, as the law states that communities should be consulted before land-use rights can be issued to outsiders (FUNAB, 2015).

Behind this principle is the underlying assumption that, despite belonging constitutionally to the State, the land is genuinely also considered as communities' property: the 1997 Land Law and the 2004 Constitution of Mozambique recognized the necessity to integrate customary rights in land legislation and the Land law actually recognizes as land property title (DUAT) any occupation and use rights over lands that are acquired through any normative systems that do not contradict the Constitution. It also created the "Local Community" body, which is the titleholder of DUAT attributed by the State to all land users within a given area. *For more details about land tenure in Mozambique, see section 4.4.*

As a consequence of this framework, local communities' representation for issues over the land and, subsequently, for the design and implementation of REDD+ initiatives, is best embodied in (i) the Participative Management Committees (*Comité de Gestão Participativa* – COGEP), created in the 1999 Forest and Wildlife legislation and composed of representatives of the local community, the private sector, the government and NGOs' at local scale – see section 6; and (ii) the Natural Resources Management Committees (*Comité de Gestão dos Recursos Naturais* – CGRN), created by decree in 2005 and composed of member from the Local Community – they were fully integrated to the ER Program consultation process.

Since the ZILMP is fully aligned with Mozambique REDD+ National Strategy, the information sharing and consultation and participation mechanisms that have been used in the design of the ER Program are interlinked with the consultation structures and mechanisms that were used for the evaluation and validation of the REDD+ National Strategy, its safeguards instruments and related projects, including MozFIP, MozBio, and Landscape Project. They include two components:

- (i) A [consultative and participative process](#), relying on (i) extensive public consultations, workshops and interviews at national scale and on (ii) the creation of the Zambézia Provincial Forum at local scale;

- (ii) An information-sharing process, relying on (i) the automatizing of REDD+ information dissemination on [social media](#), [website](#) and mails; (ii) the diffusion of didactic documents and (iii) other innovative communication events in local languages.

It is worth noticing that, although an extensive work of consultation has already been carried out, stakeholders' consultation process for the designing and implementation of the ER Program is still on going. Its results are not expected to modify the content of the program which is already well defined but, if necessary, additional changes would be integrated and justified in the next versions of the ER-PD.

Consultation process in the design of the ER Program

In the design phase of the ER Program, consultations were led by UT-REDD+ in coordination with provincial and district governments, the CGRNs, local association and civil society organizations. It was implemented according to the international and national principles concerning REDD+: FCPF guidelines as well as the Mozambican legal and regulatory frameworks (Ministerial Diploma 158/2011 and Decree 70/2013 – see *section 4.5*) were used as guiding documents to ensure the transparent and effective participation of local and forest dependent communities.

Since the Readiness phase, consultations have covered a wide range of issues, from general information on REDD+ process, reference level scenarios and MRV system, legal and institutional framework for REDD+, drivers of deforestation and degradation to the identification of potential pilot projects. From 2013, consultations increasingly focused on the content of the REDD+ initiatives and associated projects – such as MozFip, MozDGM and Mozbio (see *section 4.1*) - and, from 2015 onwards, consultations on the ER Program were intensified in the ER Program area. They also focused on the recently designed REDD+ safeguards documents (SESA, ESMF and PF).



Figure 16: Mains objectives of the consultation process

The overall objective of this process was to ensure acceptance and interest in the program, as well as to build the trust of stakeholders and support their capacity to participate in REDD+ initiatives in a meaningful and effective way (UT REDD+, 2015a). More importantly, public consultations contributed to gathering and assessing community feedback and opinions on REDD+ and associated projects and programs. They focused on the

identification and promotion of potential non-carbon benefits and the implementation of necessary safeguards. Most notably, at longer term, this process ought to maintaining a constructive relationship with the stakeholders during the implementation of the activities to ensure inclusive, transparent and accountable decision-making of locally impacted people throughout the program.

The methodology for the consultations relied on (FNDS, 2016): (i) the identification and mapping of relevant stakeholders in government institutions, civil society organizations (CSOs), formal and informal forest operators (private sector), local communities and other forest dependent communities; (ii) the organization of public consultations, workshops and interviews at central (Maputo), provincial (Zambézia) and community levels in areas where REDD+ initiatives are planned to be or are already being implemented.

Intensification of consultation for the ER Program - In Zambézia, the consultation process was intensified from early 2015 in order to precise the content and scope of the ER Program. Representatives from UT-REDD+ conducted a range of meetings at district and provincial levels in the ER Program area. Visits were also organized to meet key stakeholders such as local producers, cashew nurseries and farm schools, in order to discuss and get feedback on their perception on the causes of deforestation and on potential opportunities for REDD+ activities. In addition, interviews were organized with governmental stakeholders²⁴ in order to enter into more technical discussions on the importance of planning for the ER Program – see Box 6. This process was completed from May 2015 by additional consultations, various workshops and interviews with specific stakeholders²⁵ on the REDD+ safeguards documents – SESA, ESMF and PF.

They included discussions on the drivers of deforestation and forest degradation, land use and land tenure, social and environmental protection and sustainable forest management. In the same way, the workshops aimed to undertake a joint assessment of potential socioeconomic and environmental impacts of REDD+ and preliminary identifications of mitigation measures and strategies. Preliminary field visits were organized to understand the situation of the forest sector and the potential implications arising from the implementation of future REDD+ projects for communities.

*The main issues addressed during the consultation process and the comments received are summarized in **Table 28**.*

Box 6: Key figures on consultation process

Key numbers on stakeholders' consultations (FNDS, 2016) - During Readiness phase, an extensive consultation process was undertaken at national level. Between February 2010 and July 2011, more than **1 500 participants** took part in consultations and training workshop. From March 2013 to November 2016, **61 public consultation meetings** on REDD+ and associated projects were organized. 10 of them were community consultations. Along those consultation, **3 370 participants** were recorded,

²⁴ Provincial Director of Environmental Affairs; head of the Provincial Services of Forestry and Wildlife; Provincial Director of Agriculture; Provincial Delegate of the National Statistics Institute (INE) ; Deputy Chief of Rural Extension Services.

²⁵ District Administration; Courts; Police; District Services for Economic Activities (SDAE); Environmental Provincial Directorate; Forest Provincial Directorate; Private sector (Anadarko, ENI and Forest Operators) and Forest and Environmental NGOs.

29% of which were women. Those consultations were organized throughout the country, including in the ER Program area.

Platforms to enhance the full, effective and ongoing stakeholders' participation

As part of this consultation process, multi-stakeholders platforms have also been created, both at national level for the general REDD+ initiative in Mozambique and at provincial scale for the specific REDD+ activities in Zambézia, including the ER Program:

The Technical Review Committee for REDD+ / National Steering Committee

The Technical Review Committee (*Comité Técnico de Revisão* - CTR) for REDD+ was created by national decree in 2013 (Decree No. 70/13 – see section 4.5). It is the overarching consultative and supervising organ of all REDD+ activities in Mozambique. The CTR is composed of members of the Government, members of the civil society organizations and academic institutions as well as representatives of the private sector. The CTR meets every trimester and can organize extraordinary meetings on specific issues related to REDD+ project when necessary – see section 6 for more details.

The Zambézia Provincial Forum

The Zambézia Provincial Forum was officially created in August 2015 in order to coordinate REDD+ project and the ER Program in Zambézia. The Forum plays an important role in REDD+ program design and coordination, promoting integrated landscape management. It brings together representative of the local governments, the private sector, the academic sector, the civil society and local communities to discuss on relevant issues on landscape management and REDD+ initiatives in the area.

Table 26: Meetings of the Zambézia Provincial Forum for REDD+ (and of the Zambézia Multi-Stakeholders Landscape Forum which succeeded to it)

Forum	Place & date & number of participants	Key topics
1st Zambézia Provincial Forum for REDD+	Quelimane 01/08/2015	Launching of the provincial REDD+ forum; presentation of the forum and its objectives; discussion on inter-sectorial and integrated cooperation; presentation and discussion on REDD+ pilot project in Zambézia (ER Program).
2nd Zambézia Provincial Forum for REDD+	Pebane 06/01 – 07/01/2016	Discussion on the management of the Gilé National Reserve (GNR) and on the activities of the implementing partners.
3rd Zambézia Provincial Forum for REDD+	Quelimane 09/02/2016 75 participants	Discussion on the concrete activities to be implemented by the ER Program; debate on current REDD+ activities in the area; sharing on similar practices in Zambézia and in the rest of the country.
4th Zambézia	Quelimane	Design the action plan for the reduction of deforestation

Provincial Forum for REDD+	20/04– 22/04/2016	at provincial scale with coordination between the ER Program and MozBIO, MozFIP, and Landscape projects; discuss the activities to be implemented for ER Program; find ways to institutionalize the Forum; discussion on safeguards documents.
Extraordinary Zambézia Provincial Forum for REDD+	Quelimane 30/06/2016	This extraordinary forum was also the first meeting of the Sustainable Development for Zambézia / Zambézia Multi-Stakeholders Landscape Forum – see below. Discussion on thematic groups to be set up in the Forum; discussion on the internal rule of the Forum; drafting of the Statutes of the Forum.

Dissemination of information and consultation on ER Program and REDD+

As stated before, stakeholders' consultation and participation in the design of the ER Program also relied on an extensive information-sharing process. The dissemination of information rely on technical communication of UT-REDD+, which ranges from mass communication techniques through media including the radio, television and newspapers to more specific tools such as the utilization of social media (Facebook) and the UT-REDD+ web page.

The REDD+ website, the REDD+ Facebook page and the REDD+ mailing lists²⁶ are the most used tools. Regular updates on the main events linked to REDD+ are regularly relayed through those channels. Pre-consultation information, announcements and invitations, in addition to direct contact with stakeholders, are automatically posted on both the REDD+ website and Facebook page, and shared on the radio and television. The REDD+ website also encompass the totality of the consultation reports and list of participants. A public Drop Box was also created to gather and disseminate all the documents related to the consultation process.

Table 27: Main information sharing tools for stakeholders' consultation and participation

Tool & access	Main content
Website for REDD+ in Mozambique	Reports from the consultations with accompanying participants' lists; information on ongoing activities and project; updated news on REDD+ process in Mozambique; main contact of REDD+ initiative in Mozambique.
Facebook page for REDD+ in Mozambique	Information on ongoing activities and project; updated news on REDD+ process in Mozambique; main contact of REDD+ initiative in Mozambique; article related to REDD+ and forest in Mozambique; photos of REDD+ events.
REDD+ in Mozambique mailing lists	Mailing lists to diffuse information, invitations, reports and documents to stakeholders that registered.
REDD+ in Mozambique	Reports from the consultations with accompanying participants lists.

²⁶ The e-mail forum of discussion on REDD+ that was created in 2016 now comprises 119 members from different institutions within the Government, NGO's, donors, private sector and academy.

<u>consultations</u> <u>dropbox</u>	
Radio announcements	Announcement of the date, place and subjects of events related to REDD+ in Zambézia (local radio) and Maputo (national radio). Example here .
TV announcement	Announcement of the date, place and subjects of events related to REDD+ in Zambézia (local radio) and Maputo (national radio).
<u>Films and videos</u>	Presentation of REDD+ activities and projects in Mozambique; community consultation; theatrical workshop.

During consultation, information is also made available to all participants through the production and distribution of didactic material, such as pamphlets, policy briefings, posters or cartoons. They synthesize the main issues related to REDD+ in a concise and clear manner, easily understandable and illustrated with meaningful pictures. The pamphlets are thematic and cover various topics such as agricultural practices or charcoal production.

Finally, stakeholders' participation can also be encouraged through more innovative and punctual initiatives, such as the organization of theatrical events. In March 2016, the Landscape Coordination Unit organized a [theatrical workshop](#) in collaboration with the local theatre company Kassoria, who already is a member of the Zambézia Provincial Forum. They performed, in local languages, 8 small sketches on the main issues related to deforestation and forest degradation in Zambézia. This kind of initiative, which was filmed and disseminated on Internet, is expected to repeat in the future.

Continuous participation of stakeholders during ER Program's implementation

The implementation of the ER Program will build up on this consultation process and intensify it in order to ensure the long-term full, effective and on-going participation of all stakeholders in ER Program's implementation.

The Zambézia Multi-Stakeholders Landscape Forum (MSLF) (Sustainable Development Platform for Zambézia)

ER Program implementation and coordination will, at local stage, rely on the Sustainable Development Platform for Zambézia, also called Zambézia Multi-Stakeholders Landscape Forum, (*Plataforma de Desenvolvimento Sustentável da Zambézia*), which succeeded to the Zambézia Provincial Forum in 2016.

This forum was created as the executive body to ensure a participative and efficient ER Program implementation at local scale. It is based on the full and transparent participation of all its members for the day-to-day implementation of the ER Program activities in Zambézia. In the ER Program implementation phase, the forum will have to guarantee and support the effective integration of institutions involved in the design and implementation of the ER Program and to help facilitating discussion between them, especially on the Benefit Sharing Plan and the feedback and grievance redress mechanism. The forum will also strengthen communication on REDD+ activities in the ER Program area, with regular collect of information and systematization of dissemination. In addition, the forum will help maintaining, monitoring and updating the [ER Program GIS platform](#) for the geo-referencing of REDD+

activities in Zambézia. Consequently, the Zambézia Multi-Stakeholders Landscape Forum is expected to highly contribute to the participation of the stakeholders in the implementation of the ER Program; the finalization and signature of Memoranda of Understandings between all stakeholders who are part of the forum has actually been defined as a priority.

It should be reminded that stakeholders' consultation and participation in the implementation of the ER program will also be strengthened by the implementation of MozDGM, which is expected to play a key role thanks to its community-centered approach and its emphasis on community organization, knowledge and capacity strengthening – see *section 4.1 for more details*.

5.2 Summary of the comments received and how theses views have been taken into account in the design and implementation of the ER Program

Table 28: Summary of comments received during stakeholders' consultations

Topics and stakeholders involved	Main comments received from consulted stakeholders	Solutions for ER Program design and implementation
Exploitation of natural resources		<p><i>Many issues raised during consultations were related to the understanding of the drivers of deforestation, the potential of mitigation measures and their pros and cons.</i></p>
	Local population, civil society and communities	<p>The over-exploitation of forest resources by rural population is linked to poverty and the lack of job opportunities. They are necessary to their subsistence. How to reconcile the reduction of deforestation and the question of subsistence of communities?</p> <p>The benefits for communities is the result of the goods and services that a healthy forest produces. The aim of the ER Program is to support the process of optimizing these goods and services for current users as well as for future generations. The ER Program will generate new benefits for local population to change their habits, diminish their dependence on forest resources and contribute to deforestation reduction; this will be achieved through specific ER Program activities aiming at diversifying their sources of revenues and proposing alternative way of subsistence – see <i>section 16 on non-carbon benefits, section 15 on benefit-sharing mechanisms and section 4 on ER program activities</i>.</p>
		<p>The use of forest by local communities is strongly embedded in their life habits and culture. Forest resources are used intensively for market purposes and in some instances with lucrative illegal logging, but also for food, firewood, production of charcoal, furniture production, and building fences and home and medicinal purposes. Changing those</p> <p>The ER Program will not prohibit the entire use of forest resources but will be based on a reasoned use of them, in a sustainable way, so that local populations' needs are met at longer term. Those non-carbon benefits will have to be clearly presented to local communities and their feedbacks should be taken into account at all times of ER Program implementation – see <i>section 4 for ER Program interventions and justification</i>.</p>

		<p>habits may be difficult.</p> <p>How will REDD+ be compatible with agricultural and charcoal production?</p>	<p>The ER Program will not prohibit any agricultural practices but will provide incentives for sustainable practices that will enable the agricultural production to increase while reducing deforestation. Agricultural productivity will be increased in order to reduce shifting agriculture and the net impact on agricultural production is expected to be positive. The production of charcoal will be subject to specific measure to reduce the quantity of wood necessary to meet the demand, with improved techniques of production (improved kilns with better yields).</p>
REDD+ Benefits	Local population, civil society and communities	<p><i>Significant issues raised during consultations also were about the understanding of economic and social impacts of REDD+ and mitigation measures proposed to mitigate any potential negative impact.</i></p> <p>The potential financial benefits induced by REDD+ activities may be lower than those induced by illegal logging.</p> <p>The benefits sharing from REDD+ for local communities are not clear and sometimes not trusted, with complaints about corruption, grabbing of revenues and inefficient redistribution (including with regards to the “20% mechanism”).</p>	<p>The ER Program will have to rely on an effective benefit-sharing plan and should generate sufficient non-carbon benefits to cover any real or perceived revenue difference – <i>see section 16 on non-carbon benefits</i>. Those non-carbon benefits are crucial and represent long-term investment in rural development that should last long after ER payments.</p> <p>The question of Benefit-Sharing has been central to the redaction of the ER-PD for the implementation of the ER Program and was partly based on the analysis of land tenure rights in the ER Program area – <i>see section 4.4 and 15</i>. The ER Program was designed taking into consideration this crucial question that is perceived to be key to its success. The ER Program will have to rely on a defined clear and efficient mechanism to distribute carbon benefits to the communities and ensure that the communities also perceive non-carbon benefits – <i>see section 15</i>. The distribution of carbon benefits should rely on transparent and efficient institutional arrangements and monitored.</p>
REDD+ strategy and interventions	All stakeholders	<p><i>The understanding the current economic, social and environmental value of forest and the implications for future generations has been regularly addressed during consultations.</i></p> <p>It is necessary to address uncontrolled fires that are a major cause of deforestation and forest degradation.</p>	<p>Burn-reduction activities are under development and the awareness raising and training on better management of fires is included in various interventions of the proposed ER Program. In addition, the ER Program interventions activities seek to increase the value of forest products to rural communities, thereby reducing incentives for fires (triggered for hunting, charcoal production and agricultural purposes) – <i>see section 4 on ER Program interventions</i>.</p>

		<p>REDD+ pilot projects have contributed to increasing awareness concerning on the need for sustainable use of forest and conservation but this awareness has not changed the patterns of forest use enough.</p> <p>What is the sustainability of the REDD+ Strategy? What will happen when the incomes generated by the selling of carbon credits run out?</p>	<p>Under the existing REDD+ pilot projects, conservation agriculture is being introduced by external sources. The concepts and ways of farming are new to the people in the region, and may clash with local land use/forest use traditions. It will take time to raise awareness for the need for change, and to get people to accept the conservation programs and adopt them.</p> <p>The ER Program will therefore rely on a wide range of extension agents who are part of local communities. Consultation with communities will be crucial to understand their needs and promote coherent practices that do not clash with their cultural beliefs but which provide incentives for changes towards sustainable use of forest resources. This is partly ensured by the Zambézia Multi-Stakeholders Landscape Forum. Communication on benefits will be important.</p> <p>The REDD+ Strategy is not only based on receiving money and income from the selling of carbon credits. Conversely, it aims at initiating long-term changes in the use of forest resources so as to ensure their sustainable use for local communities. Carbon payments will help to initiate this change but, assuming that the REDD+ strategy succeeds, the non-carbon benefits are expected to contribute to the maintaining of sustainable practices way after the application of ERPA and carbon payments, fueling a “win-win” environment – see <i>section 16 on non-carbon benefits</i>.</p>
	Local population, civil society and communities	<p>In addition to reforestation projects, it would be beneficial if individuals could participate in commercial agriculture.</p> <p>It is necessary to empower communities with entrepreneurship and income generating skills.</p>	<p>The valorization of cash crops for the increase of sustainable commercial agricultural activities is an important component of the ER Program. This will come along better access to market through various measures, including increasing smallholders’ knowledge about markets trends and prices. Small scale commercial agriculture is key to the ER Program and will also be supported by the Landscape project - see <i>section 4 on ER Program interventions</i>.</p> <p>The ER Program seeks to generate long term additional revenues for smallholders through activities linked to the commercialization of cash-crops with improved value-chains, also strengthened by the formation of smallholders’ groups to be able to negotiate together and increased their business power. Complementary to the ER Program in which they fit, the “Landscape project,” MozFip and especially MozDGM will help to finance private initiatives of local communities and smallholders who wish to engage in entrepreneurial activities – see</p>

	Government and donors	<p>It is crucial to integrate REDD+ into the governance agenda of the GoM, so as it is addressed as a rural development strategy and not simply a carbon credits mechanism.</p> <p>There should be a joint effort between government, private sector, civil society organizations and communities to reverse the current negative trends in the forest sector.</p>	<p><i>section 4.</i></p> <p>The ER Program is fully integrated in the GoM commitment for reducing rural poverty. Various initiatives have been taken at governmental level to create a positive environment for the application of REDD+ and the ER Program which are part of the national development plan in general, and of rural development in particular – see <i>section 2</i>.</p> <p>The ER Program relies on various mechanisms that enable the full cooperation of the wide range of stakeholders in the design and implementation of its activities. Participative mechanism such as provincial forum (such as the Zambézia Multi-Stakeholders Landscape Forum), inter-institutional and cross-sectorial bodies (such the CTR for REDD+) will be key in ensuring this joint effort and in the ER Program success. In addition, a forest governance assessment has been conducted in 2016 and will be replicated every 2 year in order to guide the changes in the forest sector.</p>
Conservation area	Local population, civil society and communities	Complaints were raised about job opportunities in the protected areas. Communities want priority in receiving job opportunities in the protected areas, for positions such as rangers in order to supplement income while protecting their traditional land.	With regards to conservation area, the ER Program will partly rely on the Mozbio project that will help generate new revenues for the communities living around the GNR. Job opportunities are also expected to be increased by ER Program interventions related to the commercialization of cash-crops and the potential local transformation of cashew – see <i>section 4</i> .
	Government and donors	Inspection fails in conservation areas, including in Gilé for the GNR.	With regards to conservation area, the ER Program will partly rely on the Mozbio project that includes a component linked to the better management of protected areas – see <i>section 4.1</i> In addition, through reducing the appeal of deforestation and forest degradation, the ER Program is expected to reduce the overall risk of “invasions” of protected forests. The MozFIP will also support AQUA on enhancing the law enforcement in the program area.
M& MRV	Government and donors	The Government should improve monitoring of forest operators to ensure that forest legislation is adhered to in practical terms.	The GoM has launched a review of the Forest law framework that should also benefit REDD+ application. The ER Program will be based on an efficient MRV system that is currently being defined by a dedicated team, as well as on a forest information system, established at DINAF/AQUA. It will also support forest law enforcement. The ER Program, of which some interventions are dedicated to better management of forestry practices, will target forest operators.

	All stakeholders	Communities should actively participate in the monitoring of forests	The ER Program comprises a Participative MRV system to ensure local communities involvement in this component – see <i>section 14</i> .
Land issues	All stakeholders	<p><i>Many issues raised during consultations were related to the understanding of the potential impact of REDD+ on land use and land tenure, in the ER implementation risks and possible adjustments linked to land tenure.</i></p> <p>It is crucial to engage in forest and land delimitation process.</p>	<p>In the ER Program, support is provided for community delimitation process as well as for the issuance of DUAT. Those ER Program interventions are supported by the MozFip and Landscape projects and are considered as key for the success of the ER Program implementation. The Mozbio project will also contribute to it with micro-zoning activities within delimited communities. This is considered as crucial to ensure the long-term rational use of natural resources and for benefit-sharing mechanism – see <i>section 4.3 on ER program interventions, section 4.4 and the assessment of land tenure and section 15 for the benefit sharing mechanisms.</i></p>
	Local population, civil society and communities	Civil society and NGOs should be engaged in land zoning process.	The ER Program recognizes that civil society organizations should support communities in the delimitation of community lands to strengthen them. Those are complex issues for which communities need assistance to work on them adequately. The ER Program will rely on a wide range of civil society and NGOs partners such as ITC and ORAM who already engaged in such initiatives. MozFIP is supporting o <i>Plano Nacional de Ordenamento Territorial</i> , and this activity will also take place in the project area.
	Government and donors	It is necessary to clearly delimit the area of application REDD+ interventions.	The ER Program has a specific area of application that is clearly delimited by the borders of the districts that composes the accounting area – see <i>section 3</i> .
	Civil society, government and donors	There is a need for better communication strategy at the community level, with better use of community radios, which have a lot of influence on communities.	Communication is a significant part of REDD+ and of the ER Program and important efforts have been made in this sense. The dissemination of information rely on technical communication of UT-REDD+, which ranges from mass communication techniques through media including community radio but also television and newspapers as well as more specific tools such as the utilization of social media (Facebook) and the UT-REDD+ web page – see <i>section 5</i> .

Stakeholders' involvement	All stakeholders	<p>REDD+ messages should be translated into several local languages in order to be more accessible to communities.</p> <p>Communities should be aware of existing forest resources and their importance to be able to protect them</p>	<p>The ER Program is planning the dissemination of information in various languages including Portuguese and local languages – see <i>section 5</i>.</p> <p>This is an important component of the ER Program that is addressed in the consultation process in which communities are associated. Various tools and mechanisms have been developed to ensure awareness rising – see <i>section 5</i>.</p>
	Local population, civil society and communities	<p>How will the comments raised during consultations be taken into account?</p> <p>Civil society organizations should fully be involved in the REDD+ process.</p>	<p>All record of consultations are posted on the Internet and made available to public. MITADER is responsible for gathering and managing them. They are taken into account for the design and implementation of the ER Program.</p> <p>Civil society organizations are invited to participate in all activities of the REDD+ process, including public consultations and workshops throughout the country. This is also true for all the consultations related to the ER Program design and implementation. This should also be a way of listening and answering to any parties that is not in favor of REDD+, in order to understand their concerns and address them. In order to fully institutionalize stakeholders' participation in the ER Program the Zambézia Sustainable Development Platform, which is succeeding to the Zambézia REDD+ Provincial Forum (also called the Zambézia Multi-Stakeholders Landscape Forum – MSLF) is currently being formalized. This Platform is composed of Civil Society Organizations (CSO) among other stakeholders (academia, private sectors, etc.).</p>
	Government and donors	<p>The involvement of women in the consultation process should be ensured and monitored.</p>	<p>The participation of women during the consultation process is already promising, 29% of consultations participants being women (see box 5). Along the ER Program implementation, their participation will continue to be strongly encouraged. The records of all the consultations, including the list of participants, are available online – see <i>section 5</i>.</p>
	All stakeholders	<p>It is necessary to represent all stakeholders in REDD+ strategy implementation.</p>	<p>The GoM is fully aware that REDD+ strategy and the ER Program are cross-sectorial initiatives. In order to ensure the on-going participation of all stakeholders and the integration of their different views, various mechanisms have been created. The most important tool with this regard is the creation of the MSLF, which should ensure the long term and active participation of a significant variety of stakeholders, including civil society, in the design and implementation of the ER Program. In addition, the CTR for REDD+, which includes representatives of several sectors of activity, aims to establish the</p>

			<p>procedure for approving projects related to REDD+, as well as establishing the institutional framework – see <i>section 2 on cross-sectorial commitment and section 6 on institutional arrangements</i>.</p>
		<p>A need was identified for greater outreach and greater involvement of communities in designing the Legal and Institutional Framework for the National REDD + Strategy.</p>	<p>The overall participation of communities in the design and implementation of the ER Program is ensured through various mechanism that are detailed in section 5 and 6. Those also apply for the designing the Legal and Institutional Framework for the National REDD + Strategy.</p>
	Private sector	<p>What will be the involvement of forestry operators?</p>	<p>Forestry operators should always be part of every public consultation process in order to collect more input on their involvement and interest in this process as well as the sensitivity of this group throughout the process. The ER Program has specific interventions related to forestry practices – see <i>section 4</i>.</p>

6. OPERATIONAL AND FINANCING PLANNING

6.1 Institutional and implementation arrangements

First, it should be reminded that institutional and governance weaknesses have been Institutional and implementation arrangements are crucial for the good implementation of the ER Program. Admittedly, poor inter-institutional and sectorial collaboration may favor illegal logging and unplanned land occupation and would be likely to undermine the efficiency of the implementation of the ER Program interventions. In addition, as explained in section 4.1, deforestation and forest degradation in the ER Program area are mainly due to smallholders' subsistence practices linked to itinerant small-scale agriculture and charcoal production. Because they are subsistence activities, modifying those practices is a great challenge. It requires intense fieldwork and a subsequently large number of extension agents, on the field. Respective efforts therefore have to be coordinated (UT REDD+, 2015a).

Those elements stress the importance of institutional arrangements, which have a key role to play for the coordinated and efficient implementation of the ER Program interventions as well as for the long-term adaptation of smallholders' practices to sustainable use of forest and natural resources.

Although institutional and governance weaknesses have been identified as potential barriers to REDD+ implementation in Mozambique – see *section 4.1* – they have been, in the past few years, largely addressed through innovative measures and concrete efforts that should be considered as key for the ER Program success. One of the most obvious was the creation of the MITADER that, as stated in section 2, gathers into one single institution the management of cross-sectorial issues that are all very relevant to REDD+ with regards to forest management, conservation areas, rural development, law enforcement, land administration, etc. This is a unique institution that guarantees both the political commitment to REDD+ in Mozambique and the practical success of REDD+ initiatives' implementation.

Description of implementation arrangements for the ER Program: administrative oversight of the main bodies involved in REDD+

From a general point of view, REDD+ policies and implantation in Mozambique are dependent on properly articulated institutions, enabling the proposed interventions to be carried out in harmony. They are defined by various texts, the two most important ones being the REDD+ National Strategy and the Decree No. 70/13 of December 20th, 2013, ("Regulation of the procedures for approval of projects for reducing emissions from deforestation and degradation") – see *section 4.5*. The implementation of the ER Program will mostly rely on those institutional arrangements, adapted to local context.

The institutional arrangements that prevail in the area of forest conservation and with regards to REDD+ in Mozambique have been thoroughly described in (Beta and Nemus, 2015) during Readiness phase. This section describes the main institutional bodies that should intervene in the design and implementation of the ER Program. Implementation arrangements are then summarized in Box 7, Figure 18 and Figure 17.

At national level

As previously explained, at national level, the main bodies responsible for REDD+ in Mozambique are the MITADER and the FNDS, the MASA and the MEF – see *section 2.3 for more details*. Those bodies have the overall responsibilities to: (i) raise investments and funds; (ii) enter into agreements with donors and partners; (iii) ensure compliance with donors and partners; (iv) lead technical and administrative management of REDD+ programs; (v) transfer funds to districts and implementation agencies; (vi) ensure the coordination of the main processes and procedures; and (vii) guaranty continuous evaluation and monitoring of REDD+ programs (UT REDD+, 2015a).

This is not an extensive list. For more details, please see (Beta and Nemus, 2015).

MITADER

As explained in section 2, the Ministry of Land, Environment and Rural Development (MITADER) was created in January 2015 in order to join into one single institution responsibilities that were previously shared between several ministries, especially across the Ministry of Agriculture (MINAG) and the Ministry responsible for Environmental Coordination (MICOA) - see *section 2.3 for more details*. This is expected to facilitate the coordination needed to address challenges of a cross-sectorial nature, which are inherent to REDD+ initiatives. It surely is a turning point in the way forest management is addressed in Mozambique. MITADER's role in REDD+ mainly relies on the following bodies (Beta and Nemus, 2015):

- **The National Fund for Sustainable Development²⁷ (FNDS), which was created in February 2016. FNDS is the most important body within the MITADER for the ER Program implementation.** From a general point of view, the FNDS contributes to the strategic planning of the land, environment and rural development sector in Mozambique and gives impetus to the integrated and sustainable rural development process – see *section 2.3 for more details*. FNDS is responsible for the technical and financial coordination of the ER Program. It especially coordinates its implementation through its International Funds Management Unit (UGFI). It also works closely with some of MITADER's technical directorates, mainly the National Directorate of Forests (DINAF), the National Directorate of Land (DINAT), the National Agency for Environmental Quality Control (AQUA) and the National Agency of Conservation Areas (ANAC) – see *below for the description of those bodies*. FNDS will also coordinate with the following national directorates in other line ministries: the National Directorate for Agriculture and Silviculture (DNAS) and the National Directorate for Agricultural Extension (DNEA) in MASA and the Energy Fund (FUNAE) in MIREME.

It should be noted that the FNDS also is responsible for the development and implementation of the MRV system for REDD+, which is a key element of the ER Program.

Within the FNDS, the UGFI²⁸ will implement the project at the central level. UGFI is responsible for the implementation of all project activities, including technical supervision and coordination, overall project planning, quality oversight, communication, safeguards

²⁷ Fundo Nacional de Desenvolvimento Sustentável

²⁸ Unidade de Gestão dos Fundos Internacionais

management, reporting, procurement, financial management, monitoring of project activities, and regularly monitoring and reporting on its progress. In the framework of MozFip, which contributes to the ER Program, the UGFI project management team will include a financial manager, a procurement specialist, an accountant, an M&E officer, a communication specialist, a safeguards specialist and technical specialists for coordination of natural forests, plantations and reforestation, land, agriculture, and biomass. The UGFI will coordinate the work of the focal points from the relevant ministries (MASA, MIREME) to ensure their regular participation in project implementation.

- **The National Agency for Conservation Areas²⁹ (ANAC)** – The ANAC is an institution with administrative, patrimonial and financial autonomy under the tutelage of the MITADER. Its main function is to guarantee the effective management of all conservation areas, national parks, sport hunting areas and reserves in Mozambique, including through, *inter alia*, defining priorities for administration and sustainable use of conservation areas, ensuring the protection of biological diversity, licensing hunting and ecotourism activities in conservation areas, managing and training technically-professional personnel, etc. It can generate its own revenues with entrance fees in conservation areas and fees and tariffs for all tourism activities carried out in conservation areas. With regards to REDD+ and to the ER Program implementation, the ANAC is a crucial actor as it is responsible for the management of the Mozbio project, which covers the GNR and its surroundings – *see section 4.1 for more details*. It is also responsible for Biofund, which is a trust fund created in 2011 with the ANAC, academic organizations, civil society and international partners.
- **The National Agency for Environmental Quality Control³⁰ (AQUA)** was also established by MITADER in 2015, as an independent law enforcement agency. Currently, AQUA is developing a new strategy for forest law enforcement in the country. It is notably responsible for the activities of forest patrolling and inspection, prevention and detection, including through the regular assessment of forest concessions and forest operators.

Within this mandate, and relevant for the ER Program, AQUA is especially working on the development and implementation of the Forest Information System, in cooperation with DINAF.

- **The National Department of Forests³¹ (DINAF)**, which was created in 2015. One of the main responsibilities of DINAF is to develop and update standards and procedures on the sustainable management of forest resources, including the national certification scheme. It also ensures the licensing, management, protection, research, conservation, fiction and monitoring of the use of forest resources. With regards to the ER Program, the DINAF is especially in charge of the National Forest Inventory and of the designing of the Forest Information System, in cooperation with AQUA.
- **The National Direction of Lands³² (DINAT)**: It is especially responsible for the management of the national cadaster, the attribution of DUATs and the delimitation of community lands, which are essential parts of the REDD+ strategy and of the ER Program (ERI-B1: Regularizing land tenure) – *see section 4.3*.

²⁹ Administração Nacional das Áreas de Conservação

³⁰ Agência da Qualidade Ambiental

³¹ Direcção Nacional de Florestas

³² Direcção Nacional das Terras

- **The National Direction for Rural Development³³ (DNDR)** – The DNDR is crucial in REDD+ policies as it is responsible for the overall definition of rural development initiative in Mozambique, with significant focus on inter-sectorial coordination for the sustainable use of resources and on the promotion of communities' involvement in the process of local rural development.
- **The Technical Review Committee for REDD+³⁴ (CTR) and the National Steering Committee:** As already stated, the CTR was created in 2013 as the overarching consultative and supervising organ of all REDD+ activities in Mozambique. Its main objective is to pilot the inter-institutional coordination among all the sectors and stakeholders that are involved in REDD+ initiatives in Mozambique. Today, those functions are handled by the **National Steering Committee**, which was created in 2015 for MozFip. It comprises government organizations, the private sector, research institutions and civil society organizations and has the overall mandate to support UGFI in strategic decision-making regarding the FIP and REDD+ initiatives in general. Its main functions are to assume a technical advisory role, to ensure alignment and coordination between the various government programs and liaise with relevant stakeholders.

With regards to the ER Program, the National Steering Committee will ensure its consultative and piloting functions at national level. It will more focus on the content of the ER program and on consultation activities than on its implementation.

MASA

In the same way, the role of the Ministry of Agriculture and Food Security (MASA) in REDD+ mainly relies on the following bodies (Beta and Nemus, 2015):

- **The National Directorate for Agricultural Extension³⁵ (DNEA)** – One of the long-term objectives of MASA is to improve food security and reduce poverty by increasing agricultural productivity, agro-processing and marketing through sustainable exploitation of natural resources. The National Directorate for Agricultural Extension plays a key role in this strategy through: (i) operationalizing this objective; (ii) supporting and coordinating the private sector and NGO's related initiatives; (iii) disseminating good agricultural practices adapted to climate change and contributing to the protection of natural resources.
- It should be noted that agrarian extension is one of the key aspects of the implementation of REDD+ in Mozambique, which seeks to provide the communities with incomes that prevent them from causing deforestation for shifting agriculture.*
- **The National Directorate for Agriculture and Silviculture³⁶ (DNAS).** Within MASA, The DNAS is responsible for managing all forest plantations in Mozambique, which is a crucial part of the National REDD+ Strategy. It is especially in charge of promoting reforestation for conservation, energy, commercial and industrial purposes. This body is therefore especially relevant for the ER Program with regards to ER Program interventions linked to plantations (ERI-D3: Promotion of multi-purpose plantations) - see section 4.3.

³³ *Direcção Nacional de Desenvolvimento Rural*

³⁴ *Comité Técnico de Revisão*

³⁵ *Direcção Nacional de Extensão Agrária*

³⁶ *Direcção Nacional de Agricultura e Silvicultura*

Both DNEA and DNAS are crucial for the implementation of the ER Program and are regular partners for the development of, especially, the Landscape and the MozFip projects.

- **The Agricultural Research Institute of Mozambique³⁷ (IIAM)**, which was created in 2004 with administrative autonomy, aims to meet "integrate research, development and dissemination of agricultural technologies" in Mozambique, based on (i) research in the fields of agriculture, forestry, rural sociology and economics and agro-business and (ii) the production and dissemination of associated documentation, training and transfer of technical-scientific knowledge in the agricultural sector. Based in Maputo, it possesses regional centers in the Northern, East-northern, Central and Southern regions of Mozambique. Its overall responsibility is to guide public policies in the agricultural and rural development sectors, including through (i) helping to prioritize programs and actions aimed at increasing productivity and sustainability of production systems and agro-business and promoting social development for rural producers; and (ii) promoting the sustainable use and conservation of natural resources.
- **The Institution for Cashew Promotion³⁸ (INCAJU)** was created in 1997 with legal personality and administrative and financial autonomy. Its area of intervention includes: (i) the production and distribution of cashew seedlings; (ii) the promotion of the integrated management of cashew; (iii) monitoring of the marketing of cashew nuts and the promotion of the cashew industry. *INCAJU is a critical partner for the ER Program implementation of which one of the core area of intervention is the promotion of improved value chains, especially cashew (ERI-D2: Structuring of sustainable value chains) – see section 4.3.*

MIREME

The MIREME's role in REDD+ mainly relies on the **National Directorate of Energy**. In the context of REDD +, the main functions of the National Directorate of Energy are the promotion of renewable energies in rural areas, the dissemination of new technologies for the production of energy and the coordination of the Inter-ministerial Commission of Bioenergy³⁹ (CIB).

More importantly for REDD+ implementation and for the ER Program, the MIREME hosts the **Energy Fund⁴⁰ (FUNAE)**, which is a public institution with legal personality, administrative and financial autonomy, especially responsible for (i) the development, production and use of various forms of low power energy to supply rural and urban areas inhabited by low-income populations; and (ii) promoting the conservation and sustainable management of energy resources. Those activities include the promotion of the sustainable consumption of biomass (including with the dissemination of improved cook stoves) as well as the development of forest plantations for the production of biomass. FUNAE is, *inter alia*, also able to install distributions networks in rural areas and to supply financial and technical assistance for projects related to the production and distribution of power, with particular attention for the use of new and renewable power sources.

³⁷ Instituto de Investigação Agrária de Moçambique

³⁸ Instituto de Fomento do Caju

³⁹ Comissão Interministerial de Bioenergia - The CIB was created in 2011 for the "coordination, supervision, monitoring and evaluation of the implementation of the Biofuels Policy and Strategy". It seeks, *inter alia*, (i) to promote rural development through investments in biofuels, with a focus on small-scale producers in rural area; and (ii) establish mechanisms for the sustainable production of biofuels based on local agro-energy resources (Beta and Nemus, 2015).

⁴⁰ Fundo de Energia

Provincial and district levels

At provincial scale, the organs of public administration in Mozambique are represented by the provincial Governments and their provincial Governors. The provincial Government is in charge of exercising administrative guardianship over local authorities and of guaranteeing the execution of governmental policy, including REDD+ policies (Beta and Nemus, 2015).

Provincial Government contain various provincial Directions that are associated to specific areas of intervention which they are in charge of directing and coordinating - the organic structure of each provincial government is defined by the Council of Ministers, but there must be between 7 and 12 provincial directions (Beta and Nemus, 2015). In the framework of REDD+, the Provincial Direction of Land, Environment and Rural Development (DPTADER) is particularly relevant. It is responsible for implementing MITADER's policies at provincial level.

- **In Zambézia, the implementation of the ER Program interventions will be coordinated by the DPTADER.** Within DPTADER, in particular, the MozFip project, which highly contributes to the implementation of the ER Program, will rely on a provincial project coordinator and technical specialists who form the **Program Implementation Unit (PIUs)**. The provincial project coordinator coordinates and monitors progress in project implementation at the provincial level and proposes decisions in line with the project objectives and institutional arrangements. He reports to the UGFI coordinator at the central level and keeps the DPTADER director informed about project implementation.
- Under the supervision of DPTADER, **the Landscape Coordination Unit (LCU) is in charge of coordinating MozFip activities and ER Program interventions** and of monitoring project implementation progress at the provincial level. It is currently based within the ER Program area, in Mocuba. The LCU reports to the national UGFI coordinator and to the MITADER provincial directors and have regular meetings with the provincial governors. It also interfaces with the district authorities, especially the District Service of Economic Activity (SDAE) – see *below*. The LCU is presently fully staffed and composed of one provincial coordinator and technical specialists (forest specialist, agriculture specialist, biomass energy specialist, land specialist, and a sustainable development specialist, who will be responsible for the safeguards activities).

At local scale, district Governments are the main organizational and functional unit of local government and the foundation for economic, social and cultural development and planning in Mozambique. Just like Provincial Government, District governments are composed of various bodies, including District Services responsible for planning, directing and coordinating the activities of their respective sector. The creation of District Services is the responsibility of the Provincial Governor, depending on the needs, capacities and potential of economic, social and cultural development of each district (Beta and Nemus, 2015). In the framework of REDD+, the District Services for Economic Activities (SDAE) are particularly relevant.

- **The District Services for Economic Activities⁴¹ (SDAE)** are, at district level, especially responsible for issues related with agricultural and land planning development, which are crucial for REDD+ implementation. This include promoting good

⁴¹ *Serviços Distritais de Actividades Económicas*

forest management, ensuring compliance of actors and activities with forest legislation, promoting population education on fire control, assessing cultivated areas, production level and yields, disseminating appropriate production techniques and promoting relevant mechanisms to finance agricultural production.

At local scale, other significant actors of REDD+ implementation include the REDD+ Multi-Stakeholders Landscape forum (see section 5), CGRNs (see section 5), community associations, the private sector (forest operators, medium-scale farmers, input suppliers), NGOs and research/academia– see section 1.3 for partner agencies and organizations involved in the ER Program.

- **Local communities** – It should be noted that, since the 1990s, policy reforms in Mozambique have been increasing the decentralization of forest resources management. This process has been embodied in the creation of the Community Based-Natural Resource Managements (CBNRM), enhancing local communities' participation and rights in natural resources management, also embedded is law⁴². The rationale is that CBNRM has the potential not only to promote community participation in resource management but also generate community livelihood and promote rural development under the broader umbrella of poverty alleviation.
- **The Zambézia Multi-Stakeholders Landscape Forum (MSLF) also plays an important role in project coordination and in promoting integrated landscape management.** Public consultation forums are key components of REDD+ in Mozambique. They act as platforms to engage the various stakeholders on decisions relating to proposals and reports of jurisdictional integrated development programs and other REDD+ projects. The findings of the consultation are published and serve as significant basis for the design of REDD+ projects and programs. Public consultations promote the transparency of the decision-making process. As explained in section 5, the Zambézia MSLF brings together stakeholders to discuss relevant issues in the landscape and is expected to promote better coordination of projects and other initiatives in the landscape by facilitating the establishment of a common vision to manage the landscape and a space for knowledge exchange.

Box 7: Summary of implementation arrangements for the ER Program

The implementation of the ER Program in Zambézia will be embedded in the ongoing REDD+ process and aligned with the National REDD+ Strategy's overall objectives and pillars. Therefore, the ER Program will be managed by the GoM through FNDS/MITADER at central level, and by the provincial Government of Zambézia at provincial scale (DPTADER). From a financial point of view, the FNDS, which is itself piloting the International Fund Management Unit (UGFI), is the financial management unit for all REDD+ projects and activities, handling administrative and technical processes related to funding. It should be noted that, following the creation of the UGFI, the UT REDD+ was incorporated to it – see next sub-section on “capacities”. The operational REDD+ arm is now designated as the Landscape Management Unit.

⁴² The policy and legal instruments relevant for community participation in forest management include: Policy and Strategy for Development of Forestry and Wildlife (1997); Environmental Law (1997); Land Law (1997); Forestry and Wildlife Program (1998); Land Law Regulations (1998); Forestry and Wildlife Law (1999); Technical Appendix to the Law (1999); Decree 15/2000 on articulation between local government and local communities (2000); and Forestry and Wildlife Regulations (2002).

The ER Program local implementation will partly rely on specific cooperation agreements with the provincial government of Zambézia, districts administrations and local stakeholders from civil society and the private sector. The implementation of its day-to-day activities will be coordinated by the Landscape Coordination Unit in Zambézia, whose team is located in the ER Program area (Mocuba) – see *next sub-section on “capacities”*. The Landscape Coordination Unit will be a key link for local institutions and stakeholders. In August 2016, they signed a collective Memorandum of Understanding (MoU) with key civil society partners who will be involved in the program activities implementation. Those partners will implement the ER Program activities under consultation with multi-stakeholders through the Zambézia Multi-Stakeholders Landscape Forum (MSLF) - see *section 5*. The implementation of the ER Program will partly rely on local communities and most of its interventions and activities will be held within the communities who live in the ER Program area, involving the CGRN, individual farmers and small community businesses.

The objective is to create innovative and decentralized governance arrangements at national, provincial and district levels, including the government, private sector, civil society stakeholders and the communities (UT REDD+, 2015a).

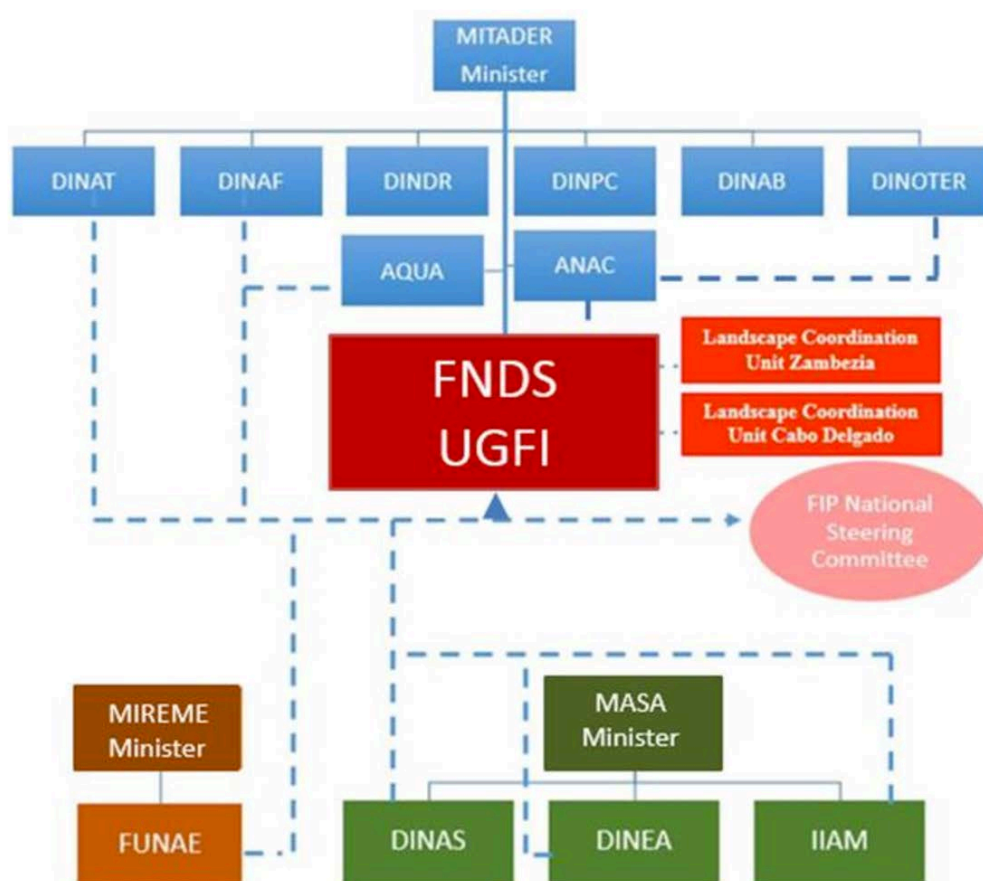


Figure 17: Description of the external linkage of UGFI

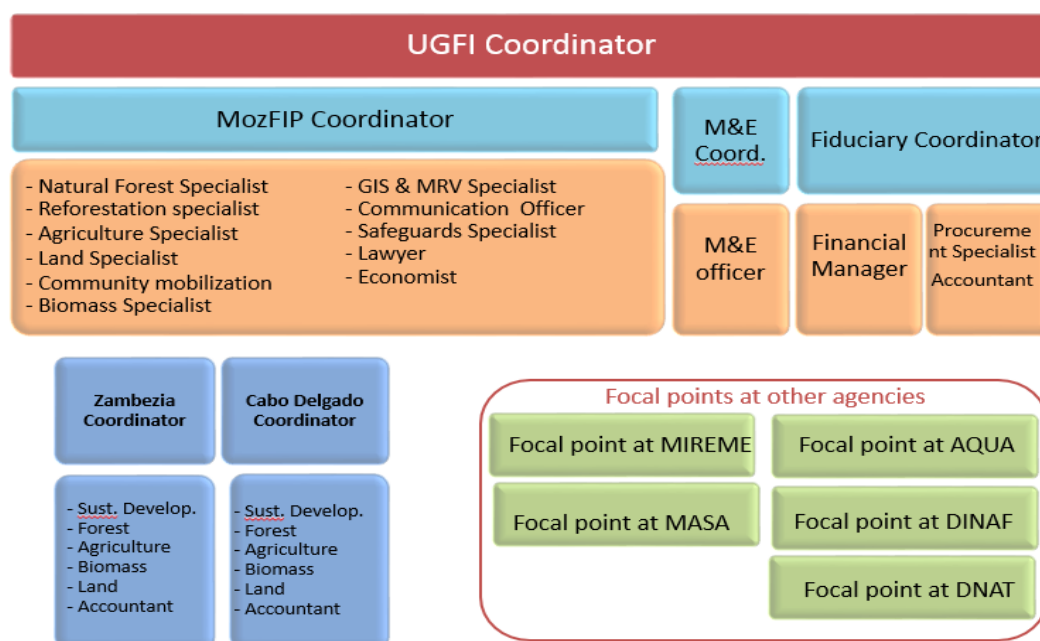


Figure 18: Description of UGFI staff composition

Operational and financial capacities

The capacities of the involved entities in the implementation of the ER Program have been reinforced progressively. They now are fully operational for carrying out and managing the ER Program interventions.

The previous description of the institutional bodies involved in the implementation of REDD+ in Mozambique is expected to show the full capacity of the GoM to implement the ER Program through well-defined financial and operational structures. As previously explained, it should be noted that multi-sectorial coordination and cross-sectorial commitment is enhanced through various mechanisms, including the CONDES, which acts as the highest governmental structure to discuss and communicate issues related with environmental and sustainable development with the Council of Ministers (UT REDD+, 2015a).

Enhanced financial capacities

Besides the existing financial administration directions within the Ministries, both MITADER and MASA have a long experience of implementing World Bank and other complex multi-donor funded projects and have adequate institutional and technical capacity to effectively absorb additional funds and implement the ER Program (UT REDD+, 2015a).

Since ER-PIN, financial capacity for the implementation of the ER Program was reinforced with the creation of the International Funds Management Unit (*Unidade de Gestão de Fundos Internacionais*, UGFI), which coordinates and supervises major donor support programs, including FCPF, MozFIP, and Landscape project, and reports directly to the Minister of Land, Environment and Rural Development. The UGFI is developing a staffing structure for each of the 2 REDD+ programs to be implemented, sharing technical and administrative staff across programs to maximize efficiency. Common standards and procedures for procurement and financial management, adhering to best practices for international fund management, has been developed as a core competence of FNDS and UGFI, to be provided across all programs (UT REDD+, 2016).

It should be noted that UGFI is financially and technically supported by the MozFip and the Landscape Management Program – see *section 4.1*.

Creation and strengthening of the landscape coordination unit

The creation of the landscape coordination unit in 2015, was a significant step in (i) the design of institutional and implementation arrangements for the day-to-day operations of the ER Program and in (ii) capacity enhancement objectives.

Its main added value is to enhance inter-sectorial and inter-institutional coordination at provincial and national levels, addressing one of the main REDD+ barriers in Mozambique - see *section 4.1*. It also shows the political will and sustained commitment of the GoM to efficiently implement REDD+ activities and the ER Program, strengthening local capacities to do so and showing a significant will to decentralize such responsibilities. The provincial Landscape Coordination Unit is also a means to overcome potential capacity and resources gaps, inherent to the size, level of ambition and complexity of any jurisdictional approach. It enables to concentrate on capacity building effort and gather human, technical and financial resources efforts into one single unit (UT REDD+, 2015a).

Landscape Coordination Units rely on existing efficient structures – may they be public, private or NGOs - who already are operating on the ground for their day-to-day operations. This is also true for the Zambézia UT REDD+ for the ER Program, in which this piloting objective is crucial: it is particularly important for the agricultural and charcoal productions components, based on a network of extension agents, for which it is necessary to have one single method for extension enabling individual modulation of support.

The ER Program activities' early implementation – that is, between 2015 and 2016 – was ensured by the provincial Landscape Coordination Unit. Based in the ER Program area since June 2015, and under the authority of the DPTADER, the provincial coordinator's responsibilities initially were to carry on the preparation, consultation process and implementation of the ER Program's early activities. He was, and still is, also responsible for promoting stakeholders' involvement in the design and implementation of the ER Program, through managing the Zambézia Multi-stakeholders Landscape Forum with local institutions and stakeholders.

Recently, the Zambézia Landscape Management Unit was strengthened. Those arrangements were completed in 2016 by the creation of a dedicated Landscape Coordination Unit (LCU). Based in Mocuba, this team is composed of 6 technical specialists who supervise the various areas of application of the ER Program, including land policies, value chains improvement, forest management and infrastructures, safeguards, accounting. The whole team of the Landscape Coordination Unit is now gathered in Mocuba in order to ensure full operational capacities of the team and better management of ER Program implementation.

Evolution of the provincial consultation forum

Stakeholders' consultation and information sharing process was also strengthened with the creation of the Zambézia Multi-Stakeholders Landscape Forum in 2016. As explained in *section 5*, this forum succeeded to the Zambézia Provincial Forum for REDD+, created in 2015. As explained in *section 5*, the Zambézia Multi-Stakeholders Landscape Forum is a means to improve consistency in the implementation of REDD+ activities in Zambézia,

between national and subnational levels (UT-REDD+, 2015a) and to ensure the participation of all stakeholders in the design and implementation of the ER Program.

Stakeholders' commitment and capacities to implement the ER Program activities in a coordinated manner will also be ensured through the planned signature of various MoUs between the provincial Landscape Coordination Unit and each of the implementing partners, to make sure that all of them effectively contribute to the ultimate goals of the ER Program⁴³. MoUs could entail rights and duties of the implementing stakeholders, as well as associated budget. Specific provisions should be enclosed on data sharing to the common information platform – *see below*. Regarding agricultural extension, a specific clause on the commitment to follow the method proposed and piloted by the provincial Landscape Coordination Unit should be included in the MoU.

Information, transparency of data, monitoring and reporting

As stated in section 4.1, transparency of data and lack on information are potential barrier to REDD+ implementation in Mozambique. They have various consequences, making law enforcement being difficult, hindering third party verification and weakening stakeholders' commitment and participation. Admittedly, accountability, through transparency of data and information, is critical to driving change. Information is also important for efficient design of activities and adaptive management all along the implementation process the ER program and for the ownership by all stakeholders of its interventions.

In order to address these issues, a [web platform](#) was created. Its first objective is to make available and usable by all a series of up-to-date data linked to rural development: DUATs, forest concessions, forest licenses, etc. It required an important initial work of data gathering and will require a sustained effort of updating, linked to data producers. The data of the platform are collected through a Geographical Information System and spreadsheets. The LCU+ provincial unit is in charge of this platform.

Development and operation of the Reference Level and Forest Monitoring System

As previously stated, the Readiness package for the ER Program includes, as required by the FCPF CF, the establishment of Reference Emissions Level/Reference Levels (REL/RL), which basically comprises two areas of activity: the activity data analysis (area of forest cover changes; deforestation, forest degradation, for the selected reference period) and the determination of emission factors (carbon stocks changes resulting from forest cover changes). For the emission factors estimation a National Forest Inventory is currently being prepared. In the same way, the design of a complete MRV system for the country will consider four levels of implementation: (i) National Level with an operational remote-sensing/GIS forest/land-use monitoring unit (MRV Unit under UT-REDD+), (ii) Provincial Level (iii) District Level and (iv) Community Level, with small forest information units.

These activities are being conducted by a new MRV Unit, in FNDS comprised of national experts who received capacity building support from a senior MRV specialist. MRV processes will be developed in close collaboration with the CGRNs, associations, individual producers and community entrepreneurs.

⁴³ A MoU between the Zambézia Multi-Stakeholders Landscape Forum and civil society, the private sector and academic partners was signed in August 2016.

Table 29: Institutional capacity for MRV

	Institution	Technical capacity related to MRV
MITADER	National Department of Forests (DINAF)	The Department of Forests (DINAF) is responsible for conducting national inventories at national scale as well as provincial and regional level; processing and analysis of satellite imagery on forest cover, definition of forest use categories and production of forest maps. DINAF is also responsible for the development of a Forest Information System
	Centre for Sustainable Development in Coastal Zones (CDS-ZC)	The CDS-ZC develops applied research on integrated management of coastal resources including coastal forests and mangroves, and has high capacity of analysis and processing of satellite images and production of land use maps and changes that occur along the coast.
	National Center for Cartography and Detection (CENACARTA)	Satellite images, cartography, teledetection. High capacity to process and distribute the images, produce land cover and land use maps, including changes.
	National Directorate of Geography and Cadaster (DINAGECA)	National registry of land occupation. Management of land information system; maintains databases of land use certificates (DUAT) and other recognized forms of land use rights. Operations at provincial level are undertaken by the Services of Geography and Registry (SPGC) which collects geo-referenced data in the field and registers land occupation.
MASA	National Institute for Agrarian Research (IIAM)	The National Institute for Agrarian Research has a Department of Natural Resources with various sections including Forests, Gene Bank, Water Management and Management of Soil Fertility, equipped with human capacity and materials for soil analysis. This capacity can be used to assess change of carbon stocks as result of current uses and adoption of REDD+ activities. The IIAM forest section has substantial knowledge on forestry in the country.
Department of Forestry of Eduardo Mondlane University - UEM-FAEF-DEF		Research on various forest issues including remote sensing and aerial photography to assess vegetation, changes in forest cover, forest degradation, change of species composition, assessment of forest biomass and stocks of carbon in the forest ecosystems. UEM also offers training to institutions at national and local level, including districts and communities on MRV.
Private companies and organizations: Portucel, Etc Terra, IUCN, WWF, IGF, BIOFUND and others		These institutions have good capacities in GIS, socio-economic information; impacts of their activities on community livelihoods, environmental analysis, among others

6.2 ER Program budget

In US Dollars

Expected uses of funds	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
ERI - A1: Coordination and management of activities	750 000	750 000	750 000	750 000	750 000	750 000	750 000	750 000	750 000	750 000	7 500 000
ERI – A2: Institutional development and strengthening and intersectoral communication	600 000	600 000	600 000	600 000	600 000	600 000	600 000	600 000	600 000	600 000	6 000 000
ERI – A3: Community awareness and capacity building – ensuring stakeholders' involvement and participation in the ER Program	140 000	140 000	140 000	140 000	140 000	140 000	140 000	140 000	140 000	140 000	1 400 000
ERI – B1: Regularizing land tenure	1 500 000	1 500 000	1 500 000	1 500 000	1 500 000	1 500 000	1 500 000	1 500 000	1 500 000	1 500 000	15 000 000
ERI - B2: Improvement of districts land use planning & promotion of community level land use planning	300 000	300 000	300 000	300 000	300 000	150 000	150 000	150 000	150 000	150 000	2 250 000
ERI – C1: Protection of conservation areas and restoration of natural habitats	900 000	900 000	900 000	900 000	900 000	900 000	900 000	900 000	900 000	900 000	9 000 000

ERI – C2: Strengthening of forest governance, transparency and forest management	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	4 000 000
ERI-D1: Promotion of conservation agriculture and agroforestry system	775 000	775 000	775 000	775 000	775 000	775 000	775 000	775 000	775 000	775 000	775 000	7 750 000
ERI-D2: Structuring of key sustainable value chains (forestry-based value chains) for cash crops and support to the establishment of commercial agriculture in areas with no forest cover	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	2 000 000	20 000 000
ERI-D3: Promotion of multipurpose plantations	700 000	700 000	700 000	700 000	700 000	700 000	700 000	700 000	700 000	700 000	700 000	7 000 000
ERI-D4: Promotion of sustainable charcoal production	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	500 000
ERI – D5: Valorization of the income generating potential of the GNR and sustainable livelihood around the GNR	500 000	500 000	500 000	500 000	500 000	500 000	500 000	500 000	500 000	500 000	500 000	5 000 000
Costs related to development and operation of the Reference Level and Forest Monitoring System;	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	400 000	4 000 000
Costs related to the Implementation of Benefit Sharing Plan and relevant Safeguard Plan(s)	100 000	100 000	100 000	100 000	100 000	100 000	100 000	100 000	100 000	100 000	100 000	900 000
Total uses	9 015 000	9 115 000	9 115 000	9 115 000	9 115 000	8 965 000	8 965 000	8 965 000	8 965 000	8 965 000	8 965 000	90 300 000

Expected sources of funds	Description
Government budget, Grants and loans	40 417 826
Revenue from sale of Emission Reductions (contracted)	43 623 660
Total sources (before taxes)	84 041 486
Net revenue before taxes (=total sources - total uses)	
	(6 258 514)

7. CARBON POOLS, SOURCES AND SINKS

7.1 Description of sources and sinks selected

According to criterion 3 of the FCPF MF (FCPF, 2016a), several sources and sinks can be accounted for. Degradation is required to be accounted for if it is significant (i.e. if it represents 10% of total forest-related emissions in the Accounting Area during the Reference Period). Justification for inclusion of sources and sinks is provided hereafter:

- **Deforestation:** Deforestation must be included;
- **Forest degradation:** In the ER Program area, forest degradation is mainly caused by forest exploitation and, to a lesser extent, by charcoal production (which is mainly a cause of deforestation as it is done in association with agriculture – it has probably been overestimated as a source in the ZILMP Background Study as it was accounted separately from deforestation (Mercier et al., 2016). It was decided to not include forest degradation in the sources of emissions for the ER Program for the following reasons:
 - While analyzing the factors to delimitate intact and degraded forest, we considered distance to anthropic activities (i.e. distance to deforestation patches of deforestation) or to forest edge in relation to carbon stocks – from biomass inventory data for the present program. It shows that proximity to anthropic activities or to forest edge do not have a significant impact on carbon stocks (
 - Figure 19). Moreover, carbon stocks have an unexpected negative correlation to distance of deforestation patches (
 - Figure 19). On this basis, it is not possible to delimitate degraded forest with the indirect approach of the GOFCC-GOLD.
 - As a consequence, the method presented in the ZILMP Background Study (Mercier et al., 2016) using exploited volumes seems the most suitable. Based on estimation of exploited volumes in Zambezia (legal and illegal logging) with secondary data from the literature, it gives an estimation of emissions due to forest exploitation in the accounting area of 37,945 tCO₂eq (Mercier et al., 2016), which corresponds to less than 10% of emissions due to deforestation;
- **Enhancement of carbon stocks:** This activity can encompass carbon sequestration through tree plantation or assisted regeneration of natural forest (non-forestland to forestland or in forestland remaining forestland). However, these sinks are not considered as sufficient in the accounting area to be worthy to account for:
 - Some plantations exist in the ZILMP area but not all of them respect the UNFCCC safeguards mentioning that activities included in REDD+ program should not lead to the conversion of natural forest. In the ZILMP Background Study, emission reductions potential was not estimated as significant enough (Mercier et al., 2016).
 - Although assisted natural regeneration activities are part of the proposed ER Program interventions (see section 4.3), the few areas managed for natural regeneration actually represent a small part of the ER Program area. They would

be limited to 1000 ha. Carbon sequestration for such an area, based on inventories on follows (see following section) would not be significant enough.

- **Sustainable management of forests:** no specific program activities will target forest concessions or zones under simple licenses to improve forest exploitation and planning. Only activities about logging concerns law enforcement to reduce illegal logging outside concessions and this would be accounted as reduced degradation.
- **Conservation of carbon stocks:** this would concern the Gilé National Reserve in the ZILMP accounted areas. The national reserve proves to have efficiently conserved forest cover (except for forest degradation due to illegal logging of specific tree species) in its central zones since its creation. However, a REDD+ project is developed in its buffer zone – undergoing deforestation – and the GRN will benefit from the program funds through its performance in reducing deforestation in this area. No additional accounting of conservation efforts was therefore included in the ER-Program.

At national level, for the development of national forest reference level (FRL), the three sources and sinks will be accounted for (see R-Package). Hence, when data are available, their significance in the Accounting Area will be reassessed – advanced draft ER-PD.

Table 30: Selection of REDD+ activities

REDD+ Activities	Included?	Justification / Explanation
Emissions from deforestation	Yes	At a minimum, ER Programs must account for emissions from deforestation.
Emissions from forest degradation	No	Not significant in the accounted area
Enhancement of carbon stocks	No	Not a sufficient level of effort to be included
Sustainable management of forests	No	Not a sufficient level of effort to be included
Conservation of carbon stocks	No	Reward of national reserve conservation effort through monitoring of performance to reduce deforestation

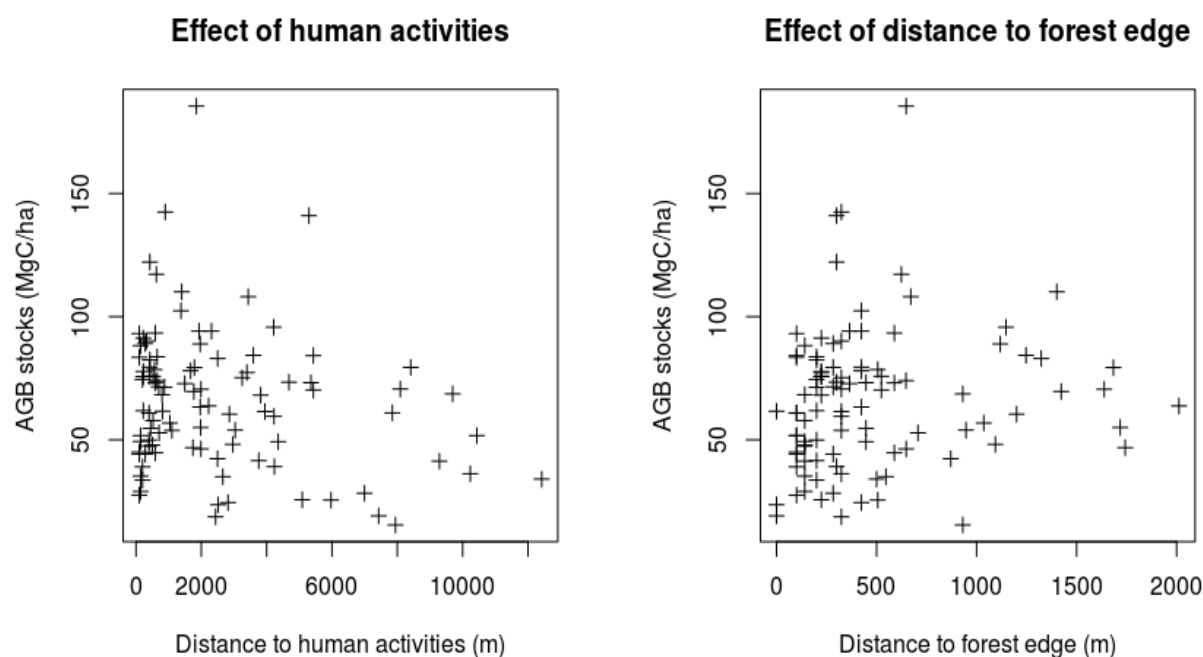


Figure 19: Relation of carbon stocks in forest inventory plots and distance to deforestation patches (left) and forest edge (right)

7.2 Description of carbon pools and greenhouse gases selected

According to the criterion 4 of the FCPF MF (FCPF, 2016a), significant carbon pools - i.e. carbon pools that contribute for more than 10% to total emissions - should be accounted for or they can be excluded if it is a conservative choice. For this ER Program, the following carbon pools can be selected:

- **Biomass in trees:**
 - Aboveground biomass (AGB): This pool is automatically considered.
 - Belowground biomass (BGB): This pool is usually significant in the case of deforestation because BGB is supposed to degrade itself after tree cut.
- **Biomass in non-woody vegetation:** This pool is usually non-significant.
- **Dead organic matter (DOM),** which includes litter and dead wood carbon pool (the latter is probably not significant as dead wood is collected for firewood or burnt during bush fires of the dry season).
- **Soil organic carbon (SOC).**
- Wood products are not considered as a carbon pool by the FCPF.

In the present document, only the first pool (biomass in trees, AGB and BGB) is considered as significant. It is conservative to ignore the others in the baseline (Mercier et al., 2016). However, the National Forest Inventory (NFI), which currently is under development, will also

account for DOM and SOC. Hence, although only the AGB and BGB are taken into account in the present version of the ER-PD, if the NFI proves other pools to actually be significant, they will be included in the baseline in the next versions of the ER-PD.

Table 31: Selection of carbon pools

Carbon pools	Selected?	Justification / Explanation
Aboveground biomass in trees	Yes	Most significant pool
Belowground biomass in trees	Yes	Significant pool related to the previous one
Biomass in non-woody vegetation	No	Not significant in comparison to biomass in trees
Dead organic matter	No	Not significant as litter is reduced (burnt frequently during the dry season) in Miombo forest and dead wood is collected for firewood or burnt during dry season
Soil organic carbon	No	Data from literature show that this pool is not significant: emission factors related to SOC would be between 5.1 tC/ha (Mercier et al., 2016) and 12.7 tC/ha (Williams et al., 2008)

Sources of greenhouse gas (CO₂, CH₄ or N₂O) emissions except from deforestation - conversion of land from forest to non-forest (mainly agricultural land) - can be the following:

- **Biomass burning:** This occurs every year in the ER Program area during the conversion of forest into fields with “slash and burn” agriculture, or during the non-woody vegetation on forest land - activity that do not cause deforestation as Miombo forest is adapted to fires.
 - CO₂ emissions due to deforestation are automatically accounted for not CH₄ and N₂O emissions as they are not significant (less than 10%). An estimation was done with the following equation and standard values from IPCC (2006) for combustion factor⁴⁴ and IPCC (2003) for emission factor and global warming potential of CH₄ and N₂O on all deforested areas considered to be converted for slash and burn agriculture. It gives a result of 5% of total program emissions due to deforestation. Moreover, it is conservative to not account for it as the ER Program aims to reduce fires and related emissions.

⁴⁴ 0.45 for open tropical forest

$$E_{biomassburn,i,t} = \sum_{g=1}^G \left(\left(A_{burn,i,t} \times B_{i,t} \times COMF_i \times G_{g,i} \right) \times 10^{-3} \right) \times GWP_g$$

Where:

$E_{biomassburn,i,t}$	Greenhouse gas emissions due to biomass burning as part of deforestation activities in stratum i in year t of each GHG (CO ₂ , CH ₄ , N ₂ O) (t CO ₂ e)
$A_{burn,i,t}$	Area burnt for stratum i in year t (ha)
$B_{i,t}$	Average aboveground biomass stock before burning stratum i , year (t d.m. ha ⁻¹)
$COMF_i$	Combustion factor for stratum i (unitless)
$G_{g,i}$	Emission factor for stratum i for gas g (kg t ⁻¹ d.m. burnt)
GWP_g	Global warming potential for gas g (t CO ₂ /t gas g)
g	1, 2, 3 ... G greenhouse gases including carbon dioxide ¹ , methane and nitrous oxide (unitless)
i	1, 2, 3 ... M strata (unitless)
t	1, 2, 3, ... t^* time elapsed since the start of the project activity (years)

Table 32: Selection of greenhouse gases

Greenhouse gases	Selected?	Justification / Explanation
CO ₂	Yes	The ER Program shall always account for CO ₂ emissions and removals
CH ₄	No	Source of emission from this gas are not significant in the context of the ZILMP
N ₂ O	No	Source of emission from this gas are not significant in the context of the ZILMP

8. REFERENCE LEVEL

8.1 Reference Period

According to the indicator 11.1 of criterion 11 of the FCPF MF (FCPF, 2016a), the end-date for the Reference Period is “the most recent date prior to two years before the TAP starts the independent assessment of the draft ER Program Document”. Since this assessment is expected to take place in 2017, the end date for the ER Program Reference Period should be 2015. In the same way, indicator 11.2 requires the start date of the Reference Period to be about 10 years before the end date (FCPF, 2016a). **As a consequence, the Reference Period used in the construction of the Reference Level for the ER Program should be 2005 – 2015.**

However, as stated in criterion 11 of the FCPF MF (FCPF, 2016a), alternative start and end dates could be allowed if justified, with the necessity for the start date to never exceed 15 years prior to end date.

At this stage, it should be noted that Mozambique has started a thorough analysis of historical deforestation in order to establish its national FRL/FREL. As explained previously, this analysis is expected to be concluded in the course of the first semester of 2017. It is currently being realized through spatially explicit tracking of land- use conversions over time, with a well-designed sampling approach (4 x 4 km grid) to train a supervised classification of changes on a multi- temporal stack of Landsat Imagery (historical AD) and Sentinel-2 Imagery (M&MRV purposes), with a reference period going from 2001 to 2016.

This national reference period (2001-2016) does not correspond to the one required for the ER Program (2005-2015) but data for the program reference period would be easily extracted as results will be furnished per year. This period would respect the requirement of criteria of the FCPF MF (FCPF, 2016a) about the length and end dates of reference period.

For now, the extraction from national data for the 2005 – 2015 period is planned to be realised once data are available. In this draft ER-PD, another REL is used. It is based on the analysis provided in the ZILMP Background Study (Mercier et al., 2016), realized with specific data for the ER Program area in Zambézia province and with a reference period going from 2005 to 2013/2014, as they were produced before the change in MF about end date of reference period (it previously was before 2013).

The data available in Mercier et al. (2016) have been updated in order to include the two additional districts that were not initially part of the ER Program. **The data used in this draft ER-PD are therefore covering the nine districts of the ER Program accounting area with a reference period going from 2005 to 2014.** Once national level data are available, the REL will be changed. This change should not happen later than early June 2017, or when the advanced draft ER-PD is publicly posted.

Table 33: Reference Period used in the construction of the Reference Level

ER-PD drafts	Provisory due date ⁴⁵	Reference Period for REL	Source of data
Initial Draft	January 16 th , 2017	2005 - 2013(2014)	ZILMP Background Study (Mercier et al., 2016) updated to cover the whole ER Program area
Draft 0	January 31 st , 2017		
Draft 1	March 3 rd , 2017	2001 - 2016	National data with extract of data for ER Program area
Advanced draft ER-PD	May 10 th , 2017	or	or
Final draft ER-PD	August 31 st , 2017	2005 - 2015	National data with extract of data for the 2005 – 2015 period for the ER Program area

8.2 Forest definition used in the construction of the Reference Level

According to the national REDD+ strategy and to the Final Report on Forest Definition (Falcão and Noa, 2016) approved by MITADER in November 2016, forest in Mozambique is defined as followed: **minimum surface of 1 ha, minimum height at maturity of 3 m and minimum coverage of tree of 30%**. This definition is retained in the present document. As a consequence, for the production of deforestation map, minimum mapping unit was 1 ha as explained in the following section.

According to forest strata definition at national level used for the National Forest inventory (**Figure 24**), 2 strata are present in ZILMP accounting area:

- Miombo forest (closed semi deciduous), Miombo forest open (opened semi-deciduous) and gallery forest (closed semi-evergreen) that were all regrouped under the name **Miombo forest**;
- **Montane forest** (semi-evergreen open forest in mountainous areas) which delimitation was kept identical to the one presented in the map use for NFI.

Mangroves were added to those 2 strata selected for forest definition in the Program, even if they are not considered in the NFI, as they are present in the area.

⁴⁵ Those dates are indicative and are subject to change depending on the actual progression of the ER-PD process.

8.3 Average annual historical emissions over the Reference Period

Description of method used for calculating the average annual historical emissions over the Reference Period

The method used to assess emission is the one described in IPCC (2006)⁴⁶ for Land (Forest in the present case) converted to other land use (croplands) consisting on the **multiplication of activity data** – area of land converted from forestland to other land (cropland in the present case) – **by emission factors** – difference of carbon stocks before and after deforestation – as presented on the following equations.

Data used for the present document are Tiers 2 (country specific data or country level estimates) or Tiers 3 (data specifically produced for the ER Program) when possible. Activity data are produced on the reference period with spatially explicit method based on available satellites images. In compliance with criterion 13 of FCPF MF that specifies that REL should not exceed the average annual historical emissions, different activity data of the reference period will be averaged to produce annual deforestation areas over the whole period. Emissions factors are derived from literature or forest inventory in the accounting area. As analysis is done over the reference period, long term (10 years) changes (increase or decrease) of carbon stocks on deforested areas (land converted to another land use) are considered instead of annual increase or decrease (see equation below).

ANNUAL CHANGE IN BIOMASS CARBON STOCKS ON LAND CONVERTED TO OTHER LAND-USE CATEGORY (TIER 2)

$$\Delta C_B = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L$$

Where:

ΔC_B = annual change in carbon stocks in biomass on land converted to other land-use category, in tonnes C yr⁻¹

ΔC_G = annual increase in carbon stocks in biomass due to growth on land converted to another land-use category, in tonnes C yr⁻¹

$\Delta C_{CONVERSION}$ = initial change in carbon stocks in biomass on land converted to other land-use category, in tonnes C yr⁻¹

ΔC_L = annual decrease in biomass carbon stocks due to losses from harvesting, fuel wood gathering and disturbances on land converted to other land-use category, in tonnes C yr⁻¹

⁴⁶ Vol. 4, Chapter 2 - Generic

INITIAL CHANGE IN BIOMASS CARBON STOCKS ON LAND CONVERTED TO ANOTHER LAND CATEGORY

$$\Delta C_{CONVERSION} = \sum_i \{(B_{AFTER_i} - B_{BEFORE_i}) \cdot \Delta A_{TO_OTHERS_i}\} \cdot CF$$

Where:

$\Delta C_{CONVERSION}$ = initial change in biomass carbon stocks on land converted to another land category, tonnes C yr⁻¹

B_{AFTER_i} = biomass stocks on land type i immediately after the conversion, tonnes d.m. ha⁻¹

B_{BEFORE_i} = biomass stocks on land type i before the conversion, tonnes d.m. ha⁻¹

$\Delta A_{TO_OTHERS_i}$ = area of land use i converted to another land-use category in a certain year, ha yr⁻¹

CF = carbon fraction of dry matter, tonne C (tonnes d.m.)⁻¹

i = type of land use converted to another land-use category

Activity used for calculating the average annual historical emissions over the Reference Period

Production method

As stated previously, when the national REL is published for Zambezia province, it will be used for the ER-PD and the spatially explicit point sampling method for LULCC used at national scale will be described in this section. For now however, this section describes the method used in the ZILMP Background Study (Mercier et al., 2016) for the elaboration of wall-to-wall maps of historic deforestation during the reference period.

As both methods use very different strategies – wall-to-wall mapping with direct classification of land use changes furnishing areas of deforestation per period VS point sampling method giving deforestation statistic on a sample of plots on the study area - it is probable that results will differ significantly. This will influence the baseline of the ER Program.

The method used for the present version is summarized in the following table.

Table 34: Methodological frameworks and description of methodology used by Etc Terra

Satellite images	LANDSAT images 5, 7 et 8.
	Priority use of GLS (Global Land Survey) products dedicated to the analysis of land use changes (orthorectified images). In case of unavailability or presence of clouds on these products, archival images L1T (geo-referenced only) will be downloaded.
Pre-processing	If the images are not pre-processed (e.g. L1T level), radiometric correction and geometric correction are performed.
	In case of cloud cover greater than 10% in a part of the study area, technical combinations of identical scenes on different dates are implemented to minimize the cloud cover of the final map.
Supervised	Use of a supervised classification method (involving the delimitation of training plots and algorithm calibration) and consideration of the 6 IPCC categories of land use

classification	(IPCC 2006) and land cover change classes. Visual inspection of Google Earth and/or images with very high resolution (2m or better) to assist in the delimitation of these training plots. Use of ENVI, QGIS, Grass, R software and RandomForest algorithm for classification.
Post-processing	3 post-processing levels are implemented to clean the map and meet the following Minimum Mapping Units (MMU): <ul style="list-style-type: none"> - Smoothing through a 3x3 majority filter. - Removal of patch of forests of less than 1 ha. - Removal of patch of deforestation of less than 0.36 ha. <p>According to Mozambican National REDD+ Strategy and to the Final Report on Forest Definition (Falcão and Noa, 2016), forest minimum area is 1 ha.</p>
Validation and quality control	<p>Internal validation: Random selection of 70% of the training plots for algorithm calibration; the remaining 30% plots were used to generate the confusion matrix and quality indicators.</p> <p>External validation: photo-interpretation of forest state on a high-density random sample of points and high-resolution images to cross-validate those reference observations with the map.</p> <p>Quality control: Production of a processing chain command script using the dedicated GIS/RS free software (R, Envi, Grass) for checking and reapplying the methodology. The Overall Accuracy must be greater than 75%.</p>

Satellite images database - Only LANDSAT images were used to carry out this work in order to ensure uniformity between images and be able to access to archive data over a long period of time. Furthermore, this type of images is recommended for mapping deforestation as it displays a geometric resolution corresponding to the maximum limit of 30 m required by the international REDD+ framework (GOFC-GOLD 2010).

Those images are available on the USGS data servers ([Earth Explorer, www.earthexplorer.usgs.gov](http://www.earthexplorer.usgs.gov)) for free. The images that were used come from three different LANDSAT missions (5,7 and 8/OLI) whose sensors are slightly different in terms of width and number of spectral bands. Images were uploaded in bands; therefore, it was primarily necessary to combine these single bands into multispectral images (stacking) for them to be comparable from one date to another. Figure 20 summarizes the necessary characteristics and pairings for the fusion of those different types of images.

In addition to those considerations on the different spectral bands characteristics, the choice of images was based on the following criteria:

- Geometric accuracy of less than 1 pixel (visual comparison image per image);
- Presence or absence of effect of the failure of the LANDSAT 7 sensor (stripping effect due to SLC module failure since 2003);
- Cloud and shadow cover.

The study area is covered by four LANDSAT scenes meeting the following identifiers (path/row): 165/071, 165/072, 166/071 and 166/072. The selected and processed LANDSAT scenes are presented in **Table 35**.

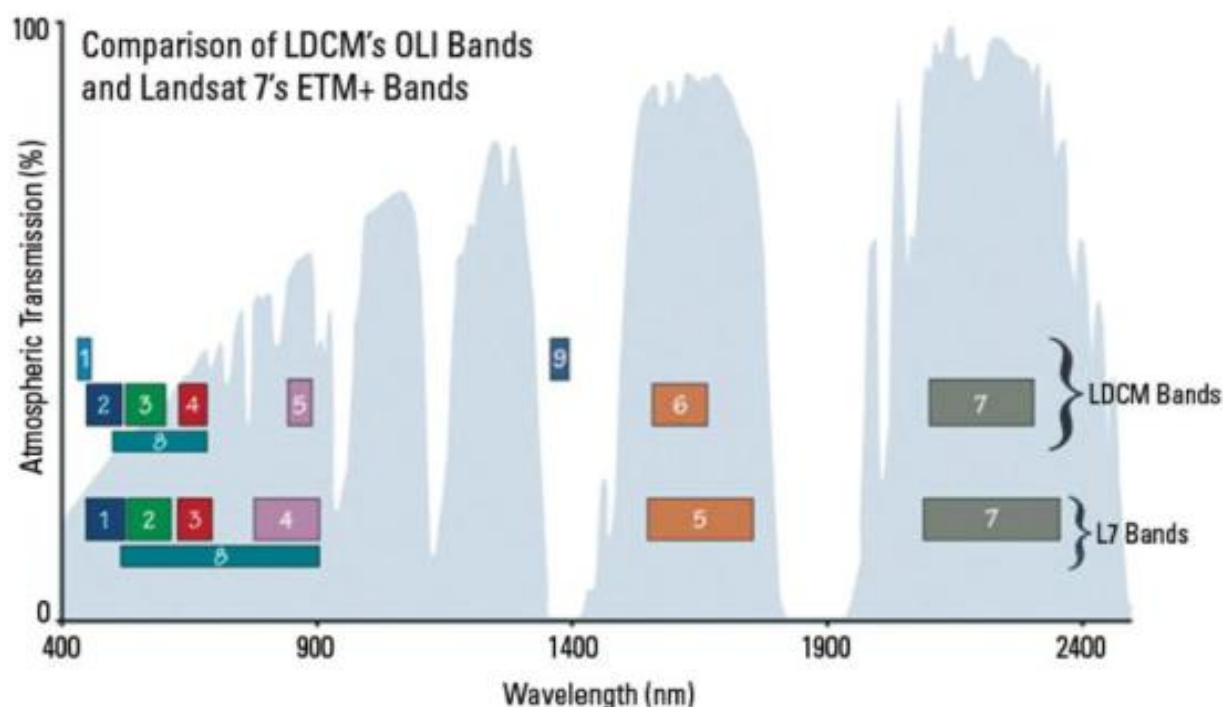


Figure 20: Comparison of spectral bands between LANDSAT 8 (LDCM) and LANDSAT 5/7. LANDSAT 8/OLI collects the same bands as LANDSAT 7 plus two bands 1 and 9 (called bands "cirrus" to improve the atmospheric corrections). Bands 2 to 7 of LANDSAT 8 were renumbered according to Landsat 5-7 numbers, following the color scheme used in this figure. *Source: NASA/USGS*

Table 35: Date of selected LANDAST images

Scene identification	Reference year of images		
	~2005 (t3)	~2010 (t4)	~2014 (t5)
USGS data	GLS 2005	GLS 2010	Landsat 8 L1T
166-071	June-06	May-09	June-13
165-071	Aug-05	May-10	March-14
166-072	Aug-06	May-09	June-13
165-072	March-05	May-10	March-14

Data pre-processing – The purpose of data pre-processing is to get a usable image database for a space-time analysis - i.e. with little or no cloud cover - a geometric offset between images of less than 1 pixel and little or no stripping effect.

To ensure good geometrical quality images, LANDSAT Global Land Survey products (GLS) and Level-1T (L1T) were used. According to Gutman et al. (2008), these data have sufficient radiometric and geometric qualities to perform land use change analysis. Additionally, a visual inspection was performed for each scene to check their geometric consistencies. For the last date (2013), different images were downloaded; the image meeting the geometric criteria was selected. No additional geo-rectification was performed.

At the end of this control phase, all images showed a discrepancy of less than 1 pixel. The scenes were then combined into mosaics using a contrast adjustment algorithm in order to reduce discrepancies between scenes, caused by contrasted atmospheric conditions. The mosaics are finally produced by reference years over the whole study area. In order to improve the classification, several spectral indexes were then derived from the primary bands as presented in **Table 36**.

Table 36: Spectral indexes calculated

Index	Formula
NDVI (Normalized Difference Vegetation Index) – Vegetation spectral enhancement	$NDVI = \frac{PIR1 - R}{PIR1 + R}$
NIRI (Near Infrared Reflectance Index) – Soil spectral enhancement	$NIRI = \frac{PIR2 - PIR1}{PIR2 + PIR1}$
NDWI (Normalized Difference Water Index) – Water spectral enhancement	$NDWI = \frac{PIR1 - V}{PIR1 + V}$

In addition to these reflectance indexes, several others indicators were derived from a Digital Elevation Model (DEM): elevation, slope and topographical roughness. The DEM that was used comes from the USGS data acquired by ASTER satellite (version 3) with a spatial resolution of 30m (Tachikawa et al. 2011).

Supervised classification - After data pre-processing, the method to establish a deforestation map follows three main steps:

- (i) Definition of land use and land cover changes classes;
- (ii) Delimitation of training plots;
- (iii) Classification with a specific algorithm;

◆ Definition of land-use classes

Land use and land cover change (LULCC) classes existing in the ER Program area and detectable with Landsat imagery are the following:

- Terra firme forests: Miombo and mountainous forests (F);
- Mangroves (M);
- Fallows, savannas and cultivated areas (P);
- Wetlands (H);
- Other lands (bare soils, rocks, settlements) (A).

The analysis of historical deforestation focuses on changes of the two forestland classes: mangroves and Miombo forest. According to the FCPF MF (FCPF, 2016a), it is required to study at least raw deforestation, that is to say, conversion from forest land to other land.

In line with the GOFC-GOLD REDD sourcebook (GOFC-GOLD 2010), a “pre-classification method” of land cover changes was applied, instead of a “post-classification” (combinations of independent maps). Such a method should reduce the error in deforestation estimations, as it does not multiply the errors from the independent maps. In practice, this implies to identify stable and dynamic land cover on the multi-date stack of images at a same stage. Hence, the typology presented in the Table 37 was adopted.

Table 37: Typology of land use & land cover changes classes for the study

Numeric code for the map	Identification code in the training plots database	Description of the class
111	FFF	Forest remaining forest over the 2005-2014 period
113	FFP	Forest converted to fallow/cultivated land between 2010-2014
133	FPP	Forest converted to fallow/cultivated land between 2005-2010
333	PPP	Mosaic of cropland, fallow and savannah land since 2005
444	HHH	Wetland
666	AAA	Rocks, bare soil and sand
777	MMM	Mangrove forest in 2014

◆ Delimitation of training plots

The delimitation of trainings plots is a necessary step to calibrate the classification algorithm when applying a supervised classification. The accuracy of the classification mainly depends on the quality of the delimitation of these training plots. Therefore, a standardized and rigorous photo-interpretation work was conducted. Photo-interpretation was carried on the basis of field knowledge, LANDSAT images patterns and high-resolution images from Google Earth. The number of polygons and delimited areas are presented in the table below.

Table 38: Number of polygons and associated delimited area used as training plots

LULCC Class ID	Number of training polygons	Cumulated area (ha)
AAA	42	148.9
FFF	174	471.8
FFP	78	131.6
FPP	45	85.9
HHH	45	177.3
MMM	26	101.2
PPP	162	742.5
Total	729	1859.2

First, in order to improve the localization and determination of changes, those areas were highlighted by performing a multi-dates color composite (Figure 21). Then, training plots were located in cluster - i.e. by grouping several plots of different categories on a same landscape unit or small area (Figure 22). A landscape unit was defined according to the scale of study: here, it roughly represents an area of analysis below 3 km² and/or at 1:10 000 scale. In order to reduce noise in training data and to guarantee the appropriate consideration of the forest definition, plots contours were verified by superposition on very high-resolution images available on Google Earth. Those images can be originated either by Quickbird or Ikonos satellites, with ground resolution around 0.6 meters.

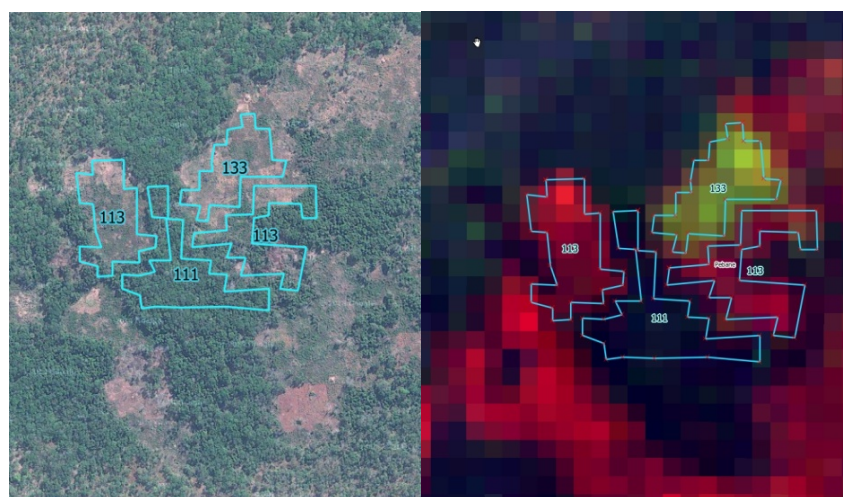


Figure 21: Example of multi-dates colorized composition showing several LULCC classes on the right (R: Band5-2014; G: Band5-2010; B: Band5-2005). Deforestation between 2005 and 2010 appears in green while deforestation between 2010 and 2014 appears in red. Forests staying forests are in blue and dark green. On the left, plots are overlaid on *Google Earth* image (*Quickbird* acquired the 12/08/2013)

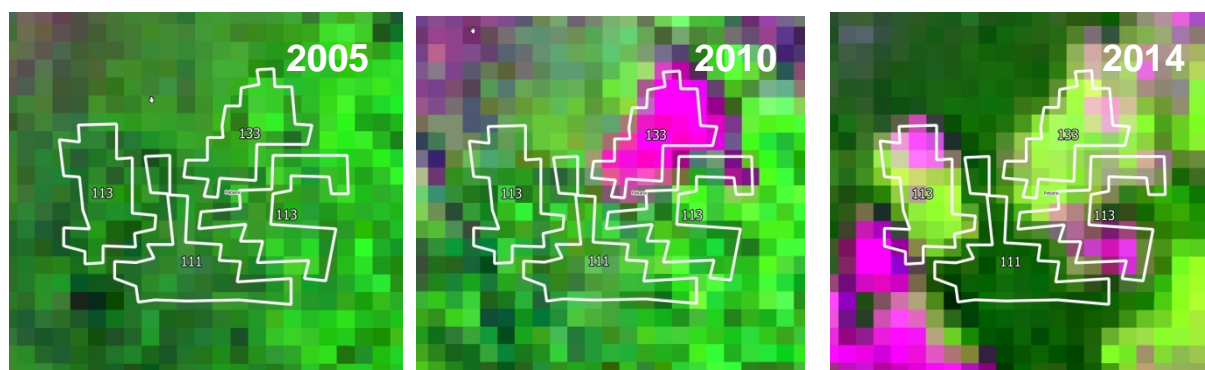


Figure 22: Example of training plot delimitation and LULCC category determination on 2005, 2010 and 2014 images (false color composite: R: Band5; G: Band4; B: Band3). The band numbers correspond to the band number of Landsat 5-7 sensor, the band number of LANDSAT 8-OLI were renumbered according to figure 2.

◆ Classification

Afterward, the training plot spatial database was correlated with the multi-date stacked image database using a statistical algorithm. In order to do so, we used the RandomForest algorithm, developed by Breiman (2002) and available in R software. It is a data-mining algorithm that combines bagging techniques and decision tree (Figure 23). It was successfully applied in similar land cover change studies in tropical forest (Grinand et al. 2013) and more recently in the Miombo forest biome (Kamusoko, Gamba, and Murakami 2014).

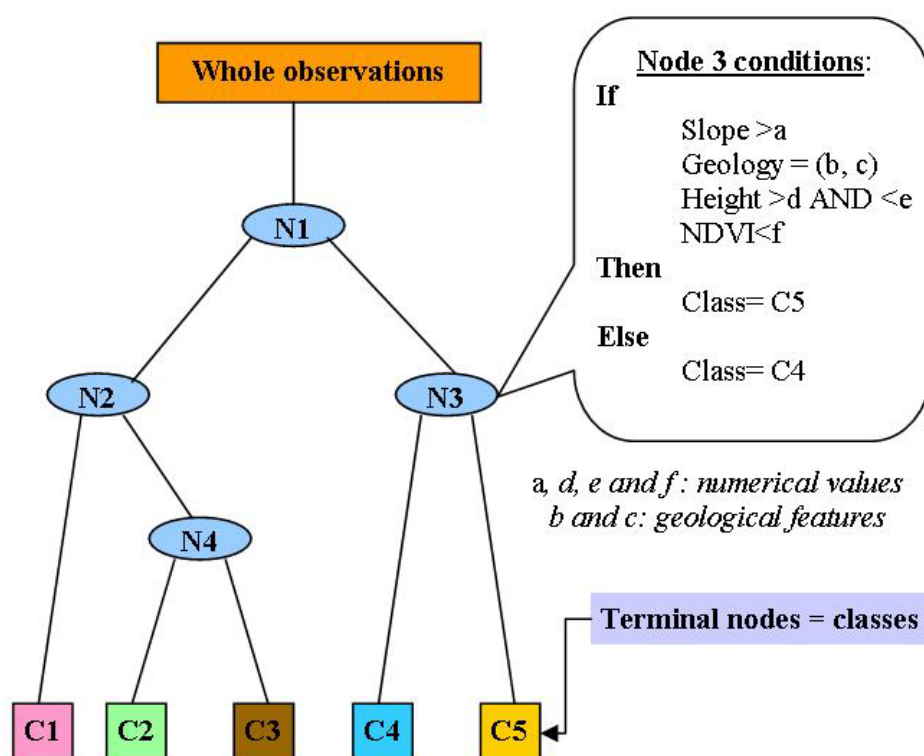


Figure 23: Classification principle with decision tree analysis. *RandomForest* uses and completes this principle by creating a large number of small decision trees by random selection of individuals (bagging), and affecting at a majority vote in order to determine the final category.

RandomForest calibration was performed using 2/3 of randomly selected training plots. The remaining plots (1/3) were used to perform an “internal validation”. Based on a confusion matrix, this validation enabled the operator to identify the remaining confusions in order to add, remove or change the training plots on the GIS and redo the classification until satisfactory results were obtained. At this stage, were considered as acceptable commission the errors of less than 10% and 20% for, respectively, stable land cover category and land cover change category.

Post-classification treatments - After classification, some isolated pixels of forest were found, giving a noisy appearance to the map. To respect the requirements on MMU (linked to the forest definition), those pixels were removed during post-classification processing. In the present study, MMU is 1 ha for forest and 0.36 for deforestation.

A majority filter with a 3x3 window was first used to remove isolated pixels. The classified image was filtered with a Grass/R script for forests and deforestation patches.

External validation of results - This step entails a statistical analysis of the classification results accuracy, with a points sampling approach. Those validation points were selected independently of training plots that were used for the classification.

The sample scheme involved the creation of 5 km wide grids that over the study area. 20 grids were randomly selected. On those grids, points were evenly spaced apart, every 100 m. At the end, the validation sampling dataset represented a total of 50 000 validations points. The state of the forest was visually inspected on every point and gathered in a spatial database. The inspections were based on very high-resolution *Google Earth* images and on the LANDSAT images that had been used for the classification. The result of the photo-interpretation (reference dataset) was finally compared with the map to produce a confusion matrix. This confusion matrix is used to calculate the accuracy of the map.

Post-stratification of results - As it is difficult to do so with photo-interpretation, the differentiation between Miombo and mountainous forests was done with the national forest stratification furnished by the Mozambican administration and used for the NFI (Gonzalo, 2016 – Appendix 3 of R-Package draft). This stratification is presented in **Figure 24**.

Results

Activity Data - Based on deforestation data from the deforestation map on the period 2005-2010-2014, annual value of deforestation for activity data are calculated with a weighted average based on an exact interval between each series of Landsat images and area of forest strata in each image. Time intervals are presented in **Table 39**.

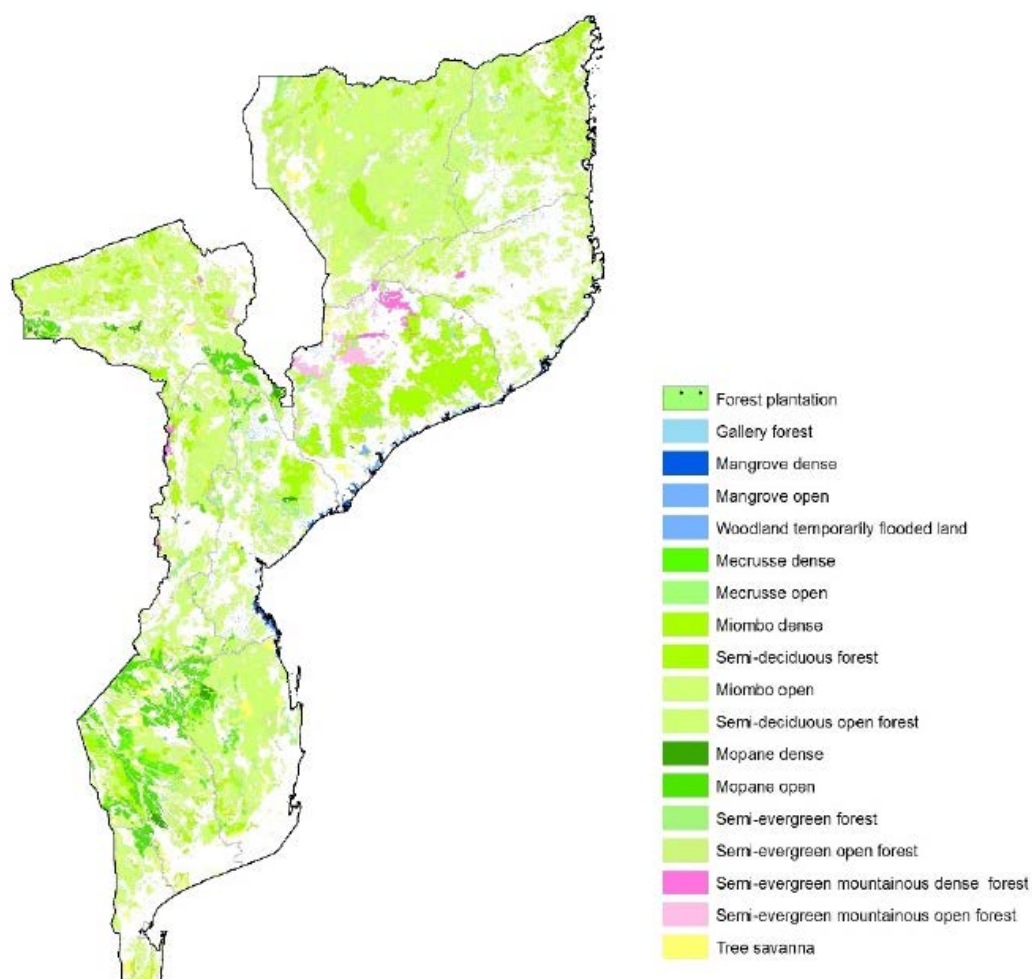


Figure 24: forest stratification at national level (From Zoneamiento Agro-ecológico Nacional, 2010-2014)

Table 39: Time interval between reference years

Scene identification	Time interval (decimal year)	
	2005-2010	2010-2014
166-071	3	4
165-071	4.8	3.8
166-072	2.8	4.1
165-072	5.2	3.8
Average	3.9	3.9
Weighted average per strata		
Miombo forest	4.1	3.9
Mountainous forest	3.1	4.0

The confusion matrix with calculation of uncertainties is presented on Table 44. It presents error in proportion of area and areas of strata corresponding to this point sampling exercise for map validation with uncertainties indicators (standard deviation and confidence intervals). These indicators were calculated following Olofsson et al. (2013) method. The matrix shows an overall accuracy of the map of 81 %.

Table 40: Activity data information – Miombo forest annual cover change

Description of the parameter including the time period covered	Miombo forest annual cover change between 2005-2010-2014 in the 9 district of the ER Program area.
Explanation for which sources or sinks the parameter is used	Mean annual historical deforestation per reference period to furnish activity data per period and calculated reference emissions per year.
Data unit	ha/yr
Value for the parameter	2005-2010: 18 828 2010-2014: 26 349
Source of data or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	Multi-dates supervised classification of land cover and land cover changes over the program areas with Landsat images on 3 dates of the reference period. Images and classification algorithms are described in the previous section. Miombo and mountainous forests are separated with post-stratification.
Spatial level (local, regional, national or international):	ER Program area
Discussion of key uncertainties for this parameter:	<p>Sources of uncertainties are:</p> <ul style="list-style-type: none"> - Operator error during the production of calibration plots and validations points - Classification of Landsat images with RandomForest model <p>Classification errors are estimated with (Olofsson et al. 2013) method and presented in the confusion matrix (Table 44).</p>

Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:

90% CI associated with deforestation classes:
2005-2010: 3.6%
2010-2014: 4.3%

Table 41: Activity Data information – Mountainous forest annual cover change

Description of the parameter including the time period covered	Mountainous forest annual cover change between 2005-2010 and 2010-2014 in the 9 district of the ER Program area.
Explanation for which sources or sinks the parameter is used	Mean annual historical deforestation per reference period to furnish activity data per period and calculated reference emissions per year.
Data unit	ha/yr
Value for the parameter	2005-2010: 1640 2010-2014: 1957
Source of data or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	Multi-dates supervised classification of land cover and land cover changes over the program areas with Landsat images on 3 dates of the reference period. Images and classification algorithms are described in the previous section. Miombo and mountainous forests are separated with post-stratification.
Spatial level (local, regional, national or international):	ER Program area
Discussion of key uncertainties for this parameter:	<p>Sources of uncertainties are:</p> <ul style="list-style-type: none"> - Operator error during the production of calibration plots and validations points - Classification of Landsat images with RandomForest model <p>Classification errors are estimated with (Olofsson et al. 2013) method and presented in the confusion matrix (Table 44).</p>

Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	90% CI associated with deforestation classes: 2005-2010: 3.6% 2010-2014: 4.3%
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Table 42: Activity Data information – Mangrove annual cover change

Description of the parameter including the time period covered	Mangroves annual cover change between 2005-2010-2014 in the 9 district of the ER Program area.
Explanation for which sources or sinks the parameter is used	Mean annual historical deforestation per reference period to furnish activity data per period and calculated reference emissions per year.
Data unit	Ha/yr
Value for the parameter	2005-2010: 0.8 ha 2010-2014: 0.2 ha
Source of data or description of the method for developing the data, including (pre-) processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	Multi-dates supervised classification of mangroves land cover over the program areas with Landsat images on 3 dates of the reference period. Difference between mangroves areas at each dates of analysis during the reference period give deforestation per period. Images and classification algorithms are described in the previous section. Miombo and mountainous forests are separated with post-stratification.
Spatial level (local, regional, national or international):	ER Program area
Discussion of key uncertainties for this parameter:	Sources of uncertainties are the following: <ul style="list-style-type: none"> - Operator error during the production of calibration plots and validations points - Classification of Landsat images with RandomForest model

Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:

uncertainties associated with Mangroves class:
90% CI = 3.2%

Table 43: summary of deforestation statistics during the reference period

Areas per strata in ha	2005	2010	2014
Miombo forest	2 659 525	2 581 524	2 478 643
Mountainous forest	95 355	90 259	82 406
Mangroves	53 353	53 349	53 348
ER Program area	2 808 233	2 725 132	2 614 398
Deforestation for reference periods in ha	2005-2010	2010-2014	2005-2014
Miombo forest	78 001	102 881	180 882
Mountainous forest	5 096	7 853	12 949
Mangroves	4	1	5
ER Program area	83 101	110 735	193 836
Deforestation for reference periods in ha/yr	2005-2010	2010-2014	2005-2014
Miombo forest	18 828	26 349	22 382
Mountainous forest	1 640	1 957	1 819
Mangroves	0.8	0.2	0.5
ER Program area	20 468	28 307	24 200

FOREST COVER CHANGES BETWEEN 2005-2010-2014 in the ZILMP area

Legend

- Gilé National Reserve (GNR)
- ZILMP Area (9 districts)
- Deforestation map between 2005-2014
- Forests in 2014
- Mangroves
- Deforestation between 2010 - 2014
- Deforestation between 2005 - 2010
- Mosaic of croplands, fallow and savannah
- Wetlands
- Bare soil, rocks, sands

0 25 50 75 km



Source: National Administrative database, USGS Nasa
 Author: Etc Terra Etc Lab'
 Jan 2017

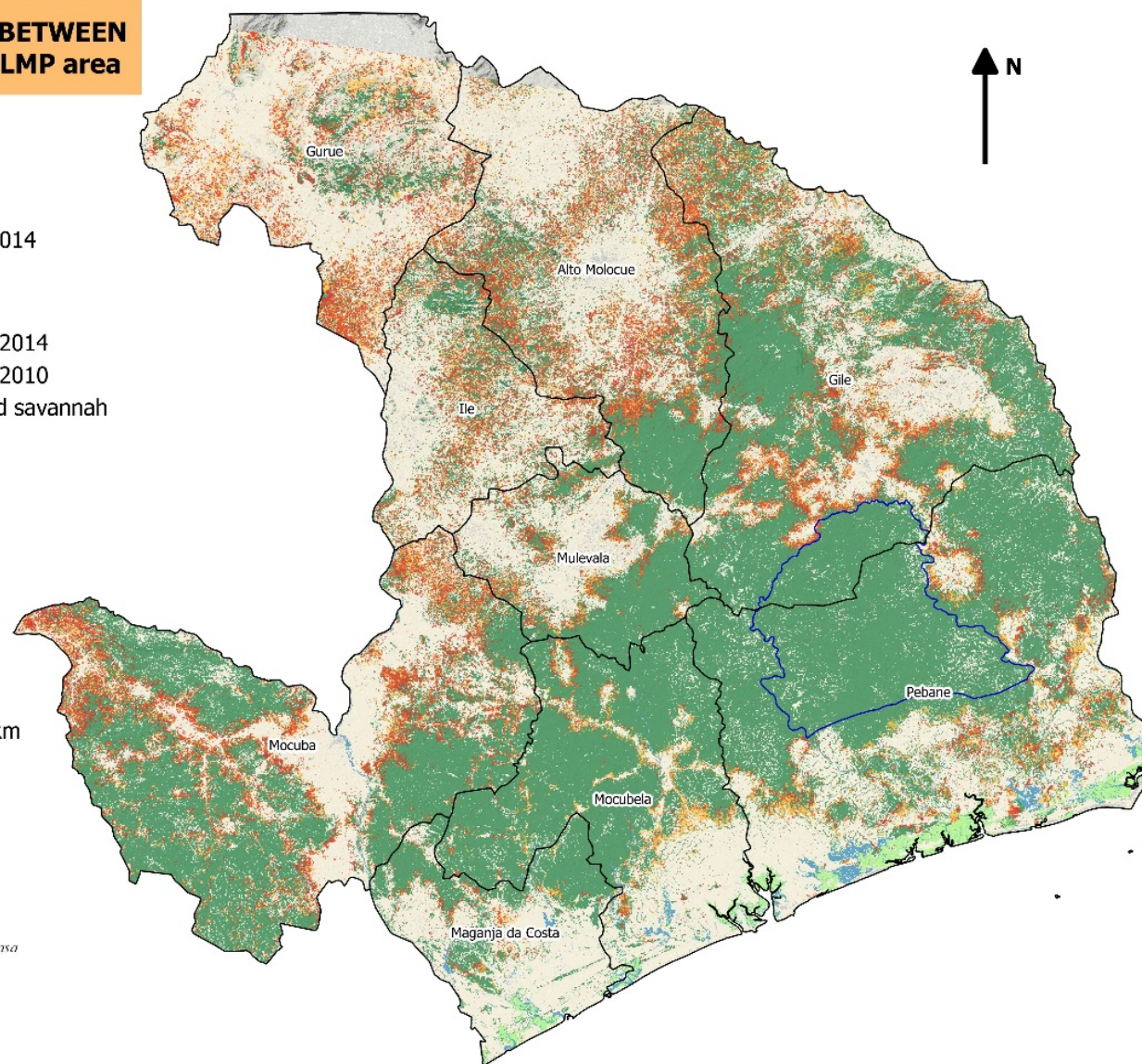


Figure 25: map of deforestation between 2005-2010-2014 in the ZILMP are

Table 44: confusion matrix corresponding to the deforestation map for 2005-2010-2014 – error data are presented in proportion of area

		Observed									
Map		111	113	133	333	444	666	777	Total	Pixels	W_i
	111	0.4422	0.0105	0.0061	0.0274	0.0018	0.0000	0.0004	0.4883	28 456 483	0.488
	113	0.0019	0.0162	0.0017	0.0013	0.0000	0.0000	0.0000	0.0211	1 230 489	0.021
	133	0.0009	0.0017	0.0112	0.0019	0.0001	0.0000	0.0000	0.0158	923 557	0.016
	333	0.0514	0.0072	0.0096	0.3158	0.0167	0.0421	0.0020	0.4448	25 922 115	0.445
	444	0.0001	0.0000	0.0000	0.0001	0.0101	0.0000	0.0002	0.0106	619 331	0.011
	666	0.0000	0.0001	0.0000	0.0061	0.0000	0.0034	0.0000	0.0096	558 397	0.010
	777	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0090	0.0097	566 247	0.010
	Total	0.4966	0.0357	0.0287	0.3525	0.0294	0.0455	0.0115	1	58 276 619	1.000
	Area [pix]	28 938 572	2 081 461	1 674 145	20 545 030	1 712 832	2 651 607	672 973	57 151 975		
Area [ha]	2 604 471	187 331	150 673	1 849 053	154 155	238 645	60 568				
Standard error (Area)	0.0014	0.0008	0.0008	0.0017	0.0006	0.0010	0.0002				
Standard error (Area) [ha]	7 370	4 098	3 986	8 663	3 213	5 030	1 194				
90% CI [ha]	12 087	6 722	6 537	14 207	5 270	8 248	1 958				
90% CI [%]	0.5%	3.6%	4.3%	0.8%	3.4%	3.5%	3.2%				
User's	0.91	0.77	0.71	0.71	0.95	0.35	0.93				
Producer's	0.89	0.45	0.39	0.90	0.34	0.07	0.78				
Overall	0.81										

Description of method used for producing emission factors

Emissions factors are the difference between pre- (forests) and post-deforestation (crop fields mainly) carbon stocks for different strata. These carbon stocks were derived from several sources, from the literature or dedicated biomass inventories.

Field inventories have been carried out to estimate aboveground biomass in Miombo forest. For other strata, data from literature were used.

For inventories to be representative, inventories were planned in several parts of Miombo forests of the program area: forest in the GNR core zone, forest in its buffer zone, forest in the Mocubela – Mulevala massifs, forest in the Alto-Molocué and North of Gilé districts... A total of 100 plots were inventoried (see Figure 26). A sample design was realized with groups of 4 plots on a topographical and vegetation transect in order (i) to account for influence of biophysical variables, such as slope or elevation and (ii) to reduce inventory work time. To estimate the number of plots necessary to guarantee forest inventory accuracy, we used the tool developed by Winrock⁴⁷ (Walker, Pearson, and Brown 2007). It depends on the mean biomass measured and on the standard deviation. With our current dataset, to achieve a confidence level of 90% with an error of 10%, 50 plots should be inventoried. With the current inventory, the sample size (100) is largely above this minimum threshold guaranteeing the accuracy and representativeness of the inventory.

The inventory was conducted on circular plots of 16 m of radius. For each plot, GPS coordinates and altitude were collected. For every tree above 5 cm diameter, the following measurements were gathered: diameter at breast height (DBH), height (with a vertex) and tree species.

Aboveground biomass is calculated using an allometric equation linking biomass to diameter and, potentially, height. Given the high species composition heterogeneity in tropical forests, multi-species equations are more relevant. Few generic equations are available for the Miombo forest. We chose the Chave's global equation (Chave et al. 2014) presented below because it is adapted to the range of measured diameters and it accounts for tree height which is more precise.

Chave's allometric equation used:

$$AGB = 0.0673 \times (\rho D^2 H)^{0.976}$$

Where AGB is aboveground biomass, ρ is wood density, H is tree height and D is diameter at breast height.

Trees height and diameter are measured during inventories. Wood density for each species encountered during inventories was selected from the global wood density database (Zanne et al. 2009; Chave et al. 2009).

⁴⁷ <http://www.winrock.org/resources/winrock-sample-plot-calculator>

According to IPCC (2003), carbon fraction in aboveground biomass averages 0.47 tC/tdm. In IPCC (2006), belowground to aboveground ratio (or root-to-shoot ratio) in tropical dry forests is expected to average:

- 0.56 if aboveground biomass is below 20 t/ha.
- 0.28 if aboveground biomass is above 20 t/ha.

The same method was used to determine post-deforestation carbon stocks on 10 years old fallows (younger fallows were not selected to remain conservative). Vegetation on fallows is comparable to the one of natural Miombo forest as it is composed of clump shoots or root suckering, but with less diversity. 18 plots of this inventory were realized around the GNR. Data from literature exists for Mozambique but there do not concern Zambezia (McNicol et al., 2011) and it is more conservative to use those produced for the GNR.

Method for this inventory is described in Mercier et al. (2016). It is based on 16-m diameter circular plots on which DBH and height of tree above 5-cm diameter are measured and tree species are reported for the correspondence with wood density (use of the global wood density database). The allometric equation that is used is the one of Chave et al. (2014) for dry forests.

Chave's allometric equation used:

$$AGB = 0.0673 \times (\rho D^2 H)^{0.976}$$

Where AGB is aboveground biomass, ρ is wood density, H is tree height and D is diameter at breast height.

As previously explained, a NFI will be realized in 2017. When results are available for strata present in the ER Program area, they will replace those presented here in order to be consistent with national level as recommended by the FCPF MF (2016a). Strata that will be inventoried are presented in Table 45. They encompass Miombo forest (dense and open) and mountainous forest but not mangroves. Hence, data for mangrove will stay secondary data. The methods used for NFI are described in section 9 (MRV).

Table 45: Forest strata accounted for in the national forest inventory (2016/2017)

Strata	LC Category	Domain	Group	Name	Area	
1	Semi-natural terrestrial vegetation	Forests	Semi-deciduous	Semi-deciduous dense forest (+Miombo dense)	7,547,903	
2				Mopane	2,183,139	
3			Semi-evergreen	Semi-evergreen dense forest (+Gallery forest)	1,662,652	
4				Mecrusse	526,349	
5				Semi-evergreen mountainous forest	884,858	
6		Woodlands (Open forests)	Semi-deciduous	+Semi-deciduous open forest (+Miombo open + Tree savanna)	29,725,985	
7			Semi-evergreen	Semi-evergreen open forest	2,421,296	
Semi-natural terrestrial vegetation Total					44,952,183	
Grand Total					44,952,183	

The tables below show results of forest inventories on pre- and post-deforestation strata of Miombo forest. Results for carbon stocks in 10-years fallows around the GNR are comparable to other results from another district in Mozambique for crops (9.4 tC/ha in ABG) and savannahs (11.5 tC/ha in ABG - McNicol, Williams, and Ryan 2011).

Legend

- ▲ 10-years fallows inventory
 - Miombo forest inventory
- deforestation map on ZILMP area
- forest
 - deforestation 2010 - 2014
 - deforestation 2005 - 2010
 - savannas and crops
 - wetlands
 - other lands
 - mangroves

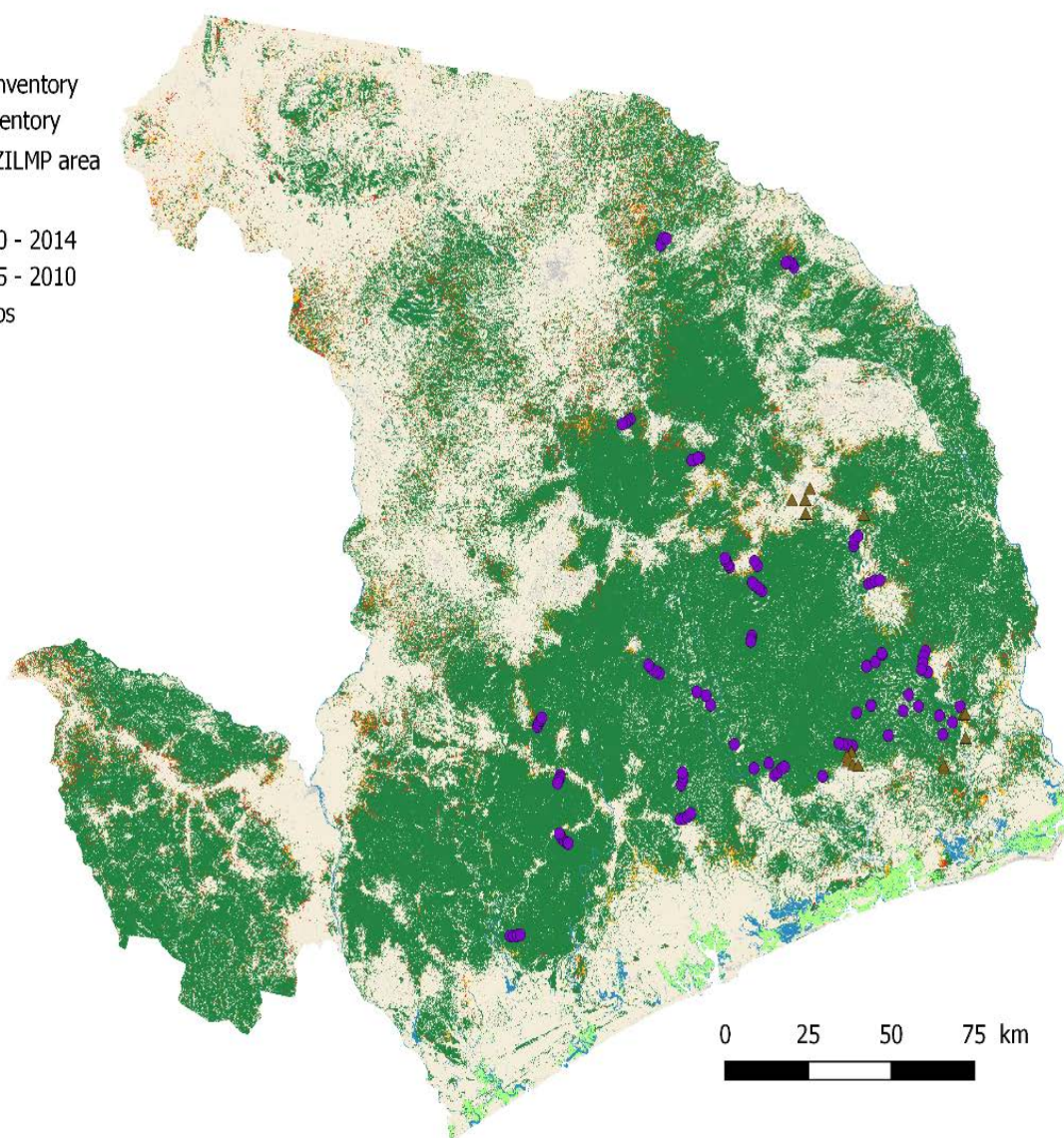


Figure 26: Map of inventories on Miombo pre- and post-deforestation strata

Pre-deforestation strata:**Table 46: Emissions factors information – pre-deforestation strata; Carbon stocks in Miombo forests**

Description of the parameter including the forest class if applicable:			Carbon stocks in AGB and BGB of Miombo forests
Data unit (e.g. t CO ₂ /ha):			tCO ₂ eq/ha
Value for the parameter:			AGB: 241.6 BGB: 67.6
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:			Data are from a forest inventory planned specifically for this purpose and described in the ZILMP Background Study for the development of the ER-PD (Mercier et al., 2016). The inventory is composed of data from 100 plots of 16 m of diameter and biomass was estimated using the Chave et al. (2014) allometric equation. Belowground biomass is estimated with default factors of IPCC (2006) - 0.56 if aboveground biomass is below 20 t/ha and 0.28 if aboveground biomass is above 20 t/ha. Results are presented in Table 43 .
Spatial level (local, regional, national or international):			ER Program area
Discussion of uncertainties of key parameter:	of	key for this	Uncertainties are from (i) the representativeness of selected plots to the whole strata, (ii) the evaluation of DBH and tree height from field operator and (iii) error related to the choice and the allometric equation used.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:			Confidence levels are calculated based on standard deviation between plots. Results are the following: AGB 90 % CI: 17.1 (7%) BGB 90 % CI: 4.8 (7%) To assess the representativeness of the inventory to Miombo forest, Winrock tool ⁴⁸ (Walker, Pearson, and Brown 2007) was used as presented in Mercier et al. (2016).

⁴⁸ <http://www.winrock.org/resources/winrock-sample-plot-calculator>

Table 47: Emissions factors information – pre-deforestation strata - carbon stocks of montane forests

Description of the parameter including the forest class if applicable:		Carbon stocks in AGB and BGB of Montane forests
Data unit (e.g. t CO2/ha):	tCO2eq/ha	
Value for the parameter:	<p>To establish the NFI sampling plan, several data available at national level were identified. We selected for montane forest data that were produced in Mozambique and gave the most conservative estimation from Lisboa et al. (2014).</p> <p>Root/shoot ratio of 0.27 was applied as for AGB above 20 t/ha (IPCC, 2006).</p> <p>AGB: 347.7BGB: 93.9</p>	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Lisboa et al. (2014)	
Spatial level (local, regional, national or international):	International	
Discussion of key uncertainties for this parameter:		
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	<p>Uncertainties are those presented in the results of the reference used.</p> <p>AGB 90% CI: 38.9 (11%)</p> <p>BGB 90% CI: 10.5 (11%)</p>	

Table 48: Emissions factors information – pre-deforestation strata_Carbon stocks in Mangroves

Description of the parameter including the forest class if applicable:		Carbon stocks in AGB and BGB of Mangroves
Data unit (e.g. t CO ₂ /ha):	tCO ₂ eq/ha	
Value for the parameter:	AGB: 435.8 BGB: 138.4	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Data are secondary, extracted from existing literature. Stringer et al. (2015) made an inventory on this ecosystem in the Zambezi delta in Mozambique; we can easily assume that carbon stocks are comparable to those of mangroves in Zambézia province. They divided mangroves into 5 strata and estimated carbon stocks in above and belowground biomass (Erreur ! Source du renvoi introuvable.).	
Spatial level (local, regional, national or international):	Regional	
Discussion of key uncertainties for this parameter:		
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	Accuracy calculation is based on the results presented in in Stringer et al. (2015) and reported in Erreur ! Source du renvoi introuvable. . Mean biomass and standard deviation is furnished per stratum and pool (AGB and BGB). From this, a weighted average (depending on the area of each stratum) and standard deviation were calculated for the entire ecosystem and corresponding 90% CI are presented here. AGB 90% CI: 51.3 (12%) BGB 90% CI: 14.5 (10%)	

Post-deforestation strata:

Table 49: Emissions factors information – post-deforestation strata_Carbon stocks in Miombo forests

Description of the parameter including the forest class if applicable:		Carbon stocks in AGB and BGB in 10-years fallows after deforestation of Miombo forests and cultivation
Data unit (e.g. t CO₂/ha):		tCO ₂ eq/ha
Value for the parameter:		AGB: 34.8 BGB: 15.3
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:		Post-deforestation uses of the land are agriculture – succession of fields and fallows – and savannas. One post-deforestation stratum and long term average carbon stock of this stratum was used. A biodiversity and biomass inventory was realized around the GNR in 2016 (mainly in the buffer zone where deforestation occurs) following, for biomass estimation, the same method as the one for pre-deforestation data, except that plots' size was 10 m of diameter. Inventories were realized on fallows of different ages but, to remain conservative, only biomass data from fallows of 10 years are used in the present document (this stratum is represented by 18 plots). The same methodology for inventory as the one used for estimation of biomass in Miombo forest was used. Results are presented in (Erreur ! Source du renvoi introuvable.).
Spatial level (local, regional, national or international):		Local
Discussion of key uncertainties for this parameter:		Uncertainties are from (i) the representativeness of selected plots to the whole strata, (ii) the evaluation of DBH and tree height from field operator and (iii) error related to the allometric equation used.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:		Confidence levels are calculated based on standard deviation between plots. Results are the following: AGB 90 % CI: 17.1 (47%) BGB 90 % CI: 4.7 (36%)

Table 50: Emissions factors information – post-deforestation strata_Mountainous forests

Description of the parameter including the forest class if applicable:

Post deforestation for mountainous forests⁴⁹

Data unit (e.g. t CO₂/ha): tCO₂eq/ha

Value for the parameter:

AGB: 34.8

BGB: 15.3

Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:

Use of the same data as for Miombo forest in the ER Program area.

Spatial level (local, regional, national or international):

Discussion of key uncertainties for this parameter:

Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:

Confidence levels are calculated based on standard deviation between plots. Results are the following:

AGB 90 % CI: 17.1 (47%)

BGB 90 % CI: 4.7 (36%)

⁴⁹ This section will be updated, pending on data from NFI. For now, it is based on post deforestation data for Miombo.

Table 51: Emissions factors information – post-deforestation strata_Carbon stocks in Mangroves

Description of the parameter including the forest class if applicable:		Post-deforestation carbon stocks in Mangroves
Data unit (e.g. t CO₂/ha):	tCO ₂ eq/ha	
Value for the parameter:	AGB: 109 BGB: 34.6	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	No post deforestation evaluation of stocks was found in existing literature but Siikamäki (2012) evaluated losses from biomass after deforestation to be of 75%. This value was retained here.	
Spatial level (local, regional, national or international):	Local	
Discussion of key uncertainties for this parameter:		
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	Accuracy depends on pre-deforestation class so it is the one discussed in Stringer et al. (2015). AGB 90% CI: 38 (12%) BGB 90% CI: 11 (10%)	

Emissions factors:**Table 52:** Emission factor for AGB in all forest strata

Description of the parameter including the forest class if applicable:			Emission factor for AGB in all forest strata
Data unit (e.g. t CO₂/ha):			tCO ₂ eq/ha
Value for the parameter:			Miombo: 206.7 Mountainous forests: 313.2 Mangroves: 326.9
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:			Difference of carbon stocks of pre- and post-deforestation strata. When deforested, AGB is considered to be completely instantly emitted.
Spatial level (local, regional, national or international):			ER Program area
Discussion of key uncertainties for this parameter:	of	key for this	Uncertainties for this parameter are combination of uncertainties for pre- and post-deforestation carbon stocks for each forest stratum. The only dedicated inventories are those on Miombo forest for which we can calculate indicators of precision. Other data are from existing literature and we have no access to databases.
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:			90% confidence intervals for emission factor are the following: Miombo forest: ±17.5 (9%) Montane forest: 33.5 (11%) Mangrove: 9.2 (8%)

Table 53: Emission factor for BGB in all forest strata

Description of the parameter including the forest class if applicable:	Emission factor for BGB in all forest strata	
Data unit (e.g. t CO₂/ha):	tCO ₂ eq/ha	
Value for the parameter:	Miombo: 55.2	
	Mountainous forests: 78.6	
	Mangroves: 103.8	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Difference of carbon stocks of pre- and post-deforestation strata. When deforested, BGB is considered to be emitted at a rate of 10% per year according to IPCC recommendation, as the decomposition is progressive.	
Spatial level (local, regional, national or international):	ER Program area	
Discussion of key uncertainties for this parameter:	Uncertainties for this parameter are combination of uncertainties for pre- and post-deforestation carbon stocks for each forest stratum. The only dedicated inventories are those on Miombo forest for which we can calculate indicators of precision. Other data are from existing literature and we have no access to databases.	
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	90% confidence intervals for emission factor are the following:	
	Miombo forest: ±4.5 (8%)	
	Montane forest: ±8.3 (11%)	
	Mangrove: ±2.6 (7%)	

Calculation of the average annual historical emissions over the Reference Period

According to the FCPF MF (FCPF, 2016a), emissions of the REL correspond to the average over the reference period of activity data multiplied by emission factors. Emission factors for AGB and BGB are added to account for all tree biomass. In the following tables, activity data and emissions due to deforestation in each forest strata are presented.

The addition of all these emissions gives a mean annual emission for the entire ER Program accounting area of:

6 620 658 tCO₂eq/yr.

These tables will be updated once data for national level are available, as previously stated.

Table 54: Reference emissions for Miombo forest strata in ZILMP area

Reference periods	Year number	Historical deforestation area - in ha/y	Emissions related to deforestation - in tCO ₂ eq
2005	1	20 469	5 573 726
2006	2	20 469	5 573 726
2007	3	20 469	5 573 726
2008	4	20 469	5 573 726
2009	5	20 469	5 573 726
2010	6	28 307	7 667 589
2011	7	28 307	7 667 589
2012	8	28 307	7 667 589
2013	9	28 307	7 667 589
2014	10	28 307	7 667 589
Average over the reference period - baseline		24 388	6 620 658

Table 55: Reference emissions for Mountainous forest strata in ZILMP area

Reference periods	Year number	Historical deforestation area - in ha/y	Emissions related to AGB - in tCO ₂ eq	Emissions related to BGB - in tCO ₂ eq	Total reference emissions - in tCO ₂ eq
2005	1	642 652	128 877	642 652	642 652
2006	2	642 652	128 877	642 652	642 652
2007	3	642 652	128 877	642 652	642 652
2008	4	642 652	128 877	642 652	642 652
2009	5	642 652	128 877	642 652	642 652
2010	6	766 896	153 793	766 896	766 896
2011	7	766 896	153 793	766 896	766 896
2012	8	766 896	153 793	766 896	766 896
2013	9	766 896	153 793	766 896	766 896
2014	10	766 896	153 793	766 896	766 896
Average over the reference period - baseline		1799	563 438	141 335	704 774

Table 56: Reference emissions for Mangroves strata in ZILMP area

Reference periods	Year number	Historical deforestation area - in ha/y	Emissions related to AGB - in tCO ₂ eq	Emissions related to BGB - in tCO ₂ eq	Total reference emissions - in tCO ₂ eq
2005	1	251	80	331	331
2006	2	251	80	331	331
2007	3	251	80	331	331
2008	4	251	80	331	331
2009	5	251	80	331	331
2010	6	86	27	113	113
2011	7	86	27	113	113
2012	8	86	27	113	113
2013	9	86	27	113	113
2014	10	86	27	113	113
Average over the reference period - baseline		0.5	169	54	222

8.4 Estimated Reference Level

ER Program Reference level

ERPA term year t	Average annual historical emissions from deforestation over the Reference Period (tCO ₂ -e/yr)	If applicable, average annual historical emissions from forest degradation over the Reference Period (tCO ₂ -e/yr)	If applicable, average annual historical removals by sinks over the Reference Period (tCO ₂ -e/yr)	Adjustment, if applicable (tCO ₂ -e/yr)	Reference level (tCO ₂ -e/yr)
1	5 573 726	-	-	-	5 573 726
2	5 573 726	-	-	-	5 573 726
3	5 573 726	-	-	-	5 573 726
4	5 573 726	-	-	-	5 573 726
5	5 573 726	-	-	-	5 573 726
6	7 667 589	-	-	-	7 667 589
7	7 667 589	-	-	-	7 667 589
8	7 667 589	-	-	-	7 667 589
9	7 667 589	-	-	-	7 667 589
10	7 667 589	-	-	-	7 667 589

8.5 Relation between the Reference Level, the development of a FREL/FRL for the UNFCCC and the country's existing or emerging greenhouse gas inventory

This section will be completed in the next versions of the ER-PD after the adaptation of the REL with available national data.

9. APPROACH FOR MEASUREMENT, MONITORING AND REPORTING

9.1 Measurement, monitoring and reporting approach for estimating emissions occurring under the ER Program within the Accounting Area

As there is a National Forest Monitoring System (NFMS) currently under development in Mozambique, in respect to criterion 15 of the FCPF MF (FCPF, 2016a), the Measurement, Monitoring and Reporting (MRV) system of the ER Program will follow the NFMS. The NFMS is built to use the same methods as those used for the establishment of the national REL – see section 8. Hence, this will allow to respect indicator 14.3 of the FCPF MF stating that methods to determine RL and for monitoring are equivalent. For each monitoring event, data for the ER Program will be extracted from results of the national monitoring, which is described hereafter.

National FREL considers a spatially explicit tracking of land- use conversions over time (third approach) as the most desirable to be reached, in order to understand the drivers of deforestation and forest degradation and plan the adequate mitigation activities. It uses a well-designed sampling approach to train a supervised classification of changes on a multi-temporal stack of images results. Result through this sampling approach could be also a map of changes. In that way, it can be compared to the method currently compared in the program REL section but samplings are different in size and because it is systematic in the FREL case and it is oriented to areas of changes by doing clusters of plots in the present method.

For the present draft ER-PD, the methods used for the establishment of the REL and of the MRV are different because the national REL for Zambezia province is not yet available, but this will be harmonized as soon as national REL is produced, and updated in the next drafts ER-PD.

The NFMS will report on deforestation, forest degradation and enhancement of carbon stocks through plantations. Since enhancement of carbon stocks is excluded for the ER Program (see section 7), only data for deforestation and degradation will be extracted from national MRV. Information of the method used is provided here but more details are available in the documentation composing the R-Package.

Monitoring of activity data

AD will be updated every 2 years (consistent with the biennial reporting set under the UNFCCC), but annual reporting capacity will be generated at MRV Unit (FNDS) and a new LULC map based on Sentinel-2 can be generated every 5 years. First frequency will allow to be consistent with national report for UNFCCC and the second will furnish location of deforestation that can drive the implementation of ER Program mitigation activities and the associated benefit sharing scheme.

LULC maps will be prepared for MRV in order to monitor the implementation of the mitigation activities and their impact (and for other purposes as NFI design, forest management, etc.) would have a lot of sense to elaborate updated versions of the LULC maps (update methodology must be simple but accurate and consistent with the analysis of changes). In jurisdictional programs, more detailed information could be prepared at local level (bottom-up perspective) to train a change detection mosaic under a sampling approach methodology or to produce an updated version of a LULC map.

As for the national RL, LULC maps will be produced with Sentinel-2 images with 2 spatial resolutions (10 and 20m) on the entire country territory. For each LULC map, 2 dates in the year will be analyzed: (i) in May/June, when the cloud cover is reduced but the trees of dry miombo have lost their leaves; (ii) in August/September to confirm first classification with trees having their new leaves but higher cloud cover. Differences between two dates of LULC maps can allow assessing LULC Changes. Results of this approach comparing two static LULC maps can be less precise than a multi-temporal analysis of change (as *presented in here*) but can furnish a spatially explicit tracking of forest conversion over time.

For the historical analysis of AD, the entire area of the country is being visually assessed (Inhambane and Zambézia provinces have been evaluated to date) on a 4 x 4 km grid at national level (the same grid used to allocate the NFI clusters from the Stratified Random Sampling design) using high and medium resolution imagery. The spatial assessment unit is almost the equivalent a 3 x 3 block of Landsat pixels (100 x 100 m), where a plot of same dimensions and an internal grid of 5 x 5 points is overlapped. This precise set of data which characterizes the current LULC and the changes produced in the historical series, will be used to decide the training areas for the LULC 2016 (sentinel-2) and for the image stack of Landsat 8 OLI and Landsat 5 TM (historical AD analysis); training subset (70%). A subset of data will be used for validation purposes of both products; test subset (30%) (see [AD Accuracy Assessment](#)).

To be completed with information from national level:

Parameter
Description
Data unit
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be

approved during the Term of the ERPA
Frequency of monitoring/recording:
Monitoring equipment:
Quality Assurance/Quality Control procedures to be applied:
Identification of sources of uncertainty for this parameter
Process for managing and reducing uncertainty associated with this parameter
Any comments

Table 57: Summary of MRV system for activity data (from Gonzalo, 2016 - R-Package draft)

Activity Data	Definition
Approach	<ul style="list-style-type: none"> 3.Spatially explicit tracking of land-use conversions over time, with a well-designed sampling approach (4 x 4 km grid) to train a supervised classification of changes on a multi-temporal stack of Landsat Imagery (historical AD) or Sentinel-2 Imagery (M&MRV purposes). EOS: Sentinel-2 (spatial resolution 10 m VNIR, 20 m Red Edge & SWIR/60 m SWIR & others), Landsat 8 OLI (spatial resolution 30 m VNIR, 15 m - panchromatic) and Landsat 5 TM in combination with other high resolution imagery and SAR (Synthetic Aperture Radar) data (e.g. PALSAR from ALOS/ALOS2). Positional accuracy of any geo-info product better (or equal) than 30 m. (11 m Sentinel-2, 30 m Landsat)
Classification System	Consistency: 2006 IPCC categories, National Classification in 'Integrated Assessment of Mozambican Forests' (AIFM 2007, Mazorli, A., Rural Consult Lda., Agriconsulting, Cooperazione Italiana), 'Zoneamiento Agroecológico de Moçambique' (ZAEN, 2010-2014), Provincial Forest Inventories conducted by JICA (Japan International Cooperation Agency) in Gaza and Cabo Delgado (2015-2016) and National Forest Inventory (2016-2017). Table 4.
Temporal boundaries	<ul style="list-style-type: none"> Historical period of the FRL covering of 10-15 years ending 2016. Three historical epochs before 2016 and not beyond 2001 with a separation of at least 2 years between epochs. Benchmark map of 2016 will be required for monitoring purposes (Sentinel-2).
Accuracy Assessment	Accuracy assessment of the LULC and LULC changes (AD) categories, to estimate two-tailed 90% confidence intervals of each category (Olofsson et al., 2014).

The screenshot displays the Collect Earth tool interface, which is used for land use change detection. It features several data entry forms surrounding a central satellite image. The forms include:

- Elementos (Elements):** A table for recording land cover types and their coverage percentages.

Elemento	Cobertura
Árvores	40-49%
Arbustos	50-59%
Matagais	Não aplicável
Gramíneas	Não aplicável
Solo Exposto	Não aplicável
Cultivos	Não aplicável
Rio	Não aplicável
Lago	Não aplicável
Infraestrutura	Não aplicável
- Lula Change (Land Use Change):** A table for recording land use change types.

C/C	F/F
P/P	A/A
B/B	D/D
T/C	T/F
T/P	T/A
T/A	T/D
- Imagem de satélite (fornecedor) (Satellite image (provider)):** A dropdown menu for selecting the satellite image provider.
- Imagem de satélite (Satellite image):** A dropdown menu for selecting the satellite image.
- Produto (Product):** A dropdown menu for selecting the product.
- Data da imagem atual (Current image date):** A date input field.
- Data da imagem antiga (Old image date):** A date input field.
- Comentário (Comment):** A text area for providing additional information.

The central satellite image shows a forest area with a yellow bounding box and a green point labeled '63866'.

Figure 27: changes detection using collect earth tool (from Gonzalo, 2016 - R-Package draft)

Monitoring of emission factors

Emissions factors will be updated every 2 years with the survey of the national network of permanent plots created for the NFI (48 plots) and the NFI will be updated every 10 years. For NFI, a total of 620 clusters of inventory plots will be realized across the country in all strata (Table 45).

Clusters are the same as those used for point sampling analysis of deforestation with remote sensing techniques. The shape of cluster for forest inventory is presented in **Figure 28**. On each plot, trees' DBH, height and species will be measured for calculation of aboveground tree biomass⁵⁰ and, soil (30 cm depth) and litter (on 25 x 25 cm sub-plots) will be collected for lab analysis.

⁵⁰ The allometric equation to be used should be discussed with the MRV team for the next drafts of the ER-PD.

NFI is being coordinated by the *Direcção Nacional de Florestas (Ministério da Terra, Ambiente e Desenvolvimento Rural, MITADER)*, and implemented by *Serviços Provinciais de Florestas e Fauna Bravia (MITADER)*, Department of Natural Resources Inventory (DIRN), IIAM and UT-REDD+ (MRV Unit, FNDS), and with the support of other collaborating Institutions (Eduardo Mondlane University).

With the results from the NFI we will be able to calculate by the end of 2017 the carbon content for aboveground (AGB) and below-ground biomass (BGB), dead organic matter (litter and dead wood) (DOM) and soil pools (SOC) by vegetation type/ land use, and the corresponding EFs. However, only results on carbon pools accounted for in the present program will be used for the strata of interest. National average for the strata of interest will be used for the MRV of the ER program in order to guarantee consistency with national FRRL. EF presented in this document will be updated as soon as data from NFI are available.

To be completed with information from national level:

Parameter
Description
Data unit
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA
Frequency of monitoring/recording:
Monitoring equipment:
Quality Assurance/Quality Control procedures to be applied:
Identification of sources of uncertainty for this parameter
Process for managing and reducing uncertainty associated with this parameter
Any comments

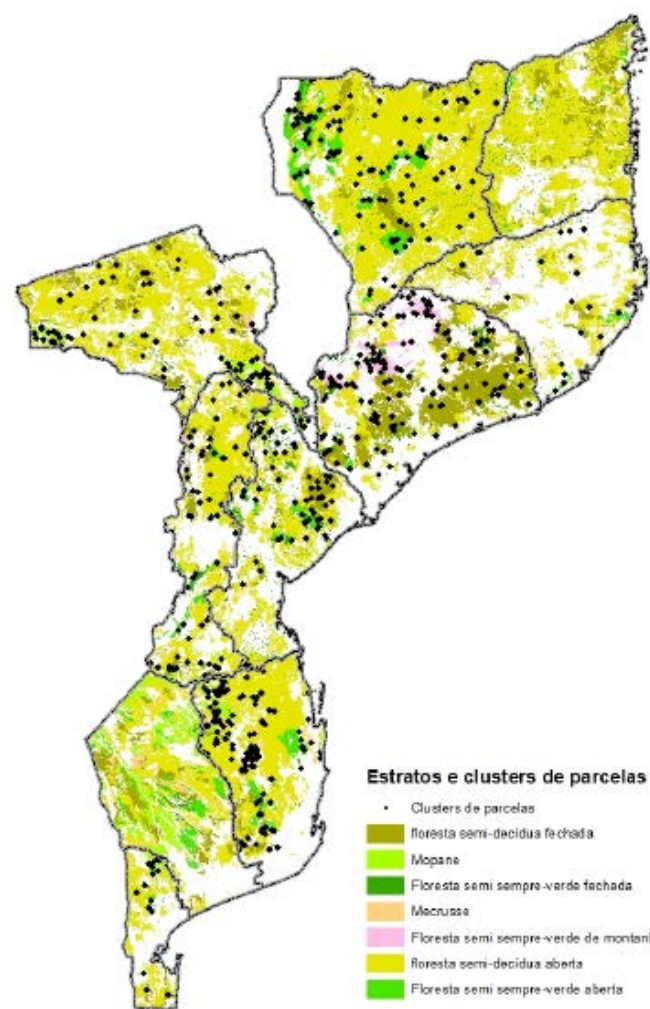


Figure 28: shape of plots for the NFI in Mozambique

Clusters, parcelas e subparcelas

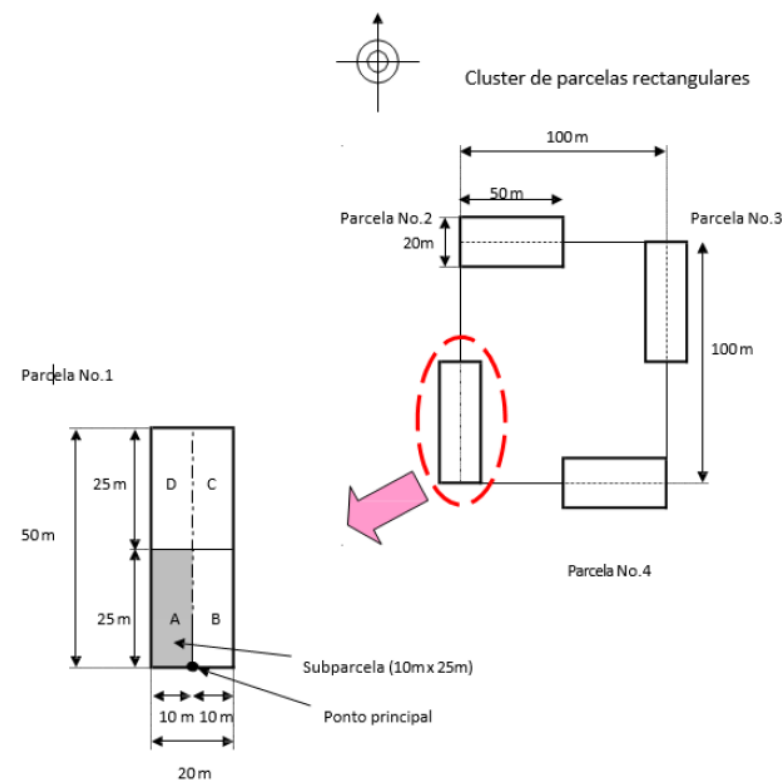


Figure 29: NFI plan in Mozambique

Community participation in monitoring

This sub-section will be completed for the next draft ER-PD after discussion with the MRV and the ER Program team. There are several manners to include communities in MRV; they have to be consistent with the ER Program management system. Communities could be included in the monitoring of the ER Program activities as they are concerned by land use planning, conservation agriculture and biomass plantations for energy purposes. This would necessitate to create local MRV offices where necessary or to reinforce CGRNs where they exist.

In accordance with criterion 16 of the FCPF MF (2016a), the ER-program has explored opportunities for communities to participate in monitoring and reporting for carbon and non-carbon benefits and safeguards. Carbon accounting will be based on techniques ensuring high qualification and will be managed at national level because it is completely linked to the NFMS. Hence, it would not be relevant to include communities in this system.

9.2 Organizational structure for measurement, monitoring and reporting

This sub-section will also be completed for the next drafts of the ER-PD. Additional information are needed to determine how the system will be organized at provincial level with regards to roles, responsibilities, flow of data, etc. One the question that should be addressed is: will an online platform exist to follow declaration on program activities and deforestation map?

The organizational structure of the ER Program for MRV is based on national arrangements:

- **A national MRV unit** exists within the FNDS. It is composed of 5 technicians who will be trained to remote sensing and forest resources analysis. They will be in charge of the measurement, monitoring and reporting at national level of activity data and carbon stocks from NFI. MRV Unit at FNDS (*Fundo Nacional de Desenvolvimento Sustentável*) is currently preparing this LULC 2016 map based on Sentinel-2 products.
- **A provincial MRV unit** is located within the provincial UT-REDD+ unit in Mocuba. It is composed of 2 persons. They will be responsible for extracting data from national monitoring for the ER Program and to guarantee the flow of data to the relevant beneficiaries. They will also assure the linked with other projects and programs that may have their own measurement and monitoring systems. The provincial unit will also be responsible for compiling data from communities about the ER Program activities.
- **Local offices** for community monitoring will be created in each district where local activities have to be monitored. CGRN, where they exist, will be reinforced for this purpose. Data from this monitoring will be transmitted to the provincial MRV unit.

The organizational structure for measurement, monitoring and reporting is summarised in the table below.

Table 58: MRV institutional arrangements and roles (from Gonzalo, 2016 – draft of R-Package)

Activities	National Level	Provincial Level	Project Level / Communities
Measurement	<ul style="list-style-type: none"> MRV Unit at FNDs will produce the LULC map and disaggregate it into adequate forest classes and will implement the AD analyses. MRV Unit regularly will collect primary and secondary data (AD/EFs) from lower MRV levels, will analyze and compile this data. The MRV Unit elaborates the GHG emission calculation at national, provincial and project level. 	<ul style="list-style-type: none"> MRV team at provincial UT-REDD+ will collect, compile and analyze primary and secondary data on project interventions, e.g. emission factors, boundaries of activities, lulc changes, etc. This includes databases, GIS and remote sensing data. 	<ul style="list-style-type: none"> Project implementer will design its own monitoring system (following national guidelines) and will collect and analyze primary and secondary data within project boundaries; e.g. forest inventory data, boundaries of activities, lulc changes mapping, etc. This information includes databases and GIS data. <p>Relevant forest information and socio-economic and environmental information will be collected at Community level.</p>
Reporting	<ul style="list-style-type: none"> MITADER? (appropriate directorate) is responsible for reporting at international (UNFCCC) and National Level and also for generating the information in collaboration with provincial institutions and project implementers for program and project reports. MITADER? (appropriate directorate) reports to UNFCCC. 	<ul style="list-style-type: none"> UT-REDD+ is responsible for compiling results from the Provincial MRV Unit for the province and reports in form of a Monitoring Report. 	<ul style="list-style-type: none"> Project implementer is responsible for compiling results from the Federal MRV Unit and Regional MRV Unit for the project and reports in form of a Monitoring Report.
Verification	<ul style="list-style-type: none"> Third party national or international (accredited agency) 		

9.3 Relation and consistency with the National Forest Monitoring System

This sub-section will also be completed for the next drafts of the ER-PD when national data are available.

10. DISPLACEMENT

According to criterion 17 of the FCPF MF (FCPF, 2016a), the ER Program should be designed and implemented so as to “prevent and minimize potential Displacement” of emissions from the ER Program Accounting Area to outside of it. The ER Program fully complies with this requirement.

10.1 Identification of risk of displacement

At this stage, it should be noted that the ER Program is not expected to generate any displacement of emissions, as it was already stated in the ER-PIN (UT REDD+, 2015a). Admittedly, as shown in section 4.3, the planned interventions under the proposed ER Program are all addressing the main drivers of deforestation and forest degradation in the ER Program area through specific and targeted measures. Those measures are primarily based on incentives and on the valorization of non-carbon benefits rather than coercive and, therefore, are expected to lower the appeal of deforestation and forest degradation *per se* for the agents of deforestation – which should contribute to reducing the risk of displacement. The only coercive measures are related to interventions aiming at reducing artisanal logging of precious timber (through support to AQUA - ERI-C2 - or law enforcement around the GNR - ERI-C1 - for instance) – which already is an illegal activity also addressed at national scale by the GoM outside of the ER Program. Those interventions were defined taking into account (i) the strategies and needs of the agents of deforestation and (ii) the main barriers to REDD+ in Mozambique – including potential institutional weaknesses, which are addressed in section 6. Their associated risk of displacement was assessed and categorized, according to criterion 17.1 of the FCPF MF (FCPF, 2016a).

This section only focuses on the direct drivers of deforestation.

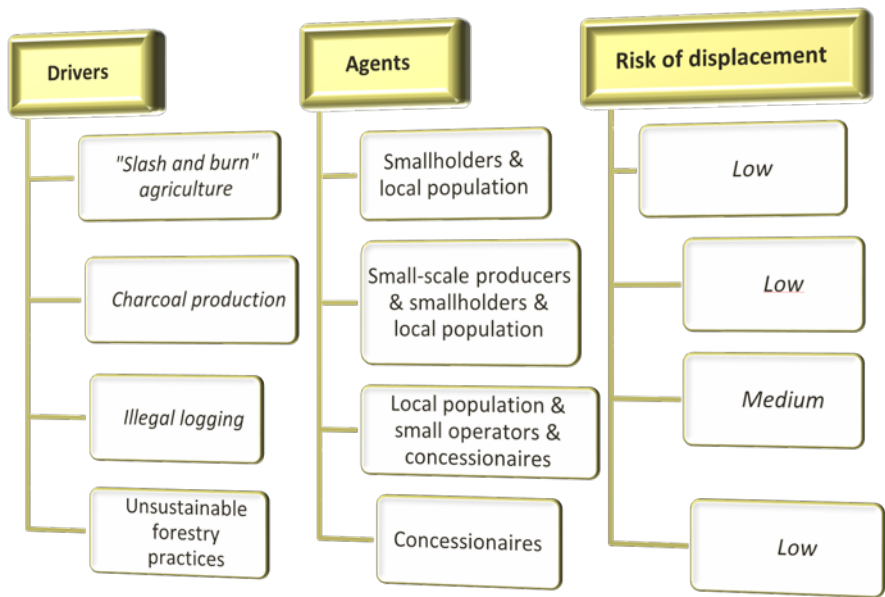


Figure 30: Reminder of the main drivers and agents of deforestation and forest degradation in the ER Program area

Table 59: Identification of risks of displacement of emissions

Driver of deforestation or degradation	Small scale agriculture based on “slash and burn” techniques
Risk of displacement	Low
Main agents of deforestation / degradation identified	Smallholders and local population
Explanation / Justification of risk assessment	<p>As stated in section 4.1, the main driver of deforestation in the ER Program area is small-scale agriculture based on “slash and burn” techniques. Small-scale agriculture in the ER Program area is almost exclusively focused on maize and cassava cultivation. Displacement of “slash and burn” agriculture because of the ER Program is very unlikely to happen. One of the priority objectives of the ER Program is, precisely, to reduce deforestation through land intensification and progressive disappearance of itinerant agriculture.</p> <p>First, the main agents of deforestation are smallholders and local population. The displacement of “slash and burn” agriculture outside of the ER Program area would imply a significant population displacement far from their current localization, which is not expected to happen. In any case, if smallholders were really prone to displacement because of the ER Program, they would likely migrate to forestland areas; yet, at national scale, there is few – if any – other districts with as much forest cover as those comprised in the ER Program area. Their displacement would therefore be limited within the ER Program Accounting Area.</p> <p>Second, one of the most important ER Program interventions is the implementation of sustainable agricultural techniques (conservation agriculture) in the ER Program area (ERI-D1), which is expected to favor agricultural activities’ settlement through land intensification. The ER Program provides for the training of smallholders (main agents of deforestation) in order for them to adopt and benefit from sustainable and settled agriculture.</p> <p>The ER Program seeks to lower deforestation with the actual increase of agricultural production in the ER Program area, through sustainable and improved practices based on - in addition to conservation agriculture: (i) support to cash-crops production (ERI-D2); (ii) support to the establishment and strengthening of commercial agriculture (ERI-D2) and (iii) the strengthening of NTPF valorization (ERI-D5). Those measures are expected to generate new agricultural and commercial opportunities for smallholders in the ER Program area. The potential additional revenues generated will contribute to the long-term settlement of agricultural practices, agents of deforestation and drivers of deforestation, thus reducing the risk of displacement of deforestation.</p> <p>The ER Program is therefore not based on the prohibition of any agricultural practices – except in the central zone of the GNR, which has already been the case over the past 10 years - which could have generated displacement of “slash and burn” agriculture. Conversely, it is based on incentives for agricultural intensification and settlement within the ER Program area.</p>

Driver of deforestation or degradation	Charcoal production
Risk of displacement	Low
Main agents of deforestation / degradation identified	Smallholders and local population
Explanation / Justification of risk assessment	<p>As stated in section 4.1, charcoal production is the second most important driver of forest degradation in the ER Program area. It is strongly linked to agricultural practices (see Box 2). Most of the time, the agent of deforestation and forest degradation linked to charcoal production is the local population (small producers / smallholders). Consequently, in this case too, a displacement of charcoal production due to the proposed ER Program measures would imply a massive population displacement from outside of the 9 districts that compose the ER Program area, which is not expected to happen. In any case, as stated in section 4.1, most of the time those small producers are also engaged in other activities that is often, is not always, agriculture. Charcoal production actually is a typical by-product of “slash and burn” agriculture that, as previously explained, is not expected to be displaced.</p> <p>This is also reinforced by the fact that charcoal production is located close to demand areas that are the urban centers within the ER Program area. Because population growth is expected to continue its high progression, charcoal demand is also expected to increase in the ER Program area. Consequently, the ER Program interventions comprise a significant component of charcoal production improvement rather than prohibition, in order to limit its impact on forest cover (see ERI-D4). This, too, is likely to reduce any risk of displacement of charcoal production.</p> <p>Admittedly, the ER Program interventions linked to charcoal production follow the same logics as those focusing on small-scale agriculture: no practices are prohibited but the measures rely on the improvement of the production techniques in order to meet the increasing demand with sustainable practices ensuring the maintaining of forest cover. The creation of fast growing species plantations for energy purpose (ERI-D3 & ERI-D4) and the improvement of kiln yields are expected to create a “win-win environment” in which charcoal production displacement outside of the ER Program area would not benefit the agents of deforestation, reducing this risk.</p>
Driver of deforestation or degradation	Illegal logging
Risk of displacement	Medium
Main agents of deforestation / degradation identified	Local population; artisanal (illegal) loggers

Explanation /
Justification of risk
assessment

As stated in section 4.1, illegal logging is a significant driver of forest degradation in the ER Program area, because it is focused on a few precious timbers only. It is also a difficult issue for the ER Program as it is essentially driven by the international demand and failure of local law enforcement. The proposed ER Program measures aiming at reducing this driver are essentially based on increased surveillance and law enforcement and on improved forest management in the ER Program area (see ERI-C1). For instance, the GNR and its surroundings, which are preferred zones of illegal logging because they entail significant and precious tree species such as *pau-ferro* (*Swartzia madagascariensis*), are covered by the ER Program interventions and will benefit from enhance law enforcement measures (ERI-C1).

However, because illegal logging is linked to international demand and illegal exports of unprocessed timber for first class species that are also available outside of the ER Program area, the ER Program interventions aiming at reducing this driver may not be sufficient to limit the risk of displacement. This risk is considered as “medium” because reducing illegal logging is only a small part of the ER Program interventions and because mitigating measures, detailed in the next sub-section, are expected to successfully address this risk.

**Driver of deforestation
or degradation**

Unsustainable forestry practices

Risk of displacement

Low

Main agents of
deforestation /
degradation identified

Industrials / concessionaires

Explanation /
Justification of risk
assessment

As stated in section 4.1, deforestation linked to forestry is mainly driven by: (i) the too rapid expansion of areas granted under simple licensing exploitation, with subsequent fast exploitation of non-selected timber and by (ii) non-sustainable exploitation practices in concessions and simple licenses areas with too short cutting cycles. The proposed ER Program measures addressing this issue (ERI-C2) are mainly focusing on improving the management of the sector and the relationship between industrials and local communities (ERI-A3 through the MSLF and ERI-C2 through the National Forest Forum) – such activities are not expected to motivate any displacement. The risk of displacement linked to the attribution of new licenses outside of the ER Program area to compensate for the ER Program interventions is also mitigated by the recent adoption of the Moratorium on the attribution of new concessions and licenses at national scale. In addition, the ER Program interventions focusing on improving governance and transparency in the forestry sector (ERI-C2) will also be implemented at national scale (improvement of national monitoring, for instance). This should help adopt a comprehensive approach and address any risk of displacement outside of the ER Program area, which will not be treated in isolation from the rest of the national territory.

Finally, it should be reminded that forest concessions in the ER Program area are granted for 50 years. A significant part of forest concessions

and simple licensing in the ER Program area were granted between 2011 and 2015. In 2015, 31% of the area covered by the districts of Gilé, Pebane, Ilé, Alto Molocué, Mulelava, Mocubela and Maganja da Costa was under forest concessions regimes (see section 4), concessionaires being bound for several years to their leasing contract within the ER Program area. This is expected to reduce the risk of displacements, all the more so as the GoM adopted, in January 2016, a memorandum on the attribution of new concessions and licenses and on the export of unprocessed timber.

10.2 ER Program design features to prevent and minimize potential displacement

As stated in section 10.1, the risk for the displacement of emissions from the ER Program area to outside of the ER Program area is expected to be very limited – if any. The table below details the mitigating measures that are expected to minimize any unplanned risk of displacement linked to the proposed ER Program measures. Those mitigating strategies are not exhaustive and should be apprehended in the framework of the ER Program as a whole, of which the comprehensive approach enables to forecast an overall net benefit of emissions reductions. *More details are provided in section 4.3 with the description of planned interventions.*

Table 60: Mitigation of the risks of displacement and prioritization of sources of displacement

Identified risk of displacement	Illegal logging
Prioritization	1 - Medium risk of displacement & medium significance in ER Program area
Risk mitigation measures	<p>As stated above, the proposed ER Program interventions aiming at reducing illegal logging may not limit the risk of displacement of this driver outside of the ER Program area. The main strategies and intervention of the ER Program with regards to illegal / artisanal logging are expected to contribute to the reduction of illegal logging in the ER Program area through (see section 4.3):</p> <ul style="list-style-type: none"> Improving law enforcement around the GNR (ERI-C1) and at broader scale (through supporting the government's forest law enforcement institutions – ERI-C2); and Strengthening forest governance, transparency and forest management (ERI-C2) in the ER Program area and at national scale. <p>The remaining displacement risk is expected to be mitigated through:</p> <ul style="list-style-type: none"> (i) The overall approach of the ER Program which, based on a comprehensive vision, aims at improving livelihood in the ER Program areas: through addressing the underlying causes of deforestation in the ER Program area, increasing smallholders' revenues and improving local population livelihood (see section

4), the ER Program is expected to reduce the appeal of deforestation and forest degradation practices, including illegal logging.

- Governmental initiatives outside of the scope of the ER Program and at national scale, to which the ER Program is fully aligned. Those mitigating measures include the overall reform of the forest sector law (supported by MozFip – see section 4.1) and the recent adoption (January 2016) of a moratorium on the harvesting of *pau-ferro* (*Swartzia madagascariensis*) - which is the species that is the most illegally logged - and on exportation of unprocessed logs, whatever the wood type⁵¹. In 2015, the GoM had already suspended the issuing of new permits for logging, for a period of two years. Those are core concern of the on going forest sector law revision.

Those measures are expected to highly contribute to mitigate any risk of displacement linked to the ER Program interventions with regards to illegal logging. Applied at national level, they are expected to reduce the global volume of logging in Mozambique and are fully complementary to the ER Program measures in Zambézia. They are likely to impact the displacement risk rating associated to the illegal logging driver in the ER Program area, from medium to low.

Identified risk of displacement	Small scale agriculture relying on “slash and burn” techniques
Categorization	2 - Low risk of displacement & high significance in ER Program area
Risk mitigation measures	<p>As discussed above, small-scale agriculture does not involve any substantial risks for displacement. The main measures that are mitigating this risk are all contributing to the settlement of agricultural practices in the ER Program area through increasing the benefits associated to it for smallholders. They include:</p> <ul style="list-style-type: none"> ▪ The promotion of conservation agriculture (ERI-D1) through trainings, support and monitoring of smallholders’ activities, with at least 1 500 ha of sustainable farming established in the ER Program area; at least 4 100 smallholders should be directly or indirectly supported (MozFip and Mozbio). ▪ The support to cash-crops (ERI-D2) and agroforestry system (ERI-D1) with the distribution of selected tree plants (distribution of at least 45 000 fruit trees) according to relevant markets to support agroforestry systems, including 30 000 cashew trees around the GNR; 5 000 cashew producers should be trained on quality issues for their cashew nuts to meet specific quality standards and on the maintenance of orchards. ▪ The support to the establishment of commercial agriculture in areas with no forest cover (ERI-D2) including the implementation of a market information platform to support producers, with the diffusion of information on markets dynamics and prices through SMS.

⁵¹ The DM 10/2016 banned *pau-ferro* from logging for 5 years. The law entered into force on January 1st, 2016. The same document decrees closed in exploration of the species that produce the first class wood for 5 years period too.

- The promotion of value chain development of non-timber forest products (NTFP) (ERI-D5), to improve and strengthen natural resource-based livelihoods of communities living in the ER Program area. In particular, the development of community management plans for non-timber products will ensure the long term character of this initiative.

This list is not exhaustive. For more details please refer to section 4.3.

Identified risk of displacement	Charcoal production
Prioritization	3 - Low risk of displacement & medium significance in ER Program area

Risk mitigation measures	<p>As discussed above, charcoal production does not involve any substantial risks for displacement. The main measures that are mitigating this risk are all contributing to the settlement of charcoal production in the ER Program are through making sustainable production of charcoal benefit small producers and local population. They include:</p> <ul style="list-style-type: none"> ▪ The sustainable use of biomass through the introduction of improved and efficient kilns (ERI-D4), including the training of 165 charcoal producers to improved charcoal production techniques in the districts of Gilé and Pebane; ▪ The promotion of plantations for energy purpose (ERI-D4 and ERI-D3). Those measures include the plantation of 10ha of fast growing trees for bioenergy production around the GNR. <p><i>For more details please refer to section 4.3.</i></p>
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Identified risk of displacement	Unsustainable forestry practices
Prioritization	4 - Low risk of displacement & medium significance in ER Program area

Risk mitigation measures	<p>As discussed above, forestry practices do not involve any substantial risks for displacement. The main strategies and intervention of the ER Program with regards to forestry are expected to contribute to the reduction of unsustainable forestry practices in the ER Program area through:</p> <ul style="list-style-type: none"> ▪ Improving law enforcement in the ER Program area and especially around the GRN (ERI-C1); and ▪ Strengthening forest governance, transparency and management (ERI-C2). <p>Just like for illegal logging, any remaining potential displacement risk is mitigated by national measures that are launched outside of the ER Program interventions but with which the ER Program is aligned, especially the memorandums cited above.</p> <p>In addition, the ER Program interventions also provide for the creation of online forest platform to increase transparency in forest sector – GIS platform (ERI-B2) - see sections 4 and 6 for more details.</p>
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11. REVERSAL

11.1 - Identification of risk of reversals and ER Program

Within the scope of the ER Program, reversals refer to the non-permanence of removed carbon – that is, a reversal of the ER process. It occurs « if one or more disturbance event(s) result in the aggregate amount of ERs measured and verified within the Accounting Area for one reporting period being less than the aggregate amount of ERs measured and verified within the Accounting Area for the previous reporting periods » (FCPF, 2015). The risk of reversal is the risk associated with any physical disturbance within the accounting area that may result in a reversal (FCPF, 2015). The risk of reversal therefore represents the possibility of reversing climate benefits through the loss of forest carbon biomass that was not provided for in the rationale and design of the ER Program. Those reversals can be of anthropogenic nature (intentional) or linked to natural phenomena on which the ER Program has no control (unintentional).

Following indicator 18.1 of the FCPF CF (FCPF 2016a), this section aims to identifying anthropogenic and natural risks of reversal that might affect ERs during the term of the ERPA and undermine its sustainability. *It is strongly linked to section 12 of the ER-PD on the uncertainties of the calculation of ERs.*

Those risks of reversal can also be apprehended as potential ER Program implementation risks, resulting in a total amount of ERs being below the expected level of ERs for a definitive reporting period. They have been summarized in the next tables, which also present the mitigation strategies associated with each identified risk, in accordance with criterion 18.2 of the FCPF MF (FCPF, 2016a).

Table 61: **Description, assessment and mitigation of Risk A**

Risk A - Lack of broad and sustained stakeholder support
Associated sub-risks and factors:
<ul style="list-style-type: none"> ▪ Continuation of Illegal logging; ▪ Limited adoption of improved agricultural and charcoal production practices; ▪ Poor perception of carbon and non-carbon benefits generated by the ER Program; ▪ Limited understanding of REDD+ and of the ER Program; ▪ Lack of clear mechanisms for compensation and performance; ▪ Land conflicts.
Mitigation measures in the ER Program
<p>The continuation of illegal logging and the limited adoption of improved agricultural and charcoal production practices can be apprehended as reversal risks as well as implementation risks.</p> <p>With regard to illegal logging, the improvement of control, forest management and overall livelihood that the ER Program is expected to generate should reduce both the possibility and the appeal of</p>

illegal logging. In order to ensure the long-term reduction of illegal logging and the sustainable commitment of rural population to the ER Program, the interventions will partly focus on increasing revenues for smallholders in the ER Program area, as an incentive for their long-term endorsement.

In addition, improved accountability and « ownership » on forest areas through collaborative management and participatory forest monitoring are part of the proposed interventions – through the creation and maintaining of an efficient PMRV (see *section 14*) and participatory inventories of resources involving local communities and authorities. They partly rely on a land titling process, in order to provide security over land to all actors and particularly to the communities. This is an important component of the ER Program, supported by the “Landscape project” – see *section 4*. It will include efficient delimitation and zoning of the areas of interventions. This mitigation measures is significant: as stated by (Tanner, 2017a) and as previously explained (see *section 4.4*), land tenure is a major risk for the ER Program if it is not adequately dealt with: secure land tenure rights are the bedrock upon which “alternative means of economic and food security” can be built. Land rights are therefore a critical factor in the successful implementation of the ER Program and in the mitigation of risks of Reversal linked to the lack of broad support from stakeholders. As Tanner (2017) puts it, slowing or even halting deforestation and forest degradation in areas that have significant levels of population evidently implies a) an impact on local livelihoods that rely heavily on forest access and use; and b) the need to involve these same populations in project activities. Whilst land and natural resources are constitutionally State property in Mozambique, secure tenure rights (DUATs) can give local people a strong stake in any developments involving these resources. In addition, a sense of secure tenure which is respected by other parties also predisposes them to actively support the implementation of activities that at first sight may seem unfamiliar and in conflict with their livelihoods strategies.

Respecting local tenure rights also imposes on others (the State, private sector actors, etc.), an obligation to follow more participatory and equitable strategies when it comes to developing new initiatives, be they for economic activities or for conservation and natural resources management purposes. The way tenure rights – and the consequent right to participate – are treated therefore establishes important parameters for the development and implementation of benefit sharing schemes – which, if successful, completes a “virtuous circle” that encourages local acceptance of and involvement in the ER Program (Tanner, 2017a). The definition of a performing and precise benefit sharing plan is therefore key to ensuring that benefits of the ER Program are perceived by rural population and to gain their support for the ER Program. This is also achieved through efficient communication and practical observation of the non-carbon benefits that the ER Program is expected to generate, including through the SIS that will be implemented – see *section 14*.

Broad and sustained local population support is also ensured through the implementation of the Mozbio project (see *section 4.1*) which focuses on providing communities with alternative livelihoods choices - in this case, some form of participating in conservation revenues - that can facilitate and promote a change in behavior with regard to currently unsustainable land and natural resources management and use (Tanner, 2017a).

It should be noted that, even out of the scope of the ER Program and according to the Ministerial Diploma n°158/2011 and the Regulation of the Land Law, community consultation is mandatory for all projects related to land use - see *section 4.5*. Communication with stakeholders in a transparent and participative way is also ensured through the creation of the Zambézia Multi-Stakeholders Landscape Forum for which various MoUs will be signed, including with the ER Program implementing partners – see *section 5 on stakeholders’ engagement*. Such platform should also guaranty the careful planning, implementation and monitoring of ER intervention in order to harmonize all interests.

Local population should also be able to make use of a transparent, clear and well-known Feedback and Grievance Redress Mechanism (FGRM) all along the ER Program implementation process. As stated in (MITADER, 2016d), the grievance mechanism will be available to all Project Affected Persons throughout the project life cycle – see *section 14*.

Risk A – Assessment indicators

- Existence of a Feedback and Grievance Redress Mechanism (FGRM);
- Existence of a transparent Benefit Sharing Mechanism;
- Existence of legal mechanism for the systematization of community consultation;
- Signature of MoU with implementing partners;
- Existence of consultative forums and platforms involving various stakeholders;
- Implementation of a land titling and delimitation process.

Overall risk assessment (with mitigation measures) – Risk A: Low

Table 62: **Description, assessment and mitigation of Risk B**

Risk B – Lack of institutional capacities and/or ineffective vertical/cross sectorial coordination**Associated sub-risks and factors:**

- Unclear repartition of the responsibilities with regard to ER Program implementation;
- Poor cooperation between the various levels of the Government;
- Poor political commitment;
- Insufficient human resources at national and local level.

Mitigation measures in the ER Program

The institutional arrangements for the implementation of the ER Program have been clearly described in both the ER-PD and the REDD+ National Strategy. Political commitment and capacities for the implementation of the ER Program are ensured through the creation of the Landscape Management Unit at national level, the provincial Landscape Coordination Unit in Zambézia, the MITADER and the FNDS – *see section 6 on institutional arrangements and section 2 on the creation of the MITADER and FNDS*. MITADER consolidates responsibilities for land, environment and rural development into one agency with a wider and more integrated mandate. FNDS consolidates funding capacity with the broader mandate required by the new multi-sector Ministry. This provides a strong foundation for improving coordination, streamlining implementation, and clarifying roles and responsibilities for the implementation of REDD+ initiatives, including for the ER Program.

In the same way, various multi-stakeholders platforms, including the CTR for REDD+, insure the on-going participation and cooperation of the various levels of the governments and of the various ministries involved in REDD+ and in the ER Program. The CTR's main objective precisely is to pilot the inter-institutional coordination among all the sectors and stakeholders that are involved in REDD+ – *see sections 2 and 6*.

It should be noted that the activities of MozFip are partly focused on fostering and coordinating political and institutional change that will generate the enabling conditions needed to add value and increase the sustainable use of the forests, and on generating the capacities and linkages between various stakeholders, institutions and markets (UT REDD+, 2016). In the same way, the “Landscape

project” focuses on the government capacity strengthening, with a component dedicated to the “Support to the UGFI⁵² and provincial implementation units”, including support for project coordination and management at provincial level, fiduciary and safeguards management, monitoring and evaluation and communications - see section 4.1. MozFip and the “Landscape project” are significant supports for the ER Program.

At local level, implementation capacities have been strengthened with the creation of the provincial REDD+ unit that, along with the provincial REDD+ coordinator, have been reinforced with additional staff – see section 6. In the same way, capacity building investments from many development partners have trained hundreds of staff members in project management, monitoring and assessment. A JICA funded project has trained over 35 technicians at the Provincial and National levels in various skills such as Remote Sensing and Carbon Stock Measuring. MITADER also has significant capacity on the ground, making use of Provincial and District representatives and coordinating sector activities at field level. MITADER also initiates and mediates collaboration between the Government, private investors and local communities for innovative nature-based economic activities that will generate revenue for the long-term sustainability of the country’s conservation areas (UT REDD+, 2016).

Risk B – Assessment indicators

- Existence of designated and empowered relevant structure for ER Program implementation;
- Experience in multi-sectorial project implementation;
- Experience of collaboration between different levels of government;
- Existence of dedicated mechanism or body for inter-sectorial cooperation;
- Support from additional projects and programs for institutional capacities strengthening;
- Deployment of relevant staff on the ground.

Overall risk assessment (with mitigating measures) – Risk B: Low

Table 63: Description, assessment and mitigation of Risk C

Risk C - Lack of long term effectiveness in addressing underlying drivers

Associated sub-risks and factors:

Implementation risks that may lead to reversals

- Poor adoption of sustainable practices addressing the mains drivers of deforestation (including shifting agriculture and charcoal production);
- Increased deforestation linked to unpredicted levels of cultivation of cash-crops;
- Continuation of wildfires;
- Maintaining of overall local population’s too high dependence on forest resources;
- External non forecasted projects, including infrastructure projects;

Political, economic and financial risk

- Difficult mobilization of up front finance to implement activities;

⁵² The International Fund Management Unit (UGFI) is financial management unit for all REDD+ activities, handling administrative and technical processes related to funding – see section 6 for more details.

- Macroeconomic risk;
- Poor political stability and commitment;
- Unpredicted institutional and legislative changes.

Mitigation measures in the ER Program

Implementation risks that may lead to reversals

The poor adoption of sustainable practices for agricultural and charcoal production is an implementation risk that could lead to reversals. The associated mitigating measures are comprised in the wide range of interventions that the proposed ER Program offers - *they are detailed in sections 4 and 10.*

In order to reduce this risk, adjusting promoted sustainable practices to the local context will be needed. The expansion of conservation agriculture and improved charcoal techniques should be accompanied by the deployment of committed extension agents who understands and know local problematic. The individual commitment of the extension agents and knowledge of local habits are essential: the promoted techniques will always be adapted to local constraints in order to facilitate their adoption. This is also true for the reduction of wildfires: most of them, in the ER Program area, are of anthropogenic origin, triggered for the opening of new fields, for hunting purposes or for charcoal production. This issue is addressed through the promotion of fire management practices, relying on significant trainings and awareness raising, as well as through the measures associated to conservation agriculture and the sustainable production of charcoal – *see section 4 of ER Program interventions and justification.*

In order to ensure long term effectiveness in addressing the main drivers of deforestation, the design of the ER Program should be clear enough for local communities: compensation, as a result of carbon sequestration, should be appealing enough, may it be in term of “payment for result” or non-carbon benefits. Communities will need to understand the compensation or the market returns expected for their commitment. Non-carbon benefits, especially, are key for forest conservation to turn into a long-term concern for stakeholders. *See mitigation strategies associated to Risk A.*

With regards to cash crops, it should be noted that their promotion is essentially based on the valorization of cashew nuts and of the cashew value chain and, therefore, based on the promotion of fruit trees – they cannot lead to deforestation. With regards to sesame (and cashew), one of the ER Program proposed interventions is to valorize the production through premiums based on “non deforestation” labels. Those activities entail a strong formation and training component. Nevertheless, the introduction of new crops, value chains or markets would have to be consulted and aligned with community preferences.

Investments external to the sector, including infrastructure development, mining activities, transport/roads, or large commercial agriculture projects could contribute to the deforestation drivers in target areas, without proper management, coordination, and integrated development planning that takes into account rural development, local livelihood and environmental needs (UT REDD+, 2016). The establishment and empowerment of a cross-sectorial coordination will help to take into consideration forestry and REDD+ related activities and the need to plan for multiple uses and to manage trade-offs. *This mitigation strategy is included in Risk B assessment.*

Political, economic and financial risk

The most serious risks facing the ER Program hinge around underlying capacity concerns and deeper political tensions in the country at the present time. The country remains susceptible to further outbreaks of political and social conflict, though a return to full-scale civil war is seen as very unlikely. 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 in the districts

in the ER Program area, through lower production, deterring of foreign investment and slow development of supporting infrastructure. Other risks could arise from a change in government, and a reduction in commitment at the national or regional level (UT REDD+, 2016).

According to (Tanner, 2017a), other more immediate concerns relate to legislative changes that are in the pipeline: the new Forestry Law, and the strong probability that the Land Law will also be revised during 2017/18. However, those changes are not expected to constitute a risk: (i) the Local Community concept, crucial for land tenure rights (see *section 4.4*), as well as the community consultation mechanism, will be maintained in both texts; (ii) the new Forestry law will formally introduce the concept of Free, Prior and Informed Consent into the Mozambican forest legislation; (iii) the revision of the Land Law will engage a lot of stakeholders and is expected to offer the opportunity to improve and consolidate, rather than embark on radical changes. It will be important for implementing and monitoring the ER program to both track this process, and where appropriate, contribute to it with feedback from program implementation on the ground.

With regards to the macroeconomic risk, the increase in debt levels, the depreciation of the metical and external shocks (such as commodity price) has 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 in Mozambique's long term growth prospects, driven by the gas sector, macroeconomic instability or low commodity prices could have an impact on growth and opportunities in sectors such as agriculture (UT REDD+, 2016).

While the ER program can do little to address those risks, it can work to improve coordination at all levels. Some of such mitigation strategies are associated to Risk B – see above. Other measures include the maintaining of a strong and stable legal framework that ensures the continuation of the ER Program beyond government term and to prepare adaptive management measures to respond to potential change in security situation. Economic sustainability of the ER Program is pursued through a well defined budget plan, the previous identification and securing of financing and the existence of a well defined structure, the UGFI – see *section 6 on institutional capacities and budget plan*.

Risk C – Assessment indicators

Implementation risks that may lead to reversals

- Experience in decoupling deforestation and degradation from economic activities;
- Support from additional projects and programs oriented on deforestation and forest degradation reduction;
- Existence of a relevant legal and regulatory environment conducive to REDD+ objectives;
- Creation of relevant incentives for adoption of sustainable agricultural practices;
- Clear perception of non-carbon benefits for stakeholders;
- Adaptation of promoted sustainable practices to local constraints and dynamic;
- Deployments of efficient and committed extension-agents at long-term.

Political, economic and financial risk

- Potential administrative change are expected to be progressive and participatory;
- Well defined structures to ensure continuation of ER Program beyond government term;
- Pre-identification of financing sources.

Overall risk assessment (with mitigating measures) – Risk C: Medium

Table 64: **Description, assessment and mitigation of Risk D**

Risk D - Exposure and vulnerability to natural disturbances
Associated sub-risks and factors:
<ul style="list-style-type: none"> ▪ Typhoons, floods or drought; ▪ Pest and other diseases; ▪ Fires.
Mitigation measures in ER Programs
<p>The ER Program area's vulnerability to natural disturbance can hardly be mitigated. The ER Program area is located in a zone sensitive to climate change and natural environmental risks. As stated in section 3, Mozambique is expected to be one of the countries that will be the most affected by climate change in the coming years and is one of the highest ranked African countries in terms of exposure to risks from weather-related hazards. In this context, tropical cyclones, for instance, might be considered as potential source of ERs reversals. Building and early warning system is one of the possible mitigation strategies (UT REDD+, 2015a). Training on conservation agriculture will have to take this situation into account so as to promote adequate models and crops. Appropriate selection of species able to resist to such conditions and appropriate selection of locations for specific ER Program interventions will be necessary.</p> <p>Fires are only exclusively of anthropogenic nature and are subjected to specific mitigation measures; they will be monitored – see <i>section 4 and table above</i>.</p> <p>Finally, a Pest Management Plan has been designed with provisions for specific biological controls and the development and use of crop varieties that are resistant or tolerant to the pest – see (MITADER, 2016c).</p>
Risk D – Assessment indicators
<ul style="list-style-type: none"> ▪ Vulnerability to fires, storms and droughts; ▪ Capacities and experience in effectively preventing natural disturbances or mitigating their impact; ▪ Existence of a Pest Management Plan.
Overall risk assessment (with mitigating measures) – Risk D: Medium

11.2 ER Program Design features to prevent and mitigate Reversals

This section was treated directly in section 11.1 and the tables above, in which specific mitigation measures are describes.

11.3 Reversal management mechanism

Choice of reversal management mechanism

As stated in (Gonzalo, 2016b) and in accordance with criterion 19 of the FCPF CF (2016a), the ER Program implementation comprises the creation of two separate buffer reserve accounts, which are ER Program- specific: (i) an Uncertainty Buffer to create incentives for improving uncertainty associated with the estimation of ERs and manage the risk that the emission reductions were overestimates for prior reporting periods; (ii) a Reversal Buffer to insure against potential Reversals.

Table 65: Selection of reversal management mechanism

Reversal management mechanism	Selected
Option 1 – The ER Program has in place a Reversal management mechanism that is substantially equivalent to the Reversal risk mitigation assurance provided by the ER Program CF Buffer approach	No
Option 2 - ERs from the ER Program are deposited in an ER Program -specific buffer, managed by the Carbon Fund (ER Program CF Buffer), based on a Reversal risk assessment.	Yes

Option 2 of the FCPF MF (FCPF, 2016a) will be applied to the ZILMP ER Program, with the creation of an ER – Program specific buffer managed by the Carbon Fund (ER Program CF Buffer). In addition to the ER Program CF Buffer, the Buffer manager will also establish a Pooled Reversal Buffer account to insure against potential large-scale reversals that exceed the amount of ERs set aside in the Reversal Buffer (FCPF, 2015).

The mechanism will act as insurance: a proportion of the credits generated by the ER Program will contribute to the reversal buffer. This proportion should correspond to the estimated risk of reversals. Separate accounts will be created in the ER Transaction Registry – yet to be created - for the exclusive purpose of receiving, disbursing, or canceling ERs that will be allocated to the reversal buffer and the pooled reversal buffer. Transfers of ERs to and from the accounts, and cancelation of ERs from the accounts, may only be initiated by the Buffer Manager. Once the ERs generated by the ER Program are determined for a specific reporting period, the administrator of the ER Transaction Registry should establish serial numbers for the amount of total ERs and transfer and deposit a portion of the serialized ERs, as Buffer ERs, into the Reversal Buffer account and into the Pooled Reversal Buffer account⁵³ (Gonzalo, 2016b; FCPF, 2015).

Number of ERs to be deposited in the ER Program CF Buffer

As stated in (FCPF, 2015), certain additional quantity of ERs out of the Total ERs should be allocated as Buffer ERs to the Reversal Buffer and the Pooled Reversal Buffer account to help manage the Reversal Risk. This additional quantity is calculated as a percentage of the Contract ERs and Additional ERs designated for transfer to the CF following each reporting period under the ERPA. This percentage should be determined by the Trustee, following consultations with the Program Entity, or by the Buffer Manager, as applicable, in accordance with the Reversal Risk assessment tool. **Although this process still has to be undertaken and the percentage validated, we provide here a proposition based on the Reversal Risk assessment tool and the previously identified risks – see section 11.1.**

⁵³ The same should apply for the Uncertainty Buffer.

According to this analysis, 16% of the ERs generated by the ER Program will be deposited in ER Program CF Buffer.

Table 66: Risk assessment tool to assess the number of ERs to be deposited in the ER Program CF Buffer

Risk factor	Risk indicators	Default Reversal Risk Set Aside Percentage	Discount (increment)	Resulting Reversal Risk Set-Aside Percentage
Default Risk	Not applicable, fixed minimum amount	10%	Not applicable	10%
Risk A - Lack of broad and sustained stakeholder support	Existence of a Feedback and Grievance Redress Mechanism (FGRM)	10%	Reversal risk is considered low: 10% discount	0%
	Existence of a transparent Benefit Sharing Mechanism			
	Existence of legal mechanism for the systematization of community consultation			
	Signature of MoU with implementing partners			
	Existence of consultative forums and platforms involving various stakeholders			
Risk B – Lack of institutional capacities and/or ineffective vertical/cross sectorial coordination	Implementation of a land titling and delimitation process.	10%	Reversal risk is considered low: 10% discount	0%
	Existence of designated and empowered relevant structure for ER Program implementation			
	Experience in multi-sectorial project implementation			
	Experience of collaboration between different levels of government			
	Existence of dedicated mechanism or body for inter-sectorial cooperation			
	Support from additional projects and programs for institutional capacities strengthening;			
Risk C - Lack of long term effectiveness in addressing underlying drivers	Deployment of relevant staff on the ground	5%	Reversal risk is considered medium: 2% discount	3%
	Experience in decoupling deforestation and degradation from economic activities			
	Support form completing projects and programs oriented on deforestation and forest degradation reduction			
	Existence of a relevant legal and regulatory environment conducive to REDD+ objectives			
	Creation of relevant incentives for adoption of sustainable agricultural			

	practices			
	Clear perception of non-carbon benefits for stakeholders			
	Deployments of efficient and committed extension-agents at long-term			
	Adaptation of promoted sustainable practices to local constraints and dynamic;			
	Potential administrative change are expected to be progressive and participatory			
	Well defined structures to ensure ensures the continuation of the ER Program beyond government term			
	Pre-identification of financing sources			
Risk D - Exposure and vulnerability to natural disturbances	Vulnerability to fires, storms and droughts		Reversal risk is considered medium: 2% discount	
	Capacities and experiences in effectively preventing natural disturbances or mitigating1 their impacts	5%		3%
	Existence of a Pest Management Plan			
Actual Reversal Risk Set-Aside Percentage: 10+(Result A+ Result B+ Result C+ Result D) $= 10 + 0 + 0 + 3 + 3$ $= 16\%$				

11.4 Monitoring and reporting of major emissions that could lead to Reversals of ERs

The monitoring of major emissions in the Accounting Area or changes in the ER Program circumstances that could lead to Reversals of ERs transferred to the Carbon Fund during the term of the ERPA will be ensured by the overall MRV system of the ER Program, which is fully technically capable of identifying Reversals, in accordance with criterion 21.1 of the FCPF MF (FCPF, 2016a). *The MRV system is described in section 9.* Reversals will reported to the Carbon Fund within the timeline prescribed in the FCPF MF (FCPF, 2016a), that is, within 90 calendar days after their identification. The potential Reversals will be addressed by the Reversal management mechanism described in section 11.2. When the occurrence of any kind of reversal is confirmed, Buffer ERs should be canceled from the Reversal Buffer account to compensate for the Reversal, according to the arrangements described in (FCPF, 2015).

12. UNCERTAINTIES OF THE CALCULATION OF EMISSION REDUCTIONS

12.1 Identification and assessment of sources of uncertainty

Method to estimate annual GHG emissions of the program in the reference period is based on a multiplication of activity data and emission factors for different strata and carbon pools. Hence, sources of uncertainties for the estimation will be assessed separately for both component.

Sources of uncertainties of activity data

Activity data uncertainties are associated to production of the historical map of deforestation. Once, data at national level will be produce and extracted for the ER-PD, this section will be updated.

Identification of sources of uncertainties

Possible sources of uncertainties associated with the production of the historical map of deforestation could be related to the quality of images used, the interpretation of operators and the classification model.

▪ Quality of satellite data

LANDSAT 7 and 8 images were used to carry out this work in order to ensure uniformity between images. Indeed those 2 sensors have the same spatial and spectral resolutions for the bands of interest for the present study (**Figure 20**). To ensure good geometrical quality images, LANDSAT Global Land Survey products (GLS) and Level-1T (L1T) were used. According to Gutman et al. (2008), these data have sufficient radiometric and geometric qualities to perform land use change analysis. The selected and processed LANDSAT scenes are presented in **Table 35**.

In addition to those considerations on the different spectral bands characteristics, the choice of images was based on the following criteria:

- Geometric accuracy of less than 1 pixel (visual comparison image per image);
- Absence of effect of the failure of the LANDSAT 7 sensor (stripping effect due to SLC module failure since 2003);
- Cloud and shadow cover that was reduced to zero by selecting images with the lowest cloud cover and by 'forcing' the algorithm to provide cloud free classification as an output.

▪ Model calibration and classification

To produce the map, a key step is the creation of training plots for the model. This step is done by photo-interpretation of plots on different classes and so, it is based on the expertise of the operators. However, plots are chosen to be representative on all areas but not on a random basis. There are selected by operators on clusters (**Figure 22**) on areas where the changes (or not) are clear limiting the risk of errors.

▪ **Classification algorithm**

The model RandomForest is used to realize the classification with calibration plots (**Figure 23**). The quality of the classification will depend on the number and the representativeness of different training plots of all variations of radiometric information on satellite images. As an intern procedure, the model produce an intern confusion matrix with data from calibration plots to give a first idea of the classification quality.

▪ **Post-processing**

After classification, isolated pixels are removed to respect the requirements on MMU (linked to the forest definition) of 1 ha for forest and 0.36 for deforestation. A majority filter with a 3x3 window was first used to remove isolated pixels. A priori, this step does not add uncertainty to the process.

▪ **Validation procedure**

This step entails a statistical analysis of the classification results accuracy with a points sampling approach. Those validation points were selected independently of training plots that were used for the classification on randomly selected 5 km wide grids. At the end, the validation sampling dataset represented a total of 50 000 validations points. Interpretation of the class of each point is, as for creation of training plots, based on operator performance.

Assessment and contribution of sources of uncertainties

Main uncertainties are those related to interpretation of training plots and validation points and to model intern procedure through the decision tree. Errors would be systematic and random. Those uncertainties are related and cannot be analyzed independently but the confusion matrix produced by the accuracy assessment following best practices as described in Olofsson et al. (2013) furnishes a good estimation of those uncertainties, aggregated.

Steps to minimize uncertainties

Uncertainties have been minimized through the application of GC/QA procedures.

For imagery quality, a visual inspection was performed for each scene to check their geometric consistencies. At the end of this control phase, all images showed a discrepancy of less than 1 pixel.

To reduce interpretation errors during creation of training plots or during the validation procedure, the following measures were taken:

- Interpretations are done by remote sensing experts, fully trained to these methods and knowing the field conditions;
- Several operators were mobilized to avoid bias due to wrong interpretation of an individual;
- The scenes were combined into mosaics using a contrast adjustment algorithm in order to reduce discrepancies between scenes;

In order to improve the classification, several spectral indexes were derived from the primary bands as presented in

Table 35: Date of selected LANDAST images

Scene identification	Reference year of images		
	~2005 (t3)	~2010 (t4)	~2014 (t5)
USGS data	GLS 2005	GLS 2010	Landsat 8 L1T
166-071	June-06	May-09	June-13
165-071	Aug-05	May-10	March-14
166-072	Aug-06	May-09	June-13
165-072	March-05	May-10	March-14

Data pre-processing – The purpose of data pre-processing is to get a usable image database for a space-time analysis - i.e. with little or no cloud cover - a geometric offset between images of less than 1 pixel and little or no stripping effect.

To ensure good geometrical quality images, LANDSAT Global Land Survey products (GLS) and Level-1T (L1T) were used. According to Gutman et al. (2008), these data have sufficient radiometric and geometric qualities to perform land use change analysis. Additionally, a visual inspection was performed for each scene to check their geometric consistencies. For the last date (2013), different images were downloaded; the image meeting the geometric criteria was selected. No additional geo-rectification was performed.

At the end of this control phase, all images showed a discrepancy of less than 1 pixel. The scenes were then combined into mosaics using a contrast adjustment algorithm in order to reduce discrepancies between scenes, caused by contrasted atmospheric conditions. The mosaics are finally produced by reference years over the whole study area. In order to improve the classification, several spectral indexes were then derived from the primary bands as presented in **Table 36**.

The interpretations were checked on very high-resolution Google Earth images.

Sources of uncertainties of emission factors

Identification of sources of uncertainties

Emissions factors are the difference between average of carbon stocks pre- and post-deforestation. Uncertainties of these factors are therefore related to the estimation of carbon stocks.

▪ Measurements errors

These errors correspond to errors in the measurements of DBH and tree height (parameters used in the allometric equation) by field operators. They are random errors and the quantity of measurements (4721 trees in forest and 342 in post-deforestation strata) allows to reduce the error. Moreover, errors done at tree level would be averaged at plot level and, according to Picard et al. (2015), these errors are limited compared to other sources.

▪ Standard factors used

The allometric equation used also requires wood density of tree species identified in the inventory. These data were selected in the Global Wood Density Database⁵⁴. Uncertainties related to those data exist but they are random and considered to be low.

To calculate BGB from AGB estimation, default factors of root-shoot ratio for tropical dry forest from IPCC (2006)⁵⁵ are used. Two factors are reported, depending on AGB biomass: 0.56 (if AGB<20 t/ha) with a range of 0.28 and 0.68 (standard error 0.086) and, 0.28 (if AGB>20 t/ha) with a range of 0.27 and 0.28 (standard error 0.003). As they are global data, uncertainties are related to the estimation of the factor itself and to the application on local data but they are difficult to assess precisely. Picard et al. (2015) do not consider those uncertainties in their study on errors for the estimation of emission factors.

▪ **Allometric model error**

Uncertainties related to the allometric model are due to the errors of the model itself (coefficient and residual model error) and to the choice of the allometric model. First source is low with the model of Chave et al. (2014). Picard et al. (2015) estimated that the latter was the main source of errors in the Congo Basin. Other allometric equations exist in Mozambique for Miombo forest (Mercier et al., 2016) but they were not selected to calculate carbon stocks because they are either site specific, non-adapted to the measured range of DBH or do not account for tree height as a parameter.

▪ **Sampling error**

These errors are related to the sampling design: location of plots representative of the variability of the studied forest strata, the number of plots and the size of the plots to represent local conditions.

Steps to minimize uncertainties

The following measures to minimize uncertainties are the following:

- Measurements in the field were realized by team that has significant experience on such inventories and composed of a botanic specialist of miombo forest
- The allometric equation was chosen after having compared conditions of application of all available in order to choose the most suitable one
- Sampling plan was designed (i) to have a minimum number of plots calculated to represent variability on carbon stocks with the tool developed by Winrock⁵⁶ and (ii) to be representative of the variability of conditions in the Miombo forest strata by spreading the most homogeneously plots on forests of the ZILMP accounting area and by distributing plots in transect of four in order to account for micro-topographic variations.

Assessment and contribution of sources of uncertainties

As a summary, main errors would be those related to the choice of the allometric model and to the sampling plan which were minimized by the number of plots and their spatial distribution.

⁵⁴ Zanne AE, Lopez-Gonzalez G, Coomes DA, Ilic J, Jansen S, Lewis SL, Miller RB, Swenson NG, Wiemann MC, Chave J (2009) Data from: Towards a worldwide wood economics spectrum. Dryad Digital Repository. <http://dx.doi.org/10.5061/dryad.234>

⁵⁵ Table 4.4 of IPCC (2006), V4, Chapter 4 – Forest Land.

⁵⁶ Winrock's CDM A/R Sample Plot Calculator Spreadsheet Tool, Walker, S.M., Pearson, T., Brown, S. 2007, 2014 Version

12.2 Quantification of uncertainty in Reference Level setting

Uncertainties in the REL were calculated following the approach 1 of IPCC (2006) using the propagation of error method. Confidence intervals were assumed symmetrical in all cases. Two uncertainties were calculated for activity data and emissions factors before assessing global uncertainty related to the REL. Following equations were used for addition or multiplication.

For addition:

$$U_{total} = \frac{\sqrt{(U_1 \cdot x_1)^2 + (U_2 \cdot x_2)^2 + \dots + (U_n \cdot x_n)^2}}{|x_1 + x_2 + \dots + x_n|}$$

Where:

U_i = percentage uncertainty associated with each of the parameters

x_i = the value of the parameter

U_{total} = the percentage uncertainty in the sum of parameters

For multiplication:

$$U_{total} = \sqrt{U_1^2 + U_2^2 + \dots + U_n^2}$$

Where:

U_i = percentage uncertainty associated with each of the parameters

x_i = the value of the parameter

U_{total} = the percentage uncertainty in the sum of parameters

Calculation of uncertainties of activity data

As explained previously, an accuracy assessment of the wall-to-wall deforestation map produced was realised following Olofsson et al. (2013) and it gives a confusion matrix with confidence interval on deforestation areas for the two periods of the reference period: 2005-2010 and 2010-2014 (Table 44). In the REL, the mean of the two values is considered so, uncertainties were combined following addition rules for all deforestation areas in the ZILMP accounting area. This leads to an uncertainty of **3%** for the 90% Confidence Interval (Table 67). This level of uncertainty has to be applied to all terra firme forest strata (Miombo and Montane forests) as they were not discriminated when producing the LULCC map. Uncertainties associated to Mangroves is **3.2%** (Table 44).

Table 67: summary of uncertainty estimated for activity data

	Deforestation 2005-2010	Deforestation 2010-2014	Addition 2005- 2014	Annual value
Value of the parameter - area in ha	83 097	110 734	193 831	23 930
Adjusted areas in ha	150 673	187 331	338 004	41 729
90% CI	4.3%	3.6%	3%	

Calculation of uncertainties of emission factors

Uncertainties related to the allometric model were not estimated as it is considered more precise to account for tree height and Chave et al. (2014) equation gave more conservative estimation as the other one with this parameter for Miombo forest.

Uncertainties related to sampling of the forest were estimated through the variability of carbon stocks calculated with the allometric equation and estimated with the standard deviation of results associated to the average used for both forest inventories for pre- and post-deforestation on Miombo forest. On other forest strata, uncertainties are derived from standard deviation presented in the sources of the data (see section 7). As emission factors result from a difference between average of carbon stocks, the equation for propagation of error in the case of addition was used. Results for different forest strata accounted for in the ER Program are presented in the following table.

Table 68: summary of uncertainty estimated for emission factors of different forest strata

Miombo forest	AGB			BGB			Total EF
	Pre- deforestation	Post- deforestation	EF	Pre- deforestation	Post- deforestation	EF	
Carbon stock average - in tCO ₂ eq/ha	241.6	34.8	206.7	67.6	12.5	55.2	261.9
90% CI	7%	47%	9%	7%	36%	8%	7%
Montana forests							
Carbon stock average - in tCO ₂ eq/ha	347.7	34.8	313.2	93.9	12.5	78.6	391.8
90% CI	11%	47%	11%	11%	36%	11%	9%
Mangroves							
Carbon stock average - in tCO ₂ eq/ha	435.8	326.9	109.0	138.4	103.8	34.6	143.6
90% CI	3%	3%	2%	3%	3%	2%	2%

Calculation of uncertainties related to REL

REL is the result of (i) the multiplication of activity data and emission factors for the estimation of emissions related to each forest strata and (ii) the addition of all emissions from different strata and sources. Uncertainties were calculated using the method of propagation

of errors. Results are presented in the following table. **Global level of uncertainties is 7% at the 90% confidence interval corresponding to mean annual emissions of 6 574 173 tCO₂eq/yr +/- 444 854.**

Table 69: summary of uncertainty estimated for REL

	Deforestation in			
	Miombo forest	Montane forests	Mangroves	Total
Activity data in ha	22 382	1 819	0.6	
Emission factor in tCO ₂ eq/ha	262	392	144	
Annual emissions in tCO ₂ eq	5 861 501	712 592	80	6 574 173
90% CI	8%	10%	4%	7%

Calculation of uncertainties related to Emission Reductions

During monitoring events, ER and associated uncertainties will be calculate. To comply with FCPF MF requirements, indicator 9.2, those uncertainties will be quantified using a Monte Carlo analysis (approach 2 of IPCC). As described in IPCC (2006)⁵⁷, the following steps will be realized (illustrated in Figure 31):

- The different parameters to which uncertainties are associated will be identified and corresponding Probability Density Functions (PDF) will be defined (for activity data and carbon stocks, data distribution is usually normal) with mean and standard deviation.
- For each of these parameters, random values (at least 1000) will be generated following the shape of PDF.
- Emissions will be calculated from those random values, for the same number of values, and, mean and uncertainties (90% CI) will be calculated from these estimations.
- The process will be repeated until mean and uncertainties of emissions remain stable.

⁵⁷ Vol 1, Chapter 3 - Uncertainties

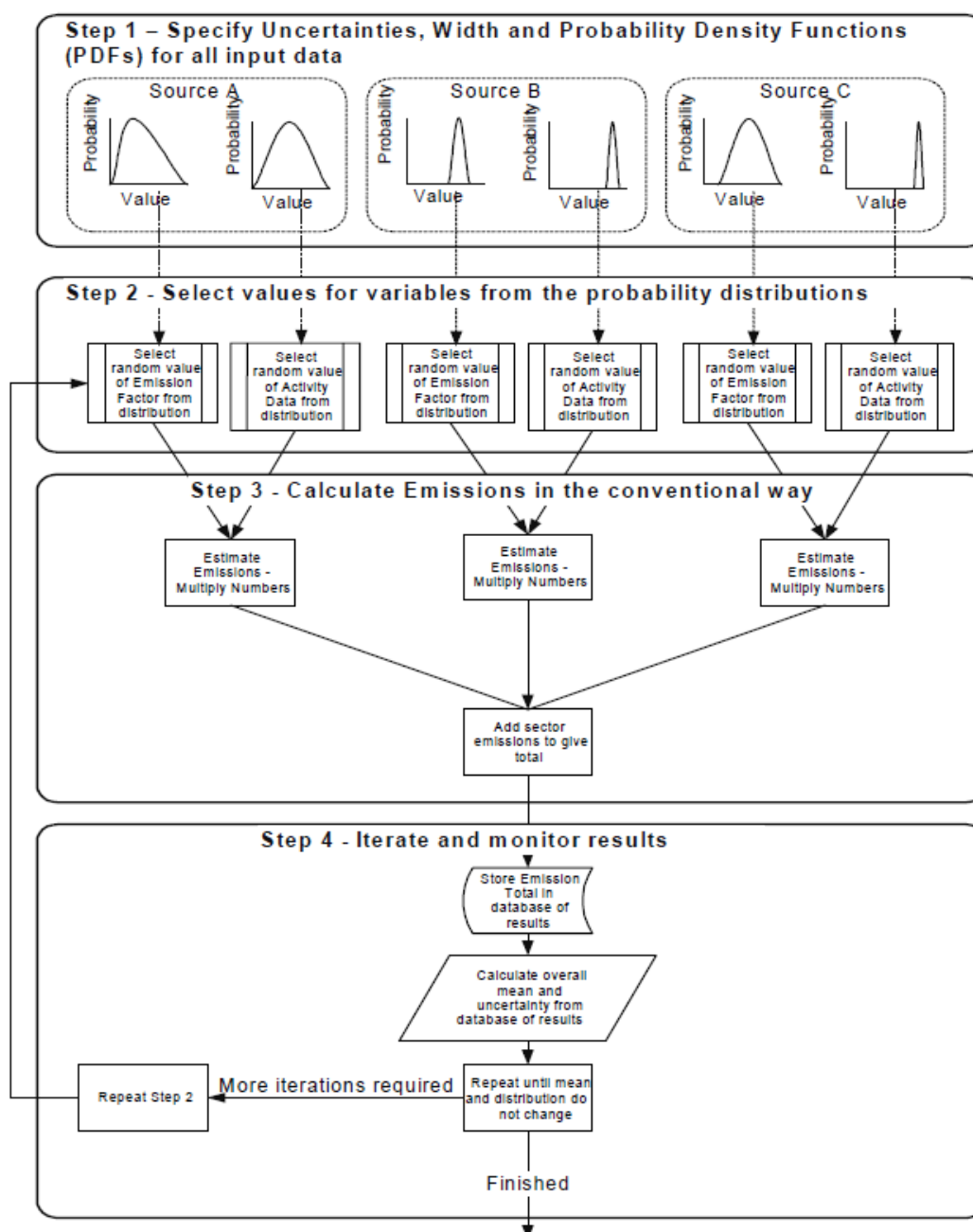


Figure 31: Illustration of Monte Carlo method (From IPCC, 2006)

13. CALCULATION OF EMISSION REDUCTIONS

13.1 Ex-ante estimation of the Emission Reductions

Emissions Reductions objectives of the ER Program are based on 2 different periods: 2016-2020 and 2021-2025. **For the first period (2016-2020), the program aims at reducing deforestation by 15% below the reference level.** For the second period, the efficiency of the ER Program is expected to increase because enabling and operational activities will have been developed for several years already. Therefore, **for the second period of its implementation (2021-2025), the ER Program aims at reducing deforestation by 25% below the reference level.**

According to criterion 22 of the FCPF MF, the expected proportion of ERs to be set aside because of uncertainties would be 0% because the level of uncertainties is below the threshold of 15%. This level will be estimated at monitoring events with the method presented in the previous section to estimate the buffer related to uncertainties. As shown in section 11, the proportion of ERs to be set aside because of possible reversals would be 16%.

Table 70: Ex-ante estimation of the ERs expected from the ER Program

ERPA term year t	Reference level (tCO ₂ -e/yr)	Estimation of expected emissions under the ER Program (tCO ₂ -e/yr)	Estimation of expected set-aside to reflect the level of uncertainties associated with the estimation of ERs during the Term of the ERPA (tCO ₂ -e/yr)	Estimation of expected set-aside to reflect the level of possible reversals associated with the estimation of ERs during the Term of the ERPA (tCO ₂ -e/yr)	Estimated Emission Reductions (tCO ₂ -e/yr)
2016	6 620 658	993 099	0	158 896	834 203
2017	6 620 658	993 099	0	158 896	834 203
2018	6 620 658	993 099	0	158 896	834 203
2019	6 620 658	993 099	0	158 896	834 203
2020	6 620 658	993 099	0	158 896	834 203
2021	6 620 658	1 655 164	0	264 826	1 390 338
2022	6 620 658	1 655 164	0	264 826	1 390 338
2023	6 620 658	1 655 164	0	264 826	1 390 338
2024	6 620 658	1 655 164	0	264 826	1 390 338
2025	6 620 658	1 655 164	0	264 826	1 390 338
TOTAL					11 122 705

14. SAFEGUARDS

14.1 Description of how the ER Program meets the World Bank social and environmental safeguards and promotes and supports the safeguards included in UNFCCC guidance related to REDD+

Compliance of the ER Program with World Bank and UNFCCC safeguards

As stated in Mozambique REDD+ National Strategy (MITADER, 2016a), within REDD+ framework, safeguards are guidelines that aim at enhancing the positive impacts and reducing the negative impacts of REDD+ projects' implementation activities. In this situation, they refer to the various measures that the GoM must adopt to manage potential risks in the design and implementation of the ER Program in Zambézia, in accordance with the World Bank social and environmental safeguards requirements. According to the FCPF Carbon Fund MF (FCPF, 2016a), in order to meet them, the ER Program should:

- Take into account the safeguard policies triggered during readiness preparation and the relevant social and environmental sustainability issues identified during the Strategic Environmental and Social Assessment (SESA) process;
- Implement the Safeguards Plans prepared in accordance with the Environmental and Social Management Framework (ESMF) that has resulted from the SESA.

The ER Program fully complies with those requirements, as it addresses social and environmental issues that were identified during readiness phase and includes relevant risk mitigation measures. It also takes into account the existing Mozambican institutional and regulatory framework, in accordance to criterion 24 of the FCPF Carbon Fund MF (FCPF, 2016a).

Admittedly, as required in Decision 1/CP.16 adopted by the UNFCCC, Mozambique has developed key elements for the implementation of the ER Program, including:

- (i) **A national REDD+ strategy**, which was approved by the GoM in November 2016 (MITADER, 2016a).
- (ii) **A national forest reference emission level (REL) and a forest reference level**, which are currently being refined and should be made available by early 2017;
- (iii) **A national forest monitoring system**, which is also currently being designed and which will be made available by early 2017;
- (iv) **A system for providing information** on how the safeguards are being addressed and respected throughout the implementation of the ER Program – see section 14.2.

Table 71: Compliance of ER Program with UNFCCC guidance related to REDD+

Safeguards for policy approach and positive incentives on issues relating to REDD+ - Appendix I of the Decision 1/CP.16 adopted by the UNFCCC	Compliance of the ER Program
Actions complement or are consistent with the objectives of national forest programs and relevant international conventions and agreements	<input type="checkbox"/>
Transparent and effective national forest governance structures, taking into account national legislation and sovereignty	<input type="checkbox"/>
Respect for the knowledge and rights of indigenous peoples and members of local communities	<input type="checkbox"/>
Full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities	<input type="checkbox"/>
Actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions (...) are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits	<input type="checkbox"/>
Actions to address the risks of reversals	<input type="checkbox"/>
Actions to reduce displacement of emissions	<input type="checkbox"/>

Main safeguard documents

With support of the FCPF and in association with existing projects that were detailed in section 4.1 (MozFip and MozDGM, Mozbio, Landscape project), various safeguards documents were prepared for the good implementation of the activities of the ER Program, including: (i) the **Strategic Environmental and Social Assessment (SESA⁵⁸)**, to inform on the preparation of the National REDD+ Strategy; (ii) the [Environment and Social Management Framework \(ESMF\) for REDD+ initiatives, MozFip and MozDGM](#) (approved in January 2017) and (iii) the [Process Framework \(PF\) for Mozbio](#), that was [updated to cover National REDD+ initiatives, MozFip and MozDGM](#) (approved in January 2017), in order to deal with any access restrictions to natural resources used in protected areas (PAs).

These safeguards provide the guidelines for better implementation of projects and activities of the ER Program in Mozambique, in light of its national legal framework and international conventions. They ensure that REDD+ initiatives in Mozambique, including the ER Program, meet relevant World Bank social and environmental safeguards and promote those included in the UNFCCC guidance related to REDD+.

In addition to those key documents, other safeguard plans have been produced, or are being produced, in relation with the projects that are implemented in the ER Program area and that will support the ER Program. In particular, an [ESMF](#) and a [Pest Management Plan](#) were conducted specifically for the Mozbio project⁵⁹, as well as, for the Landscape project, an [ESMF](#), a [Resettlement Policy Framework](#) (not completed yet) and a [Pest Management Plan](#).

⁵⁸ The SESA is still pending RSA approval.

⁵⁹ The ESMF has already been approved by the Regional Safeguard advisor of the World Bank and has been disclosed at Infopshop and in Mozambique.

The Strategic Environmental and Social Assessment (SESA). Designed in parallel and in full compliance with the National REDD+ Strategy, the main objective of the SESA is to identify *ex-ante* opportunities for the mitigation of environmental and socio-economic risks deriving from the implementation of REDD+ projects and programs in Mozambique. The SESA aims at framing the day-to-day implementation of REDD+ strategy in Mozambique, with consideration of local mechanisms of adaptation, land use and forestry practices.

The designing of the SESA in Mozambique was based on a thorough literature review and on an extensive consultation process conducted at community, district, provincial and national levels in order to ensure a participative and comprehensive approach and to identify in a transparent way the environmental and social issues that need to be addressed at sub-sector level (FUNAB, 2015). It analyzes the national legal and institutional framework of Mozambique – including the state of local communities' legal rights and stakeholders' engagement – and the international treaties to which Mozambique is a signatory – including international guidelines and performance standards. It provides detailed information on the geographical and socio-economic baselines, including land use. More importantly, the SESA analyzes the strategic objectives and options for REDD+ in Mozambique and assesses them with a complete opportunity and risk analysis, comprising social impact, environmental impact and mitigation measures. Based on those elements, it provides a synthesis of opportunities, risks, mitigation and enhancement measures for REDD+ strategies in Mozambique, that are crucial for the design of the ER Program. Details of the methodology and findings of SESA are available in the [SESA report](#).

Environment and Social Management Framework (ESMF). In addition to the SESA, the ESMF is a guide to the screening of the proposed ER Program interventions, to ensure that they do not negatively affect natural and social environment. The ESMF in Mozambique was primarily conducted with regards to MozFip, which will pilot most of the interventions of the ER Program. The objective of the ESMF is to ensure that relevant World Bank Safeguards Policies and GoM environmental and social applicable regulations are strictly adhered to in REDD+ activities implementation – which includes the ER Program (MITADER, 2016d).

More precisely, the ESMF tackles 7 of the 10+2 World Bank Operational Safeguards Policies, which are expected to be triggered in REDD+ activities implementation in Mozambique – including by the ER Program. As stated earlier, a Resettlement Policy Framework (RPF) is being prepared and a Process Framework (PF) has already been conducted to satisfy the Involuntary Resettlement safeguard (OP/BP 4.12) – *see table below*. It should be noted that, according to the ESMF, given the nature, scale and scope of the proposed investments, their potential adverse environmental and social impacts are expected to be moderate, reversible and temporary (MITADER, 2016d). Details are provided in the [ESMF document](#) (see MITADER, 2016d).

Table 72: World Bank safeguard policies triggered by ER Program

World Bank Operational Safeguards Policies	ER Program
Environmental Assessment (OP/BP 4.01)	<input type="checkbox"/>
Pest Management (OP 4.09)	<input type="checkbox"/>
Involuntary Resettlement (OP/BP 4.12)	<input type="checkbox"/>
Natural Habitats (OP/BP 4.04)	<input type="checkbox"/>

Forests (OP/BP 4.36)	<input type="checkbox"/>
Physical Cultural Resources (OP/BP 4.11)	<input type="checkbox"/>
Indigenous Peoples (OP/BP 4.10)	
Safety of Dams (OP/BP 4.37) ⁶⁰ - <i>preemptively</i>	<input type="checkbox"/>
Projects on International Waterways (OP/BP 7.50)	
Projects in Disputed Areas (OP/BP 7.60)	

Pest Management Plan (PMP), Resettlement Policy Framework (RPF) and Process Framework (PF). The Process Framework was prepared separately from the RPF, which is still being designed. However they should be used together with the ESMF. As for the PMP, its essential aspects were included in the ESMF.

The critical aspects of the PMP will assist in the implementation of the WB's vision and the GOM's strategy that promote Integrated Pest Management (IPM) approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest. It also includes mitigations measures to reduce the impacts on human health.

Although the ER Program and MozFip are not expected to trigger resettlement, a PF (MITADER, 2016e) was conducted in order to ensure that involuntary resettlement is avoided or minimized where feasible, exploring all viable alternative project designs. A RPF should be prepared in the future. This is in accordance with the WB broad conception of resettlement, which is not restricted to its usual meaning - that is "physical displacement": it also includes economic displacement, namely adversely affecting people's livelihoods even when they do not have to relocate (MITADER, 2016d). Actually, OP/BP 4.12 on Involuntary Resettlement requires that projects that may restrict access to natural resources in legally designated parks and protected areas are safeguarded by a PF (MITADER, 2016d). Admittedly, in the ER Program, some people and communities may potentially have their access to natural resources in some protected areas – such as the Gilé National Reserve - restricted⁶¹.

The RPF for the MozFip project will contain, in case of necessity, provisions for the potential preparation of a Resettlement Action Plan (RAP) and for the compensation of affected people. It will also ensure that restrictions to resources to which local people have inherent rights are discussed and agreed upon with them in a participatory manner (MITADER, 2016d). As for the PF, it mainly deals with the restrictions of access and use of resources to be associated with the project especially by components dealing with land and forests resources use planning and delimitation (MITADER, 2016e). The PF also describes the Feedback and Grievance Redress Mechanism (FGRM) to be implemented for Mozfip and DGM projects and, consequently, for the implementation of the ER Program in Zambézia – see section 14.3.

⁶⁰ Despite the project's association with agricultural and forestry development, no major water related infrastructure is expected, nevertheless the OP/BM 4.37 on Safety of Dams is considered as triggered mainly on a precautionary note.

⁶¹ It should be noted that the GRN already is a protected area (Reserve) in which lots of anthropogenic activities (agriculture, logging, charcoal production etc.) are already prohibited by the Mozambican law, outside of the scope of the ER Program.

Safeguards implementation in ER Program

The ER Program will be fully aligned with the recommendations formulated in the SESA and ESMF documents, which have been conceived as strategic safeguards umbrellas to ensure that environmental and social considerations are integrated in the formulation of the REDD+ Strategy and in all other REDD+ related programs, including the Zambézia ER Program. In particular, although primarily oriented on the MozFip program, the ESMF sets out the structures and procedures for undertaking environmental and social due diligence and for the management of future projects, policies and activities through which the refined REDD+ strategy is implemented. The ER Program will therefore be implemented as an integral component of the REDD+ National Strategy and will, especially, follow the mitigation measures identified during Readiness phase.

Guiding principles. Basic safeguard principles and requirements will be applied throughout the expected lifetime of the proposed ER Program and will be taken into account in the definition and implementation of additional projects (MITADER, 2016a; 2016c). Those principles, described in the ESMF, include:

- A systematic procedure of participatory screening for project sites and activities with environmental and social considerations;
- A step-by-step procedure for predicting the main potential environmental and social impacts of the planned activities and interventions;
- A typical environmental and social management plan for addressing negative externalities during activities implementation;
- A step by step monitoring and evaluation system for implementation of mitigation measures;
- Capacity building measures for environmental and social planning and monitoring of the activities;
- A budget to ensure that adequate resources are available, especially for the preparation and implementation of potential Environmental and Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs) and Resettlement Action Plan (RAPs).

Institutional arrangements. According to (MITADER, 2016d), safeguards implementation arrangements will build on the existing structure already in place in the UGFI under MITADER. UGFI has been recently strengthened in safeguards capacity by hiring four dedicated Safeguards specialists to oversee all existing relevant projects. These specialists will team up with two Safeguards technicians at the provincial level – one will be dedicated to the Zambézia province where the ER Program is located.

Monitoring. Monitoring will be fundamental to ensure that the objectives set forth in the ER Program and the safeguard plans are being achieved satisfactorily and where there are nonconformities, timely corrective action can be taken. In particular, the MozFip Program Management Team will have the overall responsibility for coordinating and monitoring implementation of the ESMF for all activities and project related to it, which includes most of the ER Program planned interventions. It should be noted that the National REDD+ Strategy recognized as relevant indicators of safeguards implementation the following components (MITADER, 2016a):

- Communities' participation and involvement: compliance with GoM guidelines and International Conventions on communities' participation and involvement;
- Validation process of the Environmental Management Plan: compliance with environmental licensing requirements;
- Forests management plans: compliance with the requirements of forest management plans in the areas in which the projects are implemented;
- Transparency and good governance: good dissemination of key information;
- Poverty Reduction and Benefit Sharing: the economic and social benefits generated by REDD+ programs and projects are proportionally shared between stakeholders, with special attention to women integration and gender issues;
- Land use plans: compliance with Land use plans, mapping and zoning, including the zoning of specific areas - such as conservation areas;
- Land Use Rights and Forest Resources: compliance with the national legal framework.

Monitoring of the compliance of project implementation with the mitigation measures defined in its ESIA/ESMP, PMP and/or RAP will be achieved through various channels, including (MITADER, 2016c):

- (i) Environmental and social audits, led by MITADER (for the verification of compliance with the GoM requirements) and Provincial Environmental and Social Safeguards Officers (for the verification of compliance of program requirements as such). The audits are necessary to ensure that (i) the ESMF and the ESMP processes is being implemented appropriately, and (ii) mitigation measures are being identified and implemented accordingly. The audit will be able to identify any amendments in the ESMF approach that are required to improve its effectiveness – *more details are provided in the ESMF report*.
- (ii) Regular monitoring by district and municipal authorities, who are required to report annually. Compliance monitoring comprises on-site inspection of activities to verify that measures identified in the ESMP, PMP and/or RAP are being implemented.
- (iii) Participation of communities, which may be partly achieved through the Participative Measuring, Reporting and Verification (PMRV) system- *see below*.

Participative Measuring, Reporting and Verification (PMRV). The PMRV is planned as an innovative participatory approach that aims at engaging forest-dependent communities in monitoring and verification work, including for the implementation of safeguards plans. Although it still is being designed – it should be concluded by early 2017 – the scope of the PMRV already is defined with a main objective to collect local carbon stock data to improve carbon accounting at the national level (in compliance with international standards) and increase the participation of local communities to maximize the co-benefits of REDD+ (FUNAB, 2015).

It is admitted that the PMRV should be incorporated into community based forest management system and into the multilevel MRV system (including into the national forest inventory) taking advantage of the existing local management systems with standardized practices and methods. Nevertheless, a social analysis to probe the enabling conditions for

local participation, including a detailed incentives analysis, is needed to motivate individual involvement in PMRV. A governance analysis to understand data flow (roles of members of local communities) is also needed (Gonzalo, 2016b).

In terms of methodology, it is suggested that monitoring and measuring methods should be simple but scientifically robust and unbiased to provide accurate and reliable data. The use of new technologies - such as forest surveys and remote sensing mapping using digital devices, tablets, smartphones or drones, etc.) should first be tested in areas where communities are already involved in monitoring (FUNAB, 2015). A training program will be necessary for feasibility and sustainability purposes to strengthen local capacities and autonomy. In many cases, the monitoring and reporting skills reside in intermediary organizations instead of the communities themselves. Hence, there is a strong necessity to design a complete training of trainers program on data collection, data processing and data reporting for project staff and local representatives (FUNAB, 2015).

14.2 Description of arrangements to provide information on safeguards during ER Program implementation

According to the FCPF CF Methodological Framework (FCPF, 2016a), the ER Program “should be based on a full and effective consultative, transparent and participatory process, ensuring that its design and implementation reflect inputs by relevant affected stakeholders”. With this regards, it should be noted that the approved safeguard instruments are available online on the Mozambique [REDD+ website](#). In addition, as explained in section 5, the design of the safeguard documents has been part of an extensive consultation process in Mozambique, which is continuous – *see section 5 for more details, it is also described in the [ESMF document](#)*. Finally, information on safeguards will also be achieved thanks to the REDD+ Safeguards Information System (SIS) and the Participative MRV, which will be developed in compliance with the principles of REDD+ implementation.

Safeguards Information System (SIS). As stated in Mozambique’s National REDD+ Strategy (MITADER, 2016a), the main objective of the SIS is to provide relevant information on how safeguards are handled and respected. This is a necessary requirement to obtain payment for results. The SIS is expected to be simple, accessible, inclusive, transparent, auditable, and comprehensive and to respect national legislation. The process of collecting information involves various partners from base community organizations, government and civil society organizations, following an extensive participatory approach.

According to (Gonzalo, 2016b), the SIS still is an incipient process in Mozambique that demands a coordinated structure to enable the full participation of stakeholders (community, private sector, government and civil society), which should be based on the following principles: (i) compliance with legislation and good governance; (ii) promotion of transparency and public and social responsibility; (iii) respect for local culture and traditions; (iv) significant participation of affected people and stakeholders (especially the most vulnerable); (v) "auscultation" functions as conflict resolution mechanisms; (vi) protection and conservation of forests, contributing to the improvement of the multiple functions of forests.

Although it still needs to be harmonized through seminars with stakeholders, a list of indicators was proposed for the Components 3 and 4 (Reference Level and MRV system) of the R Package (Gonzalo, 2016b). As explained by (Gonzalo, 2016b), the methodology to be

used for the monitoring process of indicators includes interviews, questionnaires, direct observation and public consultations whenever necessary. Continuous dissemination programs will be part of the process to enable stakeholders to be actively involved, making an efficient and transparent implementation of REDD + projects and initiatives, including in the ER Program area.

Table 73: Proposition of SIS indicators

Item	Sub item	Description	Scale
Environmental and ecological	Forest	Reforested Area (Increase of coverage percentage)	National, Landscape
		Reforested areas (New planting areas established)	National, Landscape
		Rehabilitated forest area	Landscape
		Information on existing management plans (updated)	Landscape
		Burned areas	National, Landscape
		Environmental Management Plan	Landscape
	Biodiversity	Fires	National, Landscape
		Registration of fragile ecosystems	Landscape
		List of endangered species (fauna and flora)	National, Landscape
		Protected species (fauna and flora) survey	National, Landscape
		Percentage of native area preserved in the concession (20% conservation law)	Landscape
		Census faunístico (2 in 2 years in the conservation area)	Landscape
	Soils	Soil quality information	Landscape
		Areas of sustainable agriculture (agroforestry and conservation systems)	Landscape
		Registration of use of agrochemicals	Landscape
	Water resources	Pollution registry of water lines (agrochemicals)	Landscape
		Pollution registry of water lines (sediments)	Landscape
Socio-cultural & economics	Cultural heritage	Registry of existing cultural rituals	Landscape, Communities
		Registry of sacred sites	Landscape, Communities
		Number of complaints attended	Landscape, Communities
	Land tenure	Number of DUAT's holders	Landscape, Communities
		Number of informal certificates issued	Landscape, Communities
		Number of individuals with "occupation of good faith and customary practices"	Communities
		Number of disputes submitted and resolved (including complaint channels used)	Landscape, Communities
	Land use change	Grassland areas acquired for forest plantations	Landscape
		Areas of Agriculture Purchased for Forest Plantations	Landscape

	Training	Number of community members involved in forest plantations / Partnerships and / or employment	Communities
		Number of community members involved in REDD + / FIP / DGM capacity building (by sex)	Communities
		Number of supported associations and forums	Landscape, Communities
		Number of operators involved in training	Landscape
		Number of charcoal workers involved in training	Landscape, Communities
		Number of trained institutions and technicians	National, Landscape
	Other beneficiaries	Number of villages and beneficiaries (disaggregate)	Landscape, Communities
		Number of community members with access / information on sustainable technologies for biomass energy use (dissemination programs)	Landscape, Communities
		Community projects: Number of Community projects / initiatives supported	Landscape, Communities
		Number of workers employed in forestry plantations	Landscape, Communities

14.3 Description of the Feedback and Grievance Redress Mechanism (FGRM) in place and possible actions to improve it

The existing Feedback and Grievance Redress Mechanisms (FGRM) that are applied in the ER Program area are, mainly, those of MozFip and DGM. Mozbio also developed a mechanism for its intervention in and around the GNR protected area. It should be reminded that MozFIP is an important bridge between REDD+ efforts and potential future payments for ERs, by contributing to the implementation of activities that address the drivers of greenhouse gas-emitting deforestation in 5 of the 9 districts of Zambézia covered by the ER Program. MozFip is key in the implementation of the Zambézia ER Program and will support the first stage of its implementation (FCPF, 2016b).

Although the general guidelines and main features of FGRMs for REDD+ were described in the SESA and the ESMF, it is fully addressed in the Resettlement Policy Framework and Process Framework of MozFip and DGM that, in accordance with criterion 26.2 of the FCPF MF (FCPF, 2016a), clearly describe FGRM procedures and specify the process to be followed to receive, screen, address, monitor, and report feedback, grievances or concerns submitted by affected stakeholders. More specifically, the existing DGRMs were assessed through the FPR and the PF, which provide a description of:

- i. The step-by-step process for registering and addressing grievances;
- ii. Specific details regarding a cost-free process for registering complaints;
- iii. Response time and communication modes;
- iv. The mechanism for appeal;
- v. The provisions for approaching civil courts if other options fail.

Those documents already detailed the main principles of the mechanisms that, in

accordance with criterion 26 of the FCPF MF (FCPF, 2016a), should demonstrate: legitimacy, accessibility, predictability, fairness, rights compatibility, capability to address a range of grievances - including those related to benefit-sharing arrangements – and transparency. Those will also apply to the ER Program implementation. As stated in (MITADER, 2016d), the grievance mechanism will be available to all Project Affected Persons throughout the project life cycle.

Stakeholders' engagement. Transparency in the FGRM encompasses the design and implementation of a local communication strategy stressing awareness-raising activities about the project and resettlement procedures and entitlements when relevant.

According to SESA and ESMF, a Stakeholder Action Plan (SAP) and Stakeholder Engagement Plan (SEP) should be prepared, reviewed and approved by the Landscape Management Unit (FUNAB, 2015; MITADER, 2016c). The SAP and SEP must consider inclusion of women's groups and representatives of other vulnerable populations (elders, youth and disabled). It is important that consultation be initiated early in order to enable stakeholders and members of the public to have adequate time to comment, voice concerns or share ideas on any project or ER Program activities.

The main objective of stakeholder engagement and public participation is to ensure that the concerns and issues raised by the Interested and Affected Parties (PI&As), organizations or individuals are taken into account during the ESIA, allowing for the PI&As to discuss proposed REDD+ initiatives and the results of the environmental and social studies.

Justification and potential complaints. As stated in the DGM Process Framework (MITADER, 2016e), conflicts and grievances generally arise from poor communication, inadequate or lack of consultation, inadequate flow of accurate information or restrictions that may be imposed on people through the implementation of REDD+ projects activities. In the case of the ER Program, grievances may be favored by:

- Mistrust generated by activities aimed to address anti-poaching and illegal logging and measures of Protected Areas (PA) and Forestry management, where community members may be caught between conflicting interests. This may raise tensions within the communities themselves and with PA rangers, Environmental Police, Forestry Inspectors and forest concessionaires;
- Illegal exploitation of natural resources in which communities may be involved;
- Land speculation that could be generated by project activities related to forest plantations. This could undermine the transparency of the land acquisition process. Customary law and traditional systems on decision making could also favor traditional leaders' personal interests.

Preventive measures to avoid conflicts. As preventative measures, awareness raising about the activities related to ER Program will be continued throughout their implementation, in order to reduce misunderstanding and grievances. In particular, the consultations that were already started during Readiness phase will be carried on. Training for technical teams, CGRNs and local leaders in conflict management, which is planned by MozFip project, will also assist in minimizing the negative impact of conflicts. To empower communities, they will be involved in awareness-raising and training concerning their rights and obligations, how to obtain legal advice and representation, and

how to seek redress against what they regard as unfair practices by investment partners, forest inspectors (*fiscais*) or others.

Institutional arrangements and procedures. First, it should be noted that the FGRM builds on existing institutional arrangements, such as the CGRNs and the Zambézia Multi-Stakeholders Landscape Forum that was established specifically for the ER Program in Zambézia – see section 5. Second, the FGRM procedures for the ER Program may rely on those provided for the MozFip, DGM and Mozbio projects – all located within the ER Program area – that all take place in a complementary manner in the ER Program area. Those mechanisms will be harmonized in order to facilitate the process. A diagrammatic presentation of the possible communication channels for presenting complaints and the points of their potential resolution and communication back to the complainants is presented in the figure below.

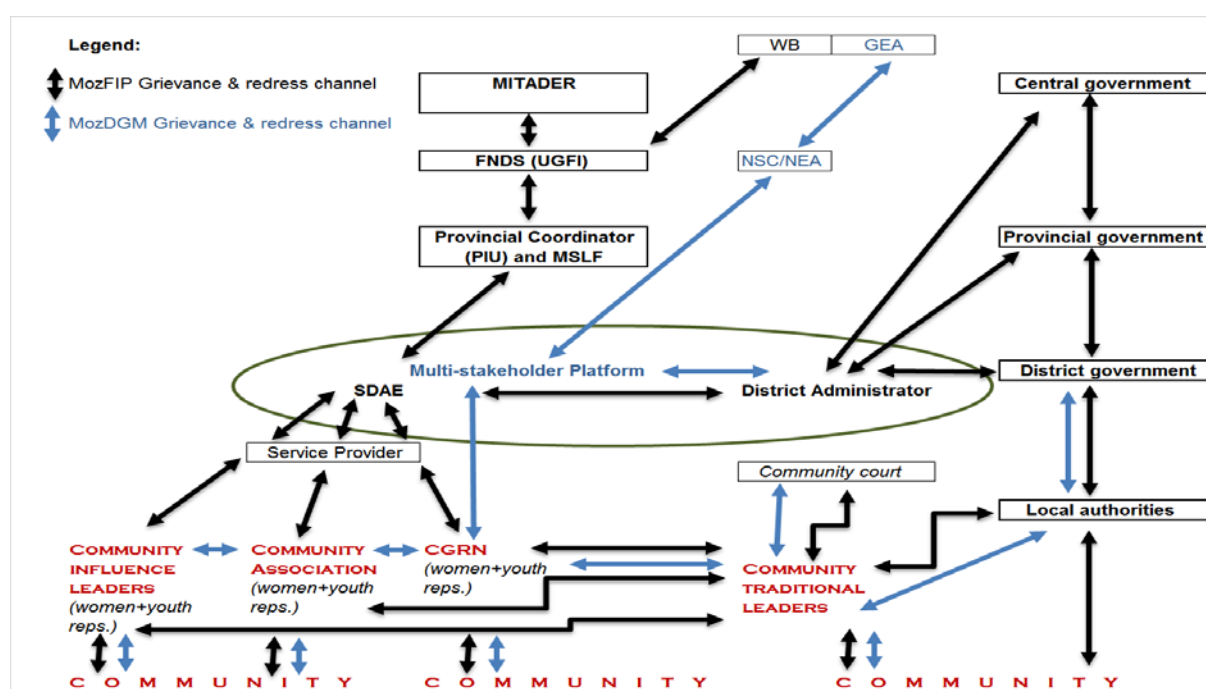


Figure 32: Channels of FGRM in Mozfip and MozDGM

For now, it should be noted that MozFip grievance redress management process is handled by the FNDS and UGFI, with whom the MozBio Project Manage Unit's safeguards team works. Grievances response in the MozDGM project is unique and for the most part separated from the MozFIP system⁶² – it is managed by the National Executing Agency (NEA).

Various levels of complaints management have been identified and are represented in the previous figure, with distinguished paths for MozFip and MozDGM grievance mechanisms. It should be noted that, because communities rely substantially on their own internal legal and regulatory systems that work in parallel with the formal systems, those should be primarily preferred: as advised by the ESMF (MITADER, 2016c), any treatment of complaints and conflicts arising in the implementation of the ER Program will primarily

⁶² The NEA will maintain the documentation of the MozDGM projects, follow the communications strategy in coordination with the Global Executing Agency (GEA), manage grievances, complaints and redress processes, responding promptly to queries, and coordinate with and sending information as requested to the GEA.

involve local communities' influential leaders, CGNRs and associations in providing a first level of listening and informal resolution. If issues are concerned with relationships with secondary or external stakeholders, and/or are outside the capacity of the community or local authorities to resolve, the CGNRs, associations or local leaders should transmit them upwards to district level. If the issues are not resolvable at these levels, they should be transmitted through the local authorities to the District Government for redress or mediation.

With regard to MozDGM, at community level, grievances that cannot be redressed locally will be passed through the CGRN and associations or local leaders to the District level in the same way as for MozFip. However, for MozDGM, it will be the exclusive duty of the Zambézia Multi-Stakeholders Landscape Forum to receive and address grievances. If this organization cannot provide a resolution that is satisfactory to the complainant, the grievance case will be passed directly to the NEA as representative of the Project Authority in Mozambique, for resolution.

In cases where conflicts or complaints are directed against governmental agencies, project management or private investors, whenever possible, project affected people and communities will be encouraged to resolve conflicts harmoniously through informal mediation by external agencies, such as NGOs or government officers. When disputes cannot be resolved informally, more formal mechanisms will be required. Where one or more communities are in conflict with a private-sector developer, the issue will be taken to the Ministry or agency with titular responsibility for the investment.

Decisions on redress and communication of these to the complainant should be timely at all levels. If affected communities' interests are superseded or rendered ineffective by any other government actions in agreements entered into by them, provisions exist in most legislation to appeal with sectorial grievances to higher levels of government such as National Directions and Ministries. Should any party be dissatisfied, the aggrieved party may take the complaint to court where it will be dealt with under Mozambican law.

Response and communication. Communication should be done in relevant languages, mainly in Portuguese. General grievance forms to be used should be prepared by Projects Implementation Units and made known and available to all potential users, although people should also feel free to use their own grievance documents at wish.

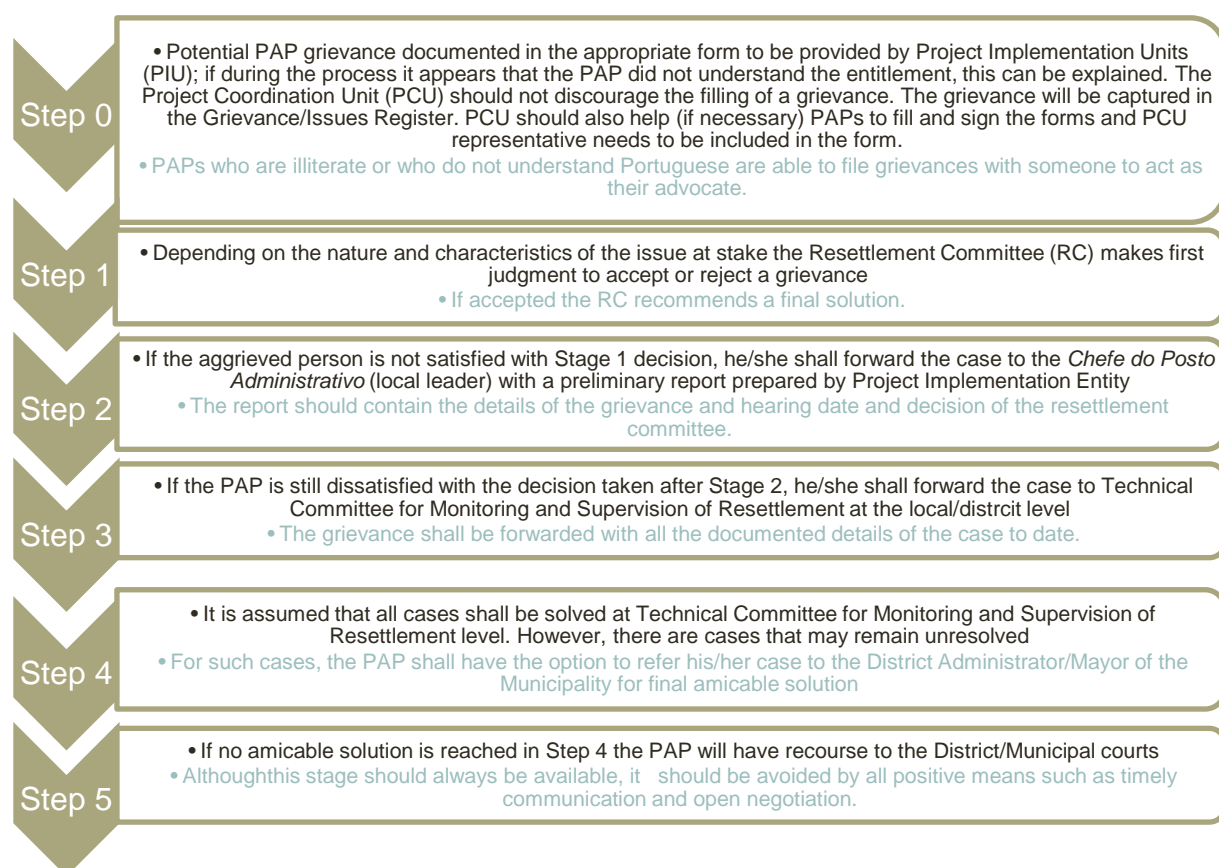


Figure 33: Step of FGMR as defined for MozFip project

The actual current operationalization of the FGMR is linked to the implementation of the MozFip and DGM projects. In addition to this specific structure, (Tanner, 2017a) recommends that complaints and grievances be handled at provincial scale by the Zambézia Multi-Stakeholders Landscape Forum to which is given some form of mediation-based function to address grievances that cannot be resolved at District level. In the same way, local NGOs also have paralegals working with them, trained in a CFJJ/FAO program since 2006, and in the context of the ITC/MCA program that also ran in Zambézia until 2012. According to (Tanner, 2017a), there is clear anecdotal evidence that these paralegals have been used by local governments as well as by NGOs to settle disputes and facilitate agreements. Their potential in conflict resolution and complaints management in the ER Program should be considered.

15. BENEFIT-SHARING ARRANGEMENTS

The ER Program will generate monetary – through the sale of carbon credits – and non-monetary benefits that have to be shared between several stakeholders according to their participation in the program. This section aims to define the Benefit Sharing Plan that should accompany the ER Program. *Prior to the analysis of possible benefit sharing mechanisms should be the understanding of land and resources tenure rights in the ER Program area – see section 4.4.*

15.1 Description of benefit-sharing arrangements

Categories of potential beneficiaries, eligibility, type and scale of benefits

Categories of potential beneficiaries – The potential beneficiaries of the ER Program benefits and of the Benefit Sharing Plan are various, and include:

- The State of Mozambique, as “owner” of the land forests addressed by the ER Program;
- The central and provincial GoM, in the form of the specific agencies and line sectors involved in the development and implementation of the ER Program;
- The populations and all forest dependent communities who live in the ER Program area and who should in principle benefit directly from the implementation of the ER Program and from subsequent payments for ERs by the FCPF;
- Private sector enterprises that operate within the ER Program area, to the extent that they may be directly involved in implementing REDD+ related activities;
- Local civil society organizations and partners in existing benefit sharing or other resource-sharing agreements with local communities.

While all of the above are important to achieve the ER Program success, the focus group is the population who lives in and directly use and/or benefit from the forest. The issue of land tenure rights is directly relevant, as it can determine who has the right to benefit from any future ER payments, and how these benefits are channeled to beneficiaries. With regard to local population, the potential beneficiaries can actually be divided into two groups: the local communities and individuals living in the ER Program area.

Benefit shares can be in the form of Government programs that aim to improve the well-being and livelihoods of local people (which may be fully or partially funded by ER payments); or some form of direct transfer to local people who engage in forest conservation and other activities that result in achieving the ER target.

Taking into account ER payments, no matter the mechanism that is chosen, their distribution could be realized through two different channels:

- (i) Payment to the communities as a whole;
- (ii) Payments to individuals of the communities.

For the ER payments to be shared with the communities as a whole, they have to be clearly identified (delimitation) and represented. Those two features are crucial and should be considered as the basis for the Benefit Sharing Mechanisms. Communities’ representation,

for now, is best embodied in the CGRN. As explained in section 5, they are composed of members representatives of the local communities and are created with every community official delimitation and every time a forest concessions is granted. They are the bodies in charge of capitalizing the “20% revenues” for local communities⁶³ – *see below for the description of the mechanism*. According to the DPTADER, there are 78 CGRN in Zambézia province, associated to forest concessions.

However, the existence of individual DUATs at sub-community level should also be stressed. As stated by (Tanner, 2017a), if one objective of the sharing of benefits is to change behaviors over land and forest use to achieve ER targets, the benefits of these changes will have to be felt by individual households where the food security and livelihoods impacts will be directly experienced. It will therefore be necessary to find some way of allocating some part of the resources coming through a benefit-share arrangement, to individual households, and especially to those most involved in the measures to control deforestation and improve natural resources management.

According to (Tanner, 2017a), local community delimitation plays its part here too, as the process will identify the local structures responsible for customary land management systems and the rights that are allocated and then legally recognized as DUATs acquired by customary norms and practices, and also by “good faith” occupation – *see section 4.4 on the recognition and attribution of DUATs*. These same structures will logically then play a role in determining how benefits are used and distributed at the sub-community level, bearing in mind the internal community “map” which will include the relevant permanent areas that are occupied and used by each family - over which a DUAT title can be issued if the holder requires - and the other areas that are collectively used – “community public domain” land, as established in the 2004 constitutional amendment.

Types of benefits - At this stage, it should be reminded that the expected benefits from the ER Program are more than just carbon benefits and ER payments. Non-carbon benefits, detailed in section 16, are also crucial. They are linked to the various activities that are implemented in the ER Program area and that generate long-term positive impact on local livelihood and the environment. Granted, the ER payments should nevertheless be associated with a change of habits for local population in order to enhance the non-carbon benefits.

Criteria, process and timeline for the distribution of benefits

The payments for the ERs are expected to be shared equitably between stakeholders. The communities who leave in the ER Program area are especially expected to benefit from them, as a way to enhance their participation in the ER Program on the long-run. This raises several issues, including on the criteria to be used for communities to receive such payments. Several methods can be elaborated to assess participation and performance of stakeholders in the program and several ways to reverse benefits (direct payments, investments or providing services).

Community delimitation - With regard to payments to the communities as a whole, the first element that should be underlined may be the question of community delimitation. The inclusion of the “Local Community” as core legal entity and concept in both the Land Law and

⁶³ According to this mechanism, by Law, 20% of the revenues derived from the management of forest and fauna resources should be transferred to the relevant local communities.

the Forest and Wildlife law – see section 4.4 for more details on the “Local Community” legal concept - underlines the fact that a community delimited according to the Land Law is then also the one that will form a CGRN and conduct consultations with forest investors in the Forest and Wildlife context.

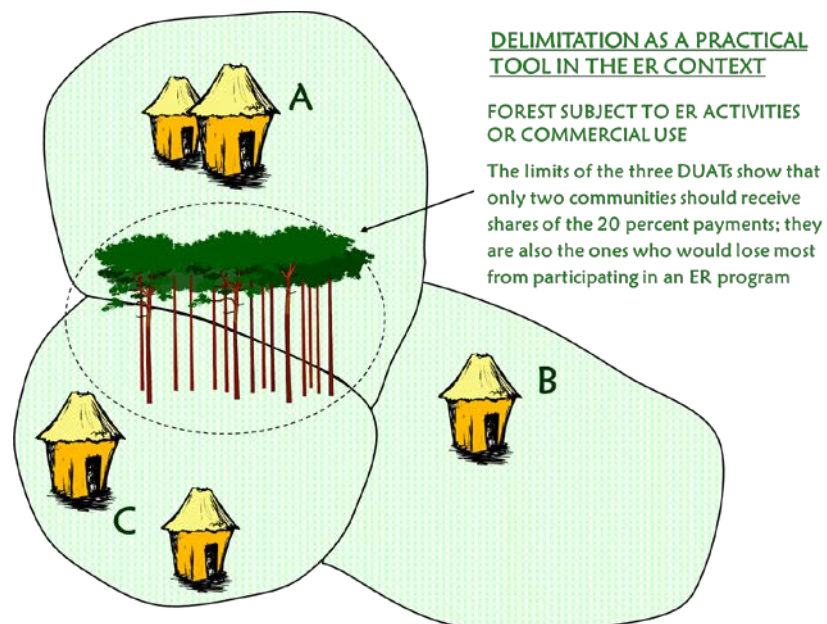


Figure 34: Example of community delimitation

According to (Tanner, 2017a), carrying out community delimitations can therefore pre-empt several of the requirements of the 20% legislation – the organization and creation of a CGRN or similar already being an outcome of the delimitation process - and then serve to guide how the devolved resources should be allocated to the one or more communities whose resources are being exploited by any potential commercial concession-holder. This is shown in the previous figure, where three communities have been delimited prior to any external interest in using their forest resources. Without a delimitation process, it is impossible to determine if indeed the forest “belongs” to one or all three communities; and it is difficult to determine what share of any revenue payments each community should get. With a delimitation carried out, these questions are resolved relatively easily (Tanner, 2017a).

Admittedly, the same principle can apply to the delimitation of areas for ER Program interventions. As Tanner (2017) puts it, local people need to see a clear advantage in participating in the ER Program, which may impose constraints on present livelihoods strategies. Going on to develop an appropriate Benefit-Sharing after developing appropriate measures to control forest degradation for example, is a critical element of the overall ER Program.

Performance based payments - It should be stressed that the ER payments will not (only) be based on land ownership and the recognition of Local Communities and smallholders' DUATs, even though this is an important component of the ER Program interventions. Admittedly, ER Payments will also be linked to the activities that are taking place in the accounting area: rights should always be linked to performance, meaning that communities, or land owners, won't receive payments because they have some kinds of rights on the area but because they are actively contributing to ERs. This performance will therefore have to be

assessed prior to any payment. Performance for benefit sharing system can be assessed in several ways depending on the MRV system of the program:

- It can be evaluated based on deforestation maps to be compared to local baseline for each spatial unit to be considered in the benefit sharing system or,
- It can be estimated by proxies of activity implemented by beneficiaries of the program that aim to reduce deforestation (e.g. number of hectares managed with conservation agriculture or forest managed for conservation, number of improved cookstoves, etc.)
- It can be a simple negotiation of a percentage of program benefits per beneficiary

Building up the 20% mechanism – According to Tanner (2017), without a successful approach to ensuring that ER payments find their way to the local people living in the ER Program areas, it is very unlikely that the underlying forces driving deforestation and forest degradation can be overcome. As previously stated, the use of Land Law instruments – namely, the “20% mechanism” - establishes both rights and responsibilities over forest resource that might be considered for the ER Program. However, given the criticism addressed to this mechanism⁶⁴, the ER Program can also be the occasion, as Tanner (2017) puts it, to consider a “more radical reform, which can bring together the various sources of present and future revenues within one system”. According to him, a “revised 20% scheme” would result in larger payments reaching the local communities and these payments may have a greater impact, enabling the funding of larger and more widely beneficial projects.

Box 8 below shows the potential from present and future revenue streams that might result, for example, from a decision to retro-fit the 20% principle to the payment of land fees and taxes, and the sharing of future ER payments.

According to (Tanner, 2017a), the task of creating such a unified system with revised and clear procedures for channeling the funds and working with local communities is made much easier by the creation of the FNDS within MITADER. This new fund integrates a range of funds coming from sectors that were once within the remit of MASA, as well as resources from the Environment Fund, the resources used to finance the District Development Fund (the so-called “7 millions” allocated to each district in the country every year to promote new economic activity). Shares of public revenues coming from land taxation, forest and wildlife projects, and other activities are also to be channeled to and managed by the FNDS.

Box 8: Possible future sources of revenues for Local Communities
(Tanner, 2017a)

Existing sources of revenue share:

- Commercial forestry fees and dues paid to the State by firms;
- Concession fees and charges for sports hunting;
- National park and reserve revenues (entry fees, etc.)

To these it is possible to add:

- Shares in ER payments from the FCPF to the GoM;

⁶⁴ Limited sums, poor perception of the actual benefits from local population, allegations of corruption and grabbing of revenues by local leaders, confusion in and lack of efficient of the various channels used to get the funds to the local communities – see (Tanner, 2017a) and (Chidiamassamba, 2012).

- Land fees and taxes;
- Fees and revenues paid by agricultural enterprises that make agreements to occupy and use local land.

Additionally, a new system for administering and using these resources at local community could also include revenues deriving from partnership agreements made with investors; and lease payments made to communities in the context of new “ceding use” legislation now in the pipeline.

Aggregating all of these payments within a single system for allocating benefit share and other revenues and managing them at community level could result in far more substantial and useful sums being available for local development initiatives. These can mitigate the impact of ER-focused changes in behavior; and also feed into a loop that consolidates this change in a longer-term process of agricultural and agrarian transformation.

In this context it will be necessary to align with the FAO PES project – see section 4.1 - which already has developed the procedures and designed a new integrated benefit-sharing system as one of its four project activities (Tanner, 2017a).

15.2 Summary of the process of designing the benefit-sharing arrangements

The designing of the Benefit Sharing Plan is still in process and is expected to be concluded by the end of July 2017 at the latest.

Summary of the process

The designing process of the Benefit Sharing plan is firstly based on a bibliographic review of the systems that have been implemented in several countries that have already developed sub-national REDD+ programs – such as Costa Rica, Brazil, DRC and Mexico. A bibliographic review to establish a benchmark of common practices is being realized. During the entire process of the ER-PD and of the Benefit Sharing Plan design, discussion will be engaged with Mozambican specialists of benefit-sharing and engagement of communities.

In addition, based on the list of possible benefits (monetary and non-monetary) generated by the ER Program, a first draft of benefit sharing will be elaborated in order to present the beneficiaries that have to be taken into account and the different possibilities to measure performance and to reward participation to the program. This draft plan is meant as a basis to list questions that have to be assessed and to arbitrate choices. From this plan, a list of options will be elaborated. They will have to be validated by the GoM and WB during several work sessions. A record of the decisions made will be established at the end of each validation meeting. The following issues will be addressed before the submission of the ER-PD advanced draft:

- **Identification of the potential beneficiaries:** this step is linked to the land tenure and carbon ownership assessments that will help determine if identified beneficiaries are eligible for such a process;

Preliminary results of the land tenure assessment clearly show that, based on the recognition of customary right and the attribution of DUATs, local communities and rural population leaving in the areas of intervention of the ER Program are eligible.

- **Definition of monetary and non-monetary benefits:** this is linked to the ER-Program strategic options and to the budget evaluation of benefits and costs for management and MRV;

Non-carbon benefits are listed in section 16.

- **The measurement of performance adapted to beneficiaries** (direct carbon accounted or measurement by relevant proxies, whether it has to be spatially explicit or not) and to the MRV and registry systems that have been designed for the program;
- **Rules for the accounting of nested projects** that have already been validated by other carbon standards.

After the validation of the rules for sharing benefits with the ER Program stakeholders, institutional arrangements will be studied in order to guarantee transparency in the process, to insure the integrity of the identified entities (control by third part if relevant) and to avoid any corruption and conflicts of interest in the program management team. This component will be prepared for the end of the assignment. These arrangements include:

- **Identification of the relevant structures** to assure the verification of monitored and reported performance, funds management and disbursement;
- **Definition of the roles and responsibilities** of each identified entity and method of control;
- **To propose a grievance mechanism** that can be used by identified beneficiaries with transparency;
- **Procedure to guarantee the transparency** of the monetary and non-monetary fluxes.

Finally, legal documents formalizing the benefits sharing plan between all stakeholders will be prepared and submitted to the UT-REDD+ for transmission to the relevant entities after validation by the UGFI.

Table 74: Design process for the Benefit Sharing Plan

Task	Dates
Submission of first draft of the benefit sharing plan with guidelines	06/02/2017
Submission of report on rules and approaches and options to measure and to reward performance for Benefit Sharing Plan	26/04/2017
Submissions of report on options to channel benefits	12/07/2017
Final benefit sharing plan	28/07/2017

Persons and entities who have been participating in the process

During the design process of the Benefit Sharing Plan, the GoM - especially the MITADER, FNDS, UGFI - the World Bank and the FCPF, as well as the Landscape Management Unit and the provincial Landscape Coordination Unit were involved during work sessions and meetings. NGOs and local population were also associated to the process through public consultations, workshop and individuals meetings. A Land Tenure specialist - C. Tanner; see (Tanner, 2017a) - was also closely associated to the design process of the Benefit Sharing Plan. Finally, Mozambican specialists of benefit sharing and engagement of communities were consulted.

Links with the Readiness process and pre-existing benefit-sharing arrangements

According to criterion 31 of the FCPF MF (FCPF, 2016a), the Benefit Sharing Plan should “be informed by and builds upon the national readiness process, including the SESA, and taking into account existing benefit-sharing arrangements, where appropriate”.

Actually, as stated by (Tanner, 2017a) and (UT REDD+, 2015a), Mozambique already has a benefit-sharing scheme to devolve a portion of public revenues derived from local resource use back to the communities who depend upon and use those resources. This is established in the 1999 Forest and Wildlife Law and implemented via the Forest and Wildlife Regulations (Decree 12/2000 of 6 June), and a specific instrument detailing how these funds should be channeled to recipient local communities (Ministerial Diploma 93/2005 of 4 May) – *those legal requirements were detailed in section 4.4 and 4.5*. Within this framework, 20% of the revenues derived from the management of forest and fauna resources should be transferred to the relevant local communities. The first payments were realized in 2005. To receive their payment, communities have to be organized with a Natural Resources Management Committee (CGRN); this committee is then able to open a bank account with three signatories who are members of the committee (Tanner, 2017a).

Although there have been some practical difficulties and criticisms regarding this scheme, it represents the most achieved experience of benefit sharing through the use of forest resources in Mozambique: between 2005 and 2011, a total of MZM 103,908,364 (about USD 3,89 millions at the time) have been distributed to 861 communities across the country. In 2012, seven years after the approval of the Ministerial Decree regulating this mechanism, a total of 1089 communities had been identified as potential beneficiaries, and 896 has successfully organized themselves with a CGRN and bank account (Chidiamassamba, 2012). In the Legal Framework study conducted during Readiness phase (Beta and Nemus, 2015), it was recognized that the “20% mechanism” is well established in Mozambique and works relatively well, even more so when local communities are supported by NGOs. A wide variety of organizations actually get involved in the process, to help organize the communities and to facilitate the payment of the funds. In Zambézia province, 9 different government agencies and civil society organizations were identified as “intervening” in the process of getting the 20% to recipient communities, ranging from the Provincial Services for Forestry and Wildlife, to national NGOs such as ORAM and several smaller local NGOs (Tanner, 2017a).

This innovation also opened the way for a similar provision to be made in the context of tourism and conservation revenues (entry fees in national parks and reserves, other charges levied on tourists, etc.). There are also other provisions for channeling other public revenues down to local level, such as the payment of 50% of fines covered for illegal forestry and hunting activities that are identified and controlled by community-based rangers and guards.

Consultations and inputs of relevant stakeholders

In accordance with criterion 31 of the FCPF MF (FCPF, 2016a), the benefit-sharing arrangements will be designed in a « consultative, transparent, and participatory manner». It will facilitate the delivery and sharing of Monetary and Non-Monetary Benefits that promote successful ER Program implementation. In order to do so, the design of the Benefit Sharing Plan will fully reflect inputs by relevant stakeholders, especially from local communities, through taking into consideration the main comments and feedbacks received during public consultations, which were organized in the context of the definition of the National REDD+ Strategy and of the Safeguards plans, especially the SESA – *see section 5 on stakeholders consultation and section 14 on safeguards plans.*

15.3 Description of the legal context of the benefit-sharing arrangements

At this stage, it should be reminded that Mozambique is considered to have an extremely progressive framework which recognizes local rights over land and resources, and guarantees the participation of local people in projects that aim to achieve REDD+ objectives (Beta and Nemus, 2015; Tanner, 2017a). The design and implementation of the Benefit Sharing Plan of the ER Program fully comply with relevant applicable laws in Mozambique, including agreements and customary rights, as required by criterion 33 of the FCPF MF (FCPF, 2016a).

The “20% Mechanism” - As stated above, the main legal basis for the Benefit Sharing Plan of the ER Program lays in the “20% mechanism”, established in the 1999 Forest and Wildlife Law and implemented via the Forest and Wildlife Regulations (Decree 12/2000 of 6 June) and Ministerial Diploma 93/2005 of 4 May. Another important legal consideration is the overall land and resource tenure framework, with which the legal context of the benefit-sharing plan is intertwined. With this regards, the main legal concepts to be underlined for the Benefit Sharing Plan are those of DUAT (land use right), Local Community, Community Delimitation and Partnership. This framework is summarized below - *for more details, see section 4.4.*

DUAT - As benefit-sharing will partly be based on the recognition of some sort of rights on land and the resources that are on this land – namely, forest and carbon – the first legal base to consider is the very constitution of Mozambique, in which originates the concept of DUATs. Although land is an absolute state property, the DUAT is the only existing land use right allocated by the State. Land use is therefore is a private right that enjoys strong constitutional protection (Tanner, 2017a).

Recognition of customary rights - Further, the National Land Policy, although maintaining land as state property, also recognizes customary rights of access and management of land by the population and states that, in case of investment on a land, the community living on that land “can enter as a partner in the investment, sharing profits and the benefits resulting from that investment” (Beta and Nemus, 2015). *See section 4.4 on DUAT attribution.*

Partnership - The concept of Local Community as being a “partner” – and, therefore, being able to collect some sort of the benefits generated on the said land – is repeated in other crucial texts, such as the Resolution 70/2008 of 30 December, which sets out the

requirements for investors seeking large areas of land (defined as over 10,000 hectares) and the 1997 Land Law and its Regulation, which also create the mandatory community consultation (Tanner, 2017a). This principle of partnership is most recently developed further, and significantly for the ER Program, in the 2014 Law for Conserving Biodiversity, which enable the State “to establish partnerships with the private sector, local communities, and national and foreign civil society organizations, on the basis of contract (...) for the administration of conservation areas”. In that case, “the possibility is underlined of celebrating contracts with the private sector and the local communities for the generation of income” (Beta and Nemus, 2015).

Local Community and Community Delimitation – In the framework of the recognition of customary right, the 1997 Land Law is, aging, crucial and formalizes the concept of Local Community. The key document in this context is the Technical Annex for delimiting rights acquired by occupation: this process is now commonly known as “community delimitation”, although it also applies to DUATs acquired by “good faith” occupation – see *section 4.4* According to (Tanner, 2017a), Land Law instruments such as Local Community delimitation and community consultations are key features, not only for channeling public funds to local level, but also for delivering significantly greater benefits through active economic agreements with investors.

REDD+ - Finally, Article 17 of the Decree which sets out the procedures for approving REDD+ projects requires “respect for the rights of local communities, *permitting their effective participation in the design, development and implementation of the REDD project (...) with approved agreements*”. Moreover, REDD+ projects “must always ensure the distribution of benefits, including the local communities” (Beta and Nemus, 2015 – emphasis added). In the same way, the recently approved National REDD Strategy also makes constant reference to the role of local communities and the need for the State to work closely with them in developing and implementing a REDD+ program (Tanner, 2017a).

Table 75: Main legal basis for the Benefit Sharing Plan

Acts	Relevant concepts for Benefit Sharing Plan
2004 Constitution of the Republic of Mozambique (CRM)	DUAT
National Land Policy (Resolution n°10/95)	<ul style="list-style-type: none"> - Recognition of customary rights of access and management of land by the population - Introduction of the idea of “Partnership” with local communities
Procedures for the Presentation and Appreciation of Projects involving more than 10 000 hectares (Resolution n°70/2008)	<ul style="list-style-type: none"> - Confirmation of the idea of “Partnership” with local communities
The Land Law (n° 19/97) and its regulation	<ul style="list-style-type: none"> - Confirmation of the idea of “Partnership” with local communities - Mandatory community consultation - Formalization of the official concept of “Local Community”
Technical Annex to the Regulation	<ul style="list-style-type: none"> - Introduction of the process of “Local Community

of the Land Law (Ministerial Diploma n°29-A/2000)	delimitation”
2014 Law for Conserving Biodiversity	<ul style="list-style-type: none"> - Confirmation of the idea of “Partnership” with local communities - Creation of the possibility for the State to celebrate contracts with the private sector and the local communities for the generation of incomes
The Forests and Wildlife Law (n° 10/99) and its regulations Ministerial Diploma 93/2005	- Introduction and formalization of the mechanisms for channeling the 20% revenues from wildlife and forestry exploration, towards the benefits of communities that inhabit the areas where the exploration of such resources is taking place
Regulation on procedures for approval of REDD+ projects (Decree 70/2013)	- Necessity to distribute the benefits of REDD+ projects, including to the local communities
National REDD+ Strategy	- Need for the State to work closely with local communities in developing and implementing REDD+ programs

To sum up, and according to Tanner (2017), “the legal framework therefore both protects and empowers local people, through the device of the Local Community. This process starts with the recognition of customary rights, is reinforced by delimitation according to the Technical Annex, and is given real content by the mandatory community consultation and its resulting agreement, or “terms of partnership”, between local rights holders and third parties wanting to meddle with local land and resources. Most importantly, the overall process brings local people into the development process as stakeholders with a potentially powerful voice when it comes to making decisions about how their land and resources area to be used”. This position also gives them legitimacy in receiving substantial shares of the benefits (monetary and non monetary) generated by the sustainable use of land and resource promoted by the ER Program.

16. NON CARBON BENEFITS

16.1 Outline of potential non-carbon benefits and identification of priority non-carbon benefits

The ER Program is expected to be associated with high non-carbon value, which should be generated during its implementation and which is expected to continue after the terms of the ERPA. Admittedly, the ER Program aims to initiate innovative and sustainable practices in its area of implementation that will have positive impact on the long run. As such, all the planned activities under the proposed ER Program will be aligned with MITADER's overall mission to promote rural development. The improvement of local population's livelihood is the priority non-carbon benefit of the ER Program, but not the only one.

The non-carbon benefits are numerous and can be classified in three main categories: (i) improvement of rural population's livelihood; (ii) strengthening of forest management and governance and (iii) environmental benefits. They have primarily been identified during consultations with stakeholders that were organized at national level and in Zambézia province, related to the REDD+ strategy and associate projects - such as MozFip, Mozbio and the Landscape Management Program - to safeguards and to the ER Program design – *see section 5 on public consultations*. They are described below and summarized in **Table 77**, which also is a reminder of the main ER Program interventions aiming at them. *For more details on interventions associated to each non-carbon benefit, see section 4.3.*

Direct non carbon benefits improving rural population's livelihood

Securing sustainable use and long-term access to forest resources - As explained in section 3, the rural population leaving in the ER Program area is highly dependent on natural and forest resources. Yet, ongoing deforestation and forest degradation in the “without project scenario” is expected to eventually reduce their access to such resources that will become scarcer, especially with high population growth and subsequent increased anthropogenic pressure on forest. *Section 4.1 already underlined the link between population growth and deforestation*. Through reducing deforestation, the ER Program as a whole is therefore expected to generate the most important non-carbon benefit: the maintaining of forest cover and associated natural resources, helping communities to secure their long-term access to resources they highly depend on.

Long-term increase and diversification of income and employment opportunities - One of the main objectives of the proposed ER Program is to help promote a range of intertwined income-generating activities for local population, linked to conservation agriculture, sustainable charcoal production and NTPFs management (UT REDD+, 2016). The promotion of conservation agriculture in the ER Program area is based on the use of various crops and on improving market access. This component provides for the integration of smallholders into improved supply chains for local, regional and global markets, which is expected to generate new employment opportunities – with increased production and transformation potential - and to reduce reliance on “slash and burn” agriculture (UT REDD+, 2015a). By improving the position of smallholders in value chains and helping them certify their crops through fair trade schemes, the ER Program is expected to allow smallholders to

sell their products with premium prices and get extra income. In the same way, the ER Program interventions focusing on adding value to NTPFs should also contribute to increase revenues and profits for local communities.

Securing alternative and sustainable energy sourcing and health benefits - The ER Program provides for the promotion of sustainable biomass use and production that could decrease deforestation and forest degradation, improve forest management and generate health benefits. This component includes energy plantations and the dissemination of improved production techniques. As stated earlier, charcoal production is a significant driver of deforestation and forest degradation in the ER Program area – *see section 4.1*. Through addressing the unsustainable exploitation of wood for energy, the ER Program will slow the rate of forest loss in rural areas and maintain a reliable source for domestic use, on the long term – which is coherent with the first non-carbon benefit (“Securing sustainable use and long-term access to forest resources”). In addition, with more efficient charcoal-making technology and the promotion of alternative sources of energy, local degradation and health risks linked to traditional cook stoves may be reduced - using charcoal and fuel wood for cooking implies a high incidence of acute respiratory infections due to air pollution (UT REDD+, 2015a).

Adaptation of agricultural practices to climate change to increase agricultural production - Mozambique is extremely vulnerable to climate variability and change – *see section 3.2*. Zambézia is a heavily affected province, facing unpredictable climatic conditions - including intense droughts, unpredictable rains, floods and uncontrolled fires. As many communities depend on the productivity of their crops for their subsistence, the promotion of conservation agricultural techniques and climate smart techniques can generate substantial change in increasing their ability to adapt to climate change – including through reducing their vulnerability to drought – thereby securing long-term agricultural production. In addition, by promoting the formation of cooperatives or other types of agricultural associations, the ER Program seeks to generate knowledge exchange between smallholders and to help them combine their sales in order to obtain better prices (UT REDD+, 2015a).

Clarified land tenure – Land tenure regularization and community delimitation are important components of the ER Program that will contribute to securing local population’s rights on the natural resources that are present in the ER Program area. As explained in section 4.3, 4.4 and 11, secure tenure right is a pre-requisite to on-going participation of stakeholders in the ER Program and in ensuring the long-term change of unsustainable behaviors based on the over-exploitation of forest and natural resources. It therefore a necessary base for much of the other non-carbon benefits – depending on the success of ER Program implementation.

Strengthening of forest management and governance

Increased transparency in the forest sector – The ER Program is expected to increase the overall transparency of the forest sector in Mozambique, through various means including better involvement of local population in the monitoring of forest resources. Transparency in terms of business activities and illegal income generating activities is also crucial in order for all participants to be on an equal basis for the use of natural resources and in the receiving of carbon (and no carbon) benefits. Increased transparency is also meant to secure long-term and sustainable practices with regard to forest management that will be able to continue after the terms of the ERPA, making all stakeholders be accountable for their behavior in the ER Program area. This will be achieved, inter alia, through the

establishment of national and provincial Monitoring, Reporting and Verification (MRV) offices, the creation and maintaining of online forest management platform and the improvement of land use planning and registration. This benefit is strongly linked with the long-term engagement of multi stakeholders in forest management – see below.

Long-term engagement of multi stakeholders in forest management with strong role of Local Communities - The proposed ER program will promote a transparent and participatory decision making process that aims to: (i) increase local communities' rights to land and forest resources; (ii) promote land use planning; and (iii) implement benefit sharing mechanisms. The proposed interventions will not only improve community-based forest management, by promoting community organization and capacity building, it will also help ensure the participation of various entities in the area, ranging from community organizations, civil society and the private sector to provincial and district governments (UT REDD+, 2016). *For more details, see also section 5.*

Reduction of unsustainable practices and illegal logging - In the ER Program, improved implementation and enforcement of legislation (and transparency) are expected to reduce unsustainable and illegal practices and to increase revenues for the GoM. Stronger enforcement will also increase the legally stipulated benefits to communities, and provide a basis for long-term and sustainable production of timber products that can provide a lasting stimulus to rural economy. Various interventions, including land tenure regularization, are aiming at this benefit.

Improvement of business environment in forestry sector - Improving law enforcement is also the key to generating revenues for legitimate private sector operators. Companies that manage natural forest concessions in a legal and sustainable way and who produce and market the products obtained from wood cut in these concessions are facing severe financial problems (UT REDD+, 2016). This is due to the unfair competition of the forest concessionaires, simple license holders and informal loggers who manage to avoid the costs of complying with the law on forest activities, industry regulations, taxes and trade duties (UT REDD+, 2016). The ER Program focuses on those issues in order to make illegality be more “expensive” and to valorize legal and transparent behaviors in the forestry sector.

Long term environmental benefits

Eventually, the ER Program is also expected to provide significant environmental benefits that will be enhanced by sustainable management of forests. It should be reminded that the environmental services provided by forests are innumerable. Sustainable management of forest ensures that ecosystems' functions and services are maintained at an optimum, including watershed protection, water regulation, soil fertility, erosion and flooding control and wildlife habitat protection. The ER Program is fully aligned with this strategy.

Soil conservation - The promotion of conservation agriculture and improved agricultural techniques in the ER Program area will contribute to enhance soil conservation and to increase land productivity. Its sustainable forest landscape management approach should create a sensible link between forest and agriculture that will eventually generate opportunities in rural areas, especially for forest and agriculture dependent communities, of whom many are women and vulnerable groups.

Protection of ecosystems - Conservation agriculture will partly be based on improved fire management, reducing wildfires in biologically critical ecosystems while avoiding the

emissions of GHG (UT REDD+, 2016). As stated in section 4.1, Mozambique is highly affected by wildfires, which have negative implications for communities and Miombo forest ecosystems. By implementing fire management activities, The ER Program is expected to protect communities from fires and to reduce the loss of valuable forest and wildlife resources that provide income-generating activities, while helping endemic species to regenerate.

Maintenance of high-value biodiversity - As previously explained, Zambézia Province is home to one of the most well preserved patch of Miombo forests in the country: the GNR. Through improving the management of forests, the ER Program will help to conserve and maintain the local environment and associated ecosystems in and around the GNR. It will also make ecosystems be less vulnerable to adverse impacts of human pressure and climate change (UT REDD+, 2015a).

Rehabilitation of degraded lands through reforestation - Land degradation is an increasingly severe problem in Zambézia, threatening wildlife habitat, grazing lands and community livelihoods. As explained in section 4.3, the project includes forest plantations and the promotion of agroforestry systems. They will contribute to addressing this issue.

16.2 Approach for providing information on priority non-carbon benefits

Information on generation and enhancement of non-carbon benefits

According to criterion 35 of the FCPF MF (FCPF, 2016a), information on the generation and/or enhancement of priority Non-Carbon Benefits should be provided during ER Program implementation. At this stage, although there is no specific communication strategy for non-carbon benefits, benefits as a whole (carbon and non carbon) of the ER Program are largely presented to the stakeholders and, especially, to local population during public consultations related to the implementation of the ER Program.

Preferred methods for collecting and providing information

The monitoring of the generation and enhancement of non-carbon benefits should be based on an approach utilizing methods available at the time to collect and provide information on priority Non-Carbon Benefits. In this approach, the FCPF recognizes that community participation, proxy indicators and information drawn from or contributing to the SIS are relevant (FCPF, 2016a). According to the National REDD+ Strategy of Mozambique, the standards, procedures and guidelines for monitoring and measuring REDD+ results should be prepared considering the strategic objective that aims to ensure the active participation of local communities and include useful information for the definition of environmental indicators related to the reduction of deforestation and forest degradation and related emissions, economic and social indicators linked to integrated rural development, as well as the specific indicators of environmental and social safeguards, as set out in the Environmental and Social Management Framework (ESMF) of REDD+ (Gonzalo, 2016a). Much of these are considered as non-carbon benefits *per se*.

Although specific measures for non-carbon benefits monitoring are yet to be developed, the main instruments planned to be used for collecting information on non-carbon benefits are the:

- (i) Multi-stakeholders platforms – such as the Zambézia Multi-Stakeholders Landscape Forum – in which stakeholders can provide direct information;
- (ii) The Grievance and Feedback Redress Mechanism, which is also expected to be useful in analyzing the impacts of the ER Program on local population and the way its non-carbon benefits are perceived.
- (iii) The PMRV (see section 14) that, while being primarily used to collect local carbon stock data, is also useful to get environmental and social information and impacts of REDD+ implementation directly from local population;
- (iv) The SIS, which will also be used to provide relevant information on how safeguards are handled and respected to enhance non-carbon benefits. The proposed SIS indicators actually are good indicators of non-carbon benefits, as shown is **Table 76**. As explained in section 14, this process will involve various partners from base community organizations, government and civil society organizations, following an extensive participatory approach. In addition to public consultations, interviews, questionnaires and direct observation will be used. The indicators of the SIS are described below (Gonzalo, 2014a).

Table 76: Proposition of SIS indicators and link to non-carbon benefits

Item	Sub item	Description	Associated non-carbon benefit (non exhaustive list)
Environmental and ecological	Forest	Reforested Area (Increase of coverage percentage)	
		Reforested areas (New planting areas established)	- Long term access to forest resources
		Rehabilitated forest area	
		Information on existing management plans (updated)	- Increased transparency in the forest sector - Improved forestry business environment - Long-term engagement of multi stakeholders in forest management with strong role of Local Communities
		Burned areas	- Soil conservation - Long term access to forest resources
		Environmental Management Plan	- Increased transparency in the forest sector - Improved forestry business environment - Long-term engagement of multi stakeholders in forest management with strong role of Local Communities
		Fires	- Soil conservation

Socio-cultural & economics		- Long term access to forest resources
	Biodiversity	<p>Registration of fragile ecosystems</p> <p>List of endangered species (fauna and flora)</p> <p>Protected species (fauna and flora) survey</p> <p>Percentage of native area preserved in the concession (20% conservation law)</p> <p>Fauna census (2 in 2 years in the conservation area)</p> <p>- Preservation of ecosystem functions and biodiversity</p>
	Soils	Soil quality information - Soil conservation
		<p>Areas of sustainable agriculture (agroforestry and conservation systems)</p> <p>Registration of use of agrochemicals</p> <p>- Adaptation of agricultural practices to climate change to improve agricultural production</p> <p>- Soil conservation</p>
	Water resources	<p>Pollution registry of water lines (agrochemicals)</p> <p>Pollution registry of water lines (sediments)</p> <p>- Preservation of ecosystem functions and biodiversity</p>
	Cultural heritage	<p>Registry of existing cultural rituals</p> <p>Registry of sacred sites</p> <p>Number of complaints attended</p> <p><i>Not relevant</i></p>
	Land tenure	<p>Number of DUAT's holders</p> <p>Number of informal certificates issued</p> <p>Number of individuals with "occupation of good faith and customary practices"</p> <p>Number of disputes submitted and resolved (including complaint channels used)</p> <p>- Clarified land tenure</p>
	Land use change	Grassland areas acquired for forest plantations <i>Not relevant</i>
		Areas of Agriculture Purchased for Forest Plantations - Rehabilitation of degraded lands through reforestation
		Number of community members involved in forest plantations / Partnerships and / or employment - Long-term engagement of multi stakeholders in forest management with strong role of Local Communities
	Training	<p>Number of community members involved in REDD + / FIP / DGM capacity building (by sex)</p> <p>Number of supported associations and</p> <p>- Long-term engagement of multi stakeholders in forest management with strong role of Local Communities</p>

		forums	
		Number of operators involved in training	
		Number of charcoal workers involved in training	<ul style="list-style-type: none"> - Long-term engagement of multi stakeholders in forest management with strong role of Local Communities - Adaptation of charcoal production technique to ensure long-term access to forest resources and health benefits
	Other beneficiaries	Number of trained institutions and technicians	<ul style="list-style-type: none"> - Long-term engagement of multi stakeholders in forest management with strong role of Local Communities
		Number of villages and beneficiaries (disaggregate)	
		Number of community members with access / information on sustainable technologies for biomass energy use (dissemination programs)	<ul style="list-style-type: none"> - Adaptation of charcoal production technique to ensure long-term access to forest resources and health benefits
		Community projects: Number of Community projects / initiatives supported	<ul style="list-style-type: none"> - Long-term engagement of multi stakeholders in forest management with strong role of Local Communities
		Number of workers employed in forestry plantations	<ul style="list-style-type: none"> - Employment opportunities

Table 77: Non-carbon benefits and associated ER Program interventions

Potential non-carbon benefits...	...will be generated and/or enhanced by
Improvement of rural population's livelihood	ER Program interventions (non exhaustive list – see <i>section 4.3</i>)
<ul style="list-style-type: none"> ▪ Long term access to forest resources (maintaining of forest cover and associated natural resources); ▪ Long-term increase and diversification of income; ▪ Employment opportunities; ▪ Adaptation of charcoal production technique to ensure long-term access to forest resources and health benefits; ▪ Adaptation of agricultural practices to climate change to improve agricultural production; ▪ Clarified land tenure. 	<ul style="list-style-type: none"> ▪ Promotion of conservation agriculture and climate-smart agriculture; ▪ Support to agro-forestry systems, including with the development of cashew orchards in relevant areas; ▪ Support to sustainable cash crops (sesame, cashew, etc.) with the provision of technical assistance and inputs (seeds, equipment); ▪ Value chain development of non-timber forest products (NTFP) and of cash crops, including through agri-business finance (support to access credit, support to lowering the risk exposure of participating financial institutions, implementing a weather-based agricultural index insurance scheme, etc.) ▪ Support to the establishment of commercial agriculture in areas with no forest cover, especially to the cashew and sesame sector with: <ul style="list-style-type: none"> ○ Market study on the economic potential of various cash-crops; ○ Training of producers on quality issues for the products to meet quality (international) standards; ○ Implementation of a market information platform to support producers, with the diffusion of information on markets dynamics and prices through SMS; ▪ Reducing the impact of charcoal production on forest and health through the introduction of improved production techniques and more efficient kilns, the plantation of fast growing trees for energy purpose and the introduction of natural assisted regeneration techniques; ▪ Improving land use planning and registration with a process of community delimitation, issuance of individual DUATs, the development of Community Land Use Plans (CLUPs) and the strengthening of CGRNs that can be charged with basic land and natural resources management functions.

Strengthening of forest management and governance	ER Program interventions (non exhaustive list – see <i>section 4.3</i>)
<ul style="list-style-type: none"> ▪ Increased transparency in the forest sector; ▪ Long-term engagement of multi stakeholders in forest management with strong role of Local Communities; ▪ Reduction of illegal logging; ▪ Improved forestry business environment. 	<ul style="list-style-type: none"> ▪ Establishment of national and provincial Monitoring, Reporting and Verification (MRV) offices; ▪ Creation and maintaining of online forest management platform; ▪ Creation and maintaining of the Zambézia Multi-Stakeholders Landscape Forum; ▪ Introduction of community based forest monitoring with the strengthening of CGRNs in forest monitoring; ▪ Improvement of law enforcement and good governance and of the management regime of protected areas of native forests (RNG); ▪ Improvement of land use planning and registration – <i>see above</i>.
Environmental benefits	ER Program interventions (non exhaustive list – see <i>section 4.3</i>)
<ul style="list-style-type: none"> ▪ Preservation of ecosystem functions and biodiversity; ▪ Soil conservation; ▪ Rehabilitation of degraded lands through reforestation. 	<ul style="list-style-type: none"> ▪ Support to safeguards management and implementation; ▪ Training to fire management; ▪ Introduction of sustainable practices for agriculture and charcoal production; ▪ Improving the management regime of protected areas of native forests (RNG) - hotspot of biodiversity; ▪ Restoration of natural forests and planting of trees for various purposes.

17. TITLE TO EMISSION REDUCTIONS

A discussion should be engaged on the arrangements to be put in place for the transfer of Title to ERs to the FCPF.

17.1 Authorization of the ER Program

Name of entity	<i>To be completed</i>
Main contact person	<i>To be completed</i>
Title	<i>To be completed</i>
Address	<i>To be completed</i>
Telephone	<i>To be completed</i>
Email	<i>To be completed</i>
Website	<i>To be completed</i>
Reference to the decree, law or other type of decision that identified this entity as the national authority on REDD+ that can approve ER Programs	<i>To be completed</i>

17.2 Transfer of Title to ERs

This sub-section aims to assess the ability of the Government of Mozambique (GoM) – as “Program Entity” - to transfer title over ERs to the FCPF according to the terms of the ERPA. It is based on an independent preliminary report (Tanner, 2017b) that will be concluded (before the submission of the final draft of the ER-PD)⁶⁵. The process of securing ER payments has a broader development objective that includes poverty alleviation and rural development activities. What is at stake mainly is the question of the rights of local people over the carbon in non-deforested areas as a result of the ER Program - especially given the fact that, as stated in section 4.4, natural forest is constitutionally the property of the State. The link between the ability to transfer title to ER to the FCPF, land and resources tenure and benefit sharing is therefore crucial for the ER Program.

Assessment of ER Program’s entity’s ability to transfer Title to ERs to Carbon Fund

As stated in (Tanner, 2017a), the Readiness phase documents conclude that, to date, there is no appropriate legislation yet in Mozambique regarding State title over carbon and which entities or specific Government agency exercises this right in the name of the State. The

⁶⁵ The final report should be available in April 2017.

State cannot sell “undeveloped” natural resources without parliamentary approval - these are sovereign assets, as set in the Constitution of the Republic of Mozambique (CRM), Article 98, Clause 1. Such resources include the carbon stocks, although this is inferred from the CRM rather than being explicitly stated in separate legislation.

However, the State can sell the products of a process of “use and development” (Article 102). Admittedly, ERs fall into this category as the result of projects and actions explicitly intended to reduced emissions and enhance carbon stocks. In all decisions over how resources are used, the State must take into account constitutional obligations regarding sustainability, promoting the well-being of citizens and the national interest.

Projects to use and develop resources can be undertaken by private firms, local communities, and by the State itself (Decree 70/2013). REDD+ projects are projects that “use and develop” natural resources. In the case of private developers – firms and local communities or associations - the ERs are the property of the “user and developer”; if the State is to sell these ERs, its right to do this as well as the terms are subject to a negotiated agreement and, in principle, the majority of any revenue goes to the “owner”.

In the third case, the State is developer and can market the ERs. The assumption implies that, being the “owner” of the resources as well as the developer of the project, the State can freely sell the titles over the ERs.

Decree 70/2013 (Article 8) indicates that the Landscape Management Unit (former UT REDD+) should develop regulations and guidelines, but this has not been done so far. However, the analysis reveals that, in fact, existing constitutional and sectoral legislation is adequate for determining who “owns” the ERs; how to reach negotiated agreements over the ownership and right to market the ERs; and over how the benefits are to be distributed.

Implication of land and resource regime and the issue of community public domain

The link between the Land Law concept of Local Community and much of this process is very important with regards to the ability to transfer titles to ER to the Carbon Fund.

First, the delimitation of local communities – see *section 4.4* - creates a hybrid entity that has a private dimension – as DUAT right holder – and a public dimension, with delimitation establishing a jurisdictional area where the local community and its structures have management power and functions delegated to it. The concept of “use and benefit” extends to the natural resources on the land as well. This is obvious in both the Land Law (Article 24) and the Forest and Wildlife Law (Law 10/99). It is also clear in the case of conservation areas, where the “right of use and benefit of carbon stocks” is explicitly referred to in Article 11, clause 3 of Law 16/2014 (Conservation Law). Participatory management by the local community is also made clear in this last law, in its Articles 7 and 22.

The role of the community as manager of a specific space is ensured through the inclusion of the very concept of “Local Community” – see *section 4.4* – in the Land Law (Article 24), in the Forest and Wildlife Law (Law 10/99) and in the context of the Conservation Law - by in its various articles and in its Glossary using the same definition that exists in the Land Law and the Forests and Wildlife Law. It is also clear in the concept of “community public domain” created in the CRM (Article 98) and the “delegated functions of the State” (Article 263) - which is also explicitly referred to in Article 22 of Law 16/2014. Participatory management by the local community is also clear in Articles 7 and 22.

Thus, while the concept that land and natural resources are State property would appear to mean that the State – through a nominated intermediary in government – can sell the title over ERs to the World Bank, the reality is far more complex. In cases where projects are carried out by the private sector – here, including community-based projects - the outcome of the “use and development” - that is, the Ers - belong to the developer. This is also the case in conservation areas that are managed by a private entity (Artigo 11, clause 3 of Law 16/2014). Any role the State has in selling title to ERs is by negotiation with the developer.

Even when the developer is the State itself, the existence of legally defined use rights over the resources in question must be taken into account - this appears to be the reasoning behind the current 20% payment of public revenues from commercial activities to local communities, under Law 10/99 and Ministerial Diploma 93/2005 – see *section 15*. However, the concept of community public domain means that, in fact, the resources in question are part of the patrimony of the community; any sale of the resulting ERs must also have the agreement of this body. In the case of conservation areas, it is important to understand if the area of *jurisdiction* of the local communities, neighboring or already living inside these areas, extend into the reserves, parks, etc.

In this context, the act of Local Community Delimitation – included in the ER Program intervention (see *section 4.3*) - takes an extreme importance for both determining the territorial category involved and identifying the bodies/structure with which the State - represented by central government - has to negotiate.

Legislative implications and tentative risk rating of the GoM’s ability to transfer Title to ERs to the Carbon Fund

According to (Tanner, 2017b), assessing the ability of the State to transfer titles to ERs is not only about assessing its ownership over those titles but also its institutional capacity, namely assessing which body should and could be engage in such a process. While the existing legal framework for land and natural resources provides all the elements to make an ER project work on the ground, with the collaboration of the local population - as stakeholders as well as beneficiaries - the two areas that require significant attention are not in fact directly related to carbon and ERs, but to more substantial structural and governance related questions. They encompass:

- Determining the nature and role of the Local Community in the context of “community public domain”;
- Determining the role of the Local Community structures (customary) and other new structures (CGRNs, etc.) in this context - i.e. the whole question of Local Community representation and the delegation of functions to community level under the CRM.

In this context, it is possible to summarize the situation as follows:

- Existing legislation is adequate for determining rights over carbon, and over ERs, provided that these are treated as natural resources and as a product of “use and development” respectively;
- Existing legislation is also adequate for deciding which entity – private and/or public - is “owner” of the ERs that are generated by a specific REDD+ project, depending upon whether it is a privately-implemented project in the context of Decree 70/2013, or whether it is a publicly-promoted project like that envisaged in the ERPD.

However:

- New legislation is needed to clarify the hybrid nature of the Local Community as both a private land occupying unit - with a collective DUAT - and as an entity with public functions, managing land and natural resources within its (delimited) area of jurisdiction;
- New legislation is needed to clarify the question of community representation, not in the specific technical context of natural resources management (the CGRNs), but in more general governance context where agreements and contracts are negotiated and signed with other actors, both private (investors etc.) and public (sectors and departments of the Government as the executive arm of the State).

While it is clear that the State is “owner” of all natural resources, this ownership does not reside with the Government or any branch of it. Therefore, the Council of Ministers must decide which sector is definitively going to represent the State in the context of negotiations dealing with the transfer of title over ERs to an external third party such as the World Bank; and new legislation is needed to clearly regulate this transfer of ER titles and determine how it is to be done in practice.

In all of this, any new legislation and accompanying Guidelines must make it clear that before any negotiations over ERs can take place with external agents like the World Bank, all necessary agreements with other parties to the use and development of natural resources, including the generation of ERs, are negotiated and validated in law. This will require the *prior delimitation of the Local Communities in the Accounting Area*, not just as land tenure entities, but as jurisdictional entities with a key role to play in the process of selling ERs titles and also in determining the subsequent flow of benefits.

There is in fact a growing debate about the hybrid nature of the Local Community and the role of this legally created entity as a unit of public administration and a DUAT title-holder. In the specific context of Mozambican land law, this is however not such a problem as might first appear. The DUAT is what it says it is: a right to use and benefit from land, it *not* an ownership right. In both the CRM and the Land Law, a management power, a “delegated function of the State”, is already incorporated into the notion of the acquired right.

The community public domain concept underlines this still further; it also underlines how the act of delimitation has a distinct public as well as private acquired rights-protecting purpose. At the collective level of the local community, the large areas that result from most delimitations are occupied and used exclusively by the respective local community, but they are also *managed* by that community as well; and this management includes nature conservation as well as a key role in the titling of new DUATs *inside the area – jurisdiction –* of the local community. As areas of community public domain, State rights over natural resources, including ERs, are delegated to this unit, and new legislation is required to regulate how this happens in practice.

As the GoM moves towards revisions of the land and other natural resources laws - a new Forest Law is in draft form; there are plans to revise the Land Law in 2017 - there will be good opportunities to explore all the questions above and begin to develop legislation where it is needed. The hybrid nature of the Local Community, how it is represented, and what this implies for the transacting and transferring of ERs, should be key items on the agenda.

18. DATA MANAGEMENT AND REGISTRY SYSTEMS

18.1 Participation under other GHG initiatives

Registration of part of the ER Program under other level standards (VCS)

As stated in section 3, the ER Program accounting area includes the Gilé National Reserve (GNR) – see section 3 for the map of the accounting area. Since 2014, the GNR and its surroundings are part of a REDD+ pilot project financed by the French Global Environment Facility (*Fond Français pour l'Environnement Mondial* - FFEM) to mitigate deforestation and forest degradation in the GNR. Its goal is to implement, with local communities, agro-ecological techniques that foster both food security and forest conservation. Along with improved surveillance and management of the GNR, those activities are contributing to lower deforestation rate in the buffer zone of the GNR, promoting both economic development and forest conservation.

More importantly, in order to secure the long-term, sustainable funding of those activities and to continue the rehabilitation efforts that have been made in the GNR, this project is planning to register to the VCS standards to sale credits on the voluntary carbon market. This is expected to occur in 2017 – the validation of the Project Design Document (PDD) is currently being finalized and should be validated in the next few weeks.

The GNR project is fully complementary to the ER Program, which was partly designed as an upscale of this pilot project.

The potential sales of carbon credits generated by the ERs of the GNR project are planned to cover a period going from 2011 to 2018 – that is, before the expected application of the ERPA of the present ER Program.

From 2018 onwards, the ERs generated in the GNR and its surrounding will fully be accounted for in the ER Program area. Neither double counting nor multiple claims to ERs titles linked to the GNR project are therefore expected to arise.

Transfer of ER to other GHG mitigation initiatives outside of the ER Program area

Cabo-Delgado Integrated Landscape Management Program. It should be noted that the GoM is currently designing another REDD+ Program in Cabo Delgado province: the Cabo-Delgado Integrated Landscape Management Program (*Programa de Gestão Integrada da Paisagem de Cabo Delgado* – [PROGIP-CG](#)). Covering 7 districts of the province⁶⁶, it follows the same integrated approach as the ZILMP ER Program, combining a wide range of activities for rural development and reduction of deforestation and environmental degradation. While it is not expected to have any impact on the ER Program in Zambézia, the PROGIP-CG could benefit from the lessons-learns and expertise generated in the scope of the ZILMP ER Program design and implementation.

⁶⁶ Ancuabe, Macomia, Metuge, Quissanga, Meluco, Montepuez and Ibo.

The FAO “Payment for Ecosystem Services to Support Forest Conservation and Sustainable Livelihoods” project. As detailed in section 4.1, a project of payments for ecosystem services is currently being developed by the FAO in Zambézia province. Although this project is not integrated in the ER Program, it is expected to complement it by developing new income generating activities using resources from the “20% mechanism” and other public funds to mitigate the impact of changing forest use behavior away its present destructive course (Tanner, 2017a). It is an interesting initiative in terms of the benefit sharing mechanisms as it moves away from the usual “20% mechanism” for benefit sharing to Local communities to a system in which payments will become conditional on environmental performance of communities (Tanner, 2017a).

18.2 Data management and Registry systems to avoid multiple claims to ERs

According to criterion 37 of the FCPF MF (FCPF, 2016a), it is necessary for the GoM to decide whether to maintain its own comprehensive national REDD+ Program and Projects Data Management System or to use a centralized REDD+ Programs and Projects Data Management System managed by a third party on its behalf. In any case, this system should be made available to the public via the Internet, in Portuguese (national official language in Mozambique).

Criterion 38 (FCPF, 2016a) also stipulates that the GoM should « ensure that any ERs from REDD+ activities under the ER Program are not generated more than once; and that any ERs from REDD+ activities under the ER Program sold and transferred to the Carbon Fund are not used again by any entity for sale, public relations, compliance or any other purpose ».

For now, the GoM has not yet designed a proper National ER transactions registry. Various initiatives are being developed with this regards and will be taken into account for the adoption of the national REDD+ Program and Projects Data Management System, including the National Forest Monitoring System (NFMS) that is currently being designed by the MRV team.

The question of the ERs generated by the GNR project

During Readiness phase, ZILMP Background Study (Mercier et al., 2016) identified the necessity to anticipate: (i) how the GRN project will be included in the ER Program; (ii) how to ensure the compatibility of methodologies and (iii) how benefits could be shared. According to (Mercier et al., 2016), several components of the carbon accounting system have to be taken into consideration in a nested approach, mainly compatibility of REL and of MRV systems. These components are summarized in **Figure 35**.

(Mercier et al., 2016) also detailed several options for nested approach and methodological framework showing that, depending on the level of development of national monitoring systems, on the level of centralization of forest policy enforcement and on the existence of projects or subnational programs, the nested approach can be more or less driven by national methods or, conversely, by projects’ ones, as proposed by Gibbon (Gibbon et al. 2014) – see **Figure 36**.

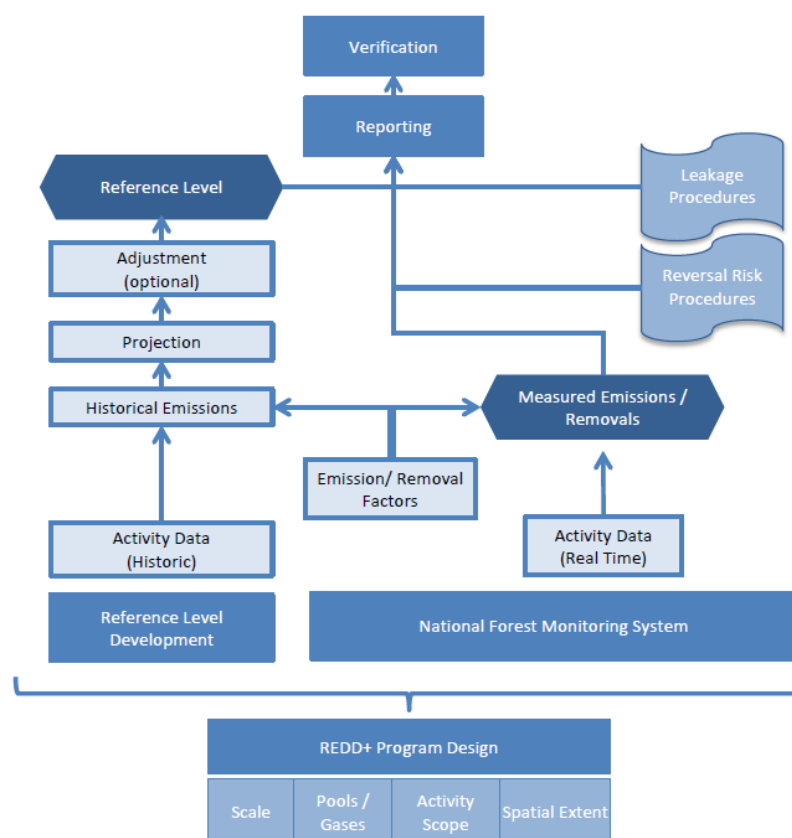


Figure 35: Components of the national or subnational carbon accounting system that would be included in a nested approach (From Broadhead et al., 2014)

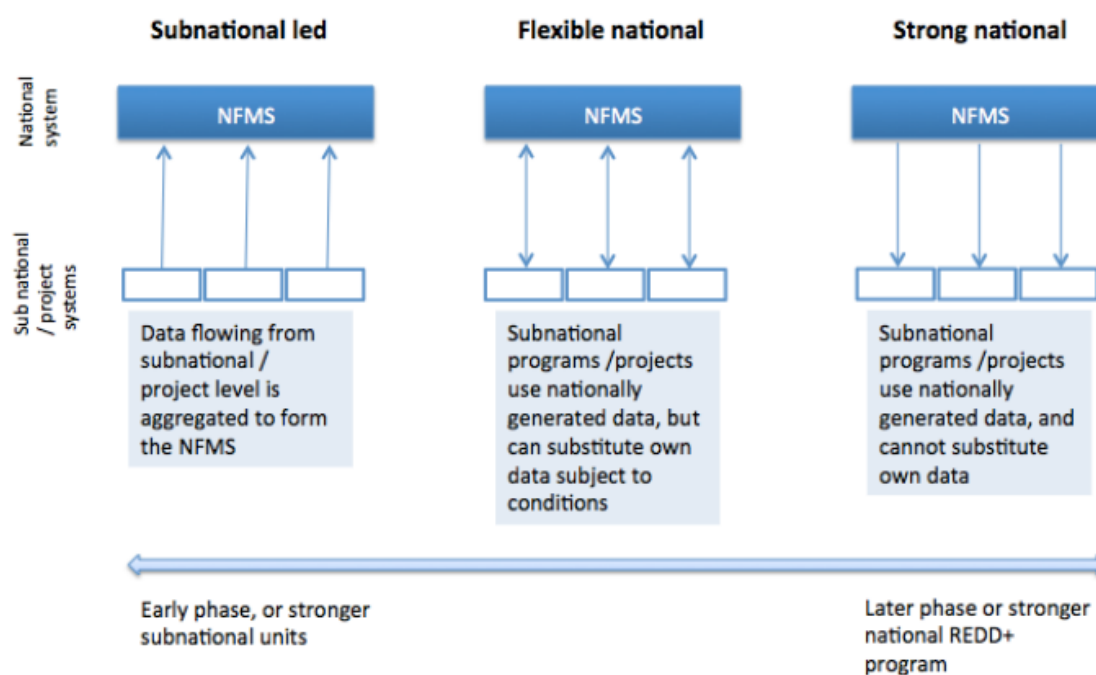


Figure 36: Several nested approaches to integrate national forest monitoring system (From Gibbon et al. 2014)

As stated by (Mercier et al., 2016), the most challenging part may be the compatibility of RELs. According to (Gibbon et al., 2014), if the program REL is spatially explicit, projects can “cut-out” their REL from the more global program’s projections and the same can be done for MRV. In addition, as suggested by the Jurisdictional and Nested REDD+ requirements of the VCS standards (VCS 2012), the program can choose several options for the crediting of nested projects: (i) it can decide that crediting can only occur with the jurisdiction or (ii) that two crediting schemes can coexist - jurisdiction with its buyers and projects with other buyers of the voluntary market. The second case requires that project also validate a PDD in order to be recognized by the program – which is planned for the GNR project. In any case, it is important for projects and programs to consider the same carbon pools and activities (deforestation, degradation, etc.).

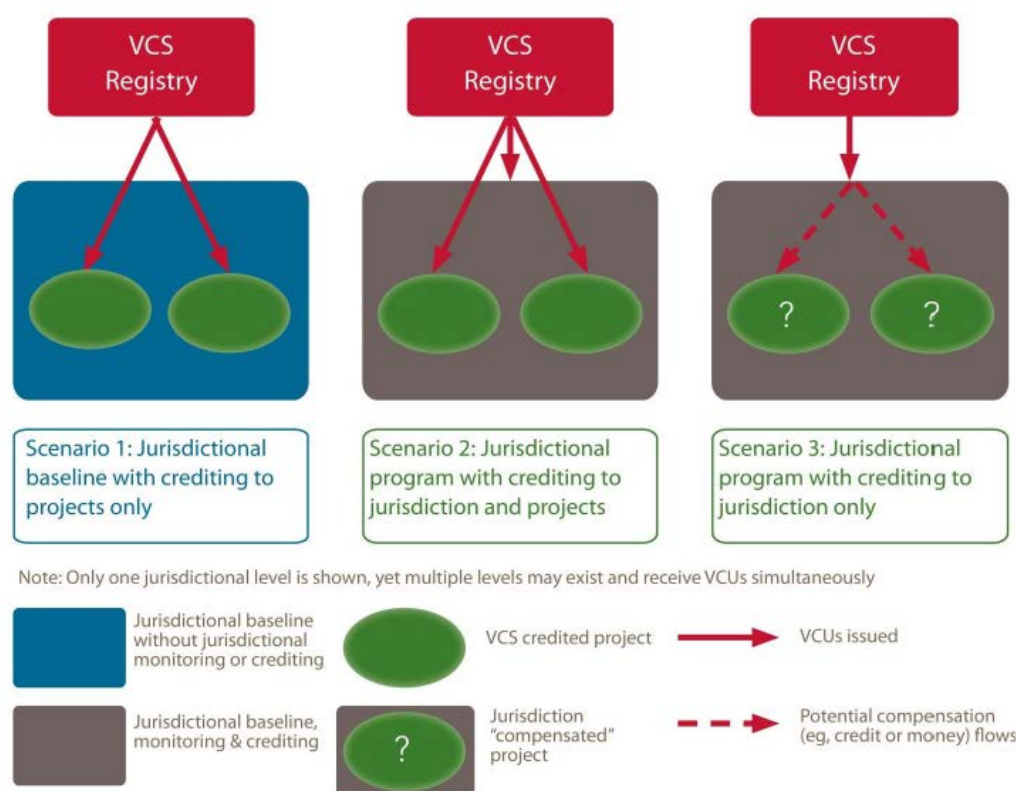


Figure 37: Several crediting scenario proposed by VCS standard (From VCS 2012)

With regard to this ER Program, as stated earlier, **the different timings between the GNR project and the ER Program reduce any risk of double counting and conflicts.** However, should a specific solution be chosen, (Mercier et al., 2016) recommended to choose the second option: the validation of the GNR project under VCS standards will enable to valorize early efforts and to avoid dependency on the ER Program success to ensure sustainable funding of the GNR through the sale of carbon credits. A harmonization of the REL may be necessary.

As the Gilé REDD+ project will register to VCS before the application of the ERPA associated to the ER Program, it would be interesting to measure performance with a spatially explicit analysis of deforestation, through remote sensing techniques - the size of the program is coherent with wall-to-wall regular analysis. This would foster the adaptation or elaboration of REL for potential other projects and guarantee transparency and objectivity of performance evaluation. In addition, since the ER Program chooses to use a spatially explicit approach for the REL, it will be possible for other projects to extract their REL from the program's one (Mercier et al., 2016).

Progress on the final formalized arrangements to be adopted in order to avoid having multiple claims to ER titles in the future and on the definition of a Project Data Management System should be made quickly and will be reported for in the next versions of the ER-PD.

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ANNEXES

Annex 1: Prioritization of interventions according to the National REDD+ Strategy – Action Plan

Actions	Priority 1	Priority 2	Priority 3
SO1			
Design and implementation of relevant systems and tools for planning, implementing and monitoring REDD+			
Reinforcement of the land use planning system with focus on the identification of forests to be conserved and areas to be restored			
Train partners and extension agents (capacity building)			
Assess the need to adjust the national legislation to reinforce actions to reduce deforestation and forest degradation			
Research on REDD+ implementation techniques, technologies and policies and their impact on society			
Evaluate the implementation of fiscal and non-fiscal incentives to promote the reduction of emissions from deforestation and forest degradation and the increase of carbon stocks through forests			
Establish an M & MRV and SIS system			
SO2			
Improvement of the productivity and of the conservation of soils through the reduction of itinerant agriculture			
Transfer of technology and organization of agricultural producers			
Valorization of post-harvesting operations: marketing, processing and storage of agricultural products			
Promotion and support of partnerships between large, medium and small producers			
Planting of multiple use trees in agricultural areas and promotion of agroforestry systems			
Restoration and rehabilitation of degraded areas			
SO3			
Sustainable use of biomass energy in urban areas			
Improving access to alternative energy sources to biomass in urban and peri-urban areas			

National production of improved stoves

Sustainable biomass energy production (biomass production and coal processing)

Formalization of the coal business in large cities

SO4

Review and re-qualification of conservation areas

Establishment of sustainable business in conservation areas

Attracting funding and other sources of income to conservation areas that are compatible with biodiversity conservation

SO5

Review and strengthening of forest governance and monitoring system

Forest statistical information system for the registration, control and public disclosure of forest operations

Forest inventories and forest management plans for productive timber areas

Establishment of standards for wood products and improvement of the efficiency and integral use of wood; Diversification of products and services within areas of forest concessions

Classification of wood in the customs tariff

Training of forestry operators (in matters of forest operations, use of the management plan and use of wood)

Model Forest Concessions

SO6

Facilitate and simplify procedures for access, security and land tenure for the establishment of industrial, community and family forest plantations, as well as for the restoration of degraded forest areas

Network for testing species and provenances of multiple use trees in the main agro-ecological zones

AUM species germplasm bank (seeds and clones)

Restoration of degraded forests using ROAM techniques

Industrial forest plantations

Small and medium-scale forest plantations (communities and families)

Markets for forest products and services