REPÚBLIC OF MOZAMBIQUE

MINISTERY OF LAND, ENVIRONMENT AND RURAL DEVELOPMENT (MITADER)

STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA)

Final Report

Maputo, October 2017

LIST OF ACRONYMS

AFS	Agri-Forest System
ANAC	National Administration Conservation Areas
ANRLMP	Agriculture and Natural Resources Landscape Management Project
CA	Conservation Area
CBNRM	Community-Based Natural Resource Management
CBO	Community-Based Organization
CESMP	Contractor's Environmental and Social Management Plan
CSO	Civil Society Organization
CTR	Technical Reviosion Committee/Comité Técnico de Revisão
DA	District Administration
DCC	District Consultative Council
DGM	Dedicated Grant Mechanism
DINAB	National Directorate of Environment
DINAF	National Directorate of Forestry
DLA	Department of Environmental Licensing
DNA	National Directorate of Environment
DNA	National Directorate for Water
DNE	National Directorate for Energy
DNOTR	National Directorate of Land Planning and Resettlement
DPASA	Provincial Directorate of Agriculture and Food Security
DPOPHRH	Provincial Directorate of Public Works, Housing and Water Resources
EA	Environmental Assessment
EDM	Electricidade de Moçambique/Electricity Company
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FIP	Forest Investment Program
GDP	Gross Domestic Product
GOM	Government of Mozambique
IDA	International Development Association
IDCF	Innovation and Demonstration Catalytic Fund
MEF	Ministry of Economics and Finance
M&MRV	Measurement, Monitoring, Reporting and Verification
MDP	Municipal Development Project
MICOA	Ministry for the Coordination of Environmental Affairs
MASA	Ministry of Agriculture and Food Security
MIREME	Ministry of Mineral Resources and Energy
MISAU	Ministry of Health
MITADER	Ministry of Land, Environment and Rural Development
MOPHRH	Ministry of Public Works, Housing and Water Resources
MozDGM	Mozambique Dedicated Grant Mechanism
MozFIP	Mozambique Forest Investment Program
MSME	Micro Small and Medium Enterprises
MZM	Mozambique Metical (national currency)

NCSD	National Commission for Sustainable Development
NEMP	National Environmental Management Program
NGO	Non-Governmental Organization
PARPA	Action Plan for the Reduction of Absolute Poverty
PEDSA	Strategic Plan for Agricultural Development
PCU	Project Coordination Unit
PDD	District Development Plans (Plano Distrital de Desenvolvimento)
PDPF	Provincial Directorate of Planning and Finance
PDUT	District Land Use Plan
PEPA	Environmental Quality Standards of Mozambique Projects
PF	Process Framework
PLPP	Provincial level project personnel (with monitoring responsibilities)
PNI	National Irrigation Program
PNISA	National Agriculture Investment Plan
PP	Urban Detailed Plan/Plano de Pormenor
PPP	Public Private Partnership
PPU	Provincial Project Unit
PPU	Partial Urban Plan/Plano Parcial de Urbanização
PROIRRI	Sustainable Irrigation Development Project
PRS	Poverty Reduction Strategy
RAP	Resettlement Action Plan
REDD	Reduced Emissions from Deforestation and Forest Degradation
RPF	Resettlement Policy Framework
SDAE	District Services of Economic Activities
SDMAS	District Services of Women, Social Affairs and Health
SDPI	District Services of Planning and Infrastructure
SESA	Strategic Environmental and Social Assessment
TOR	Terms of Reference
UCA	Coordination and Support Unit
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States of America Dollar
WB	World Bank
WHO	World Health Organization

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EXECUTIVE SUMMARY

The 2009-12 period marked a decisive stage in Mozambique's establishment of readiness to implement the National REDD+ agenda. From 2013, with support from the World Bank (WB) through a $3.6 million Forest Carbon Partnership Facility (FCPF), REDD+ Readiness grant (P129413) and additional $5 million, in 2016, the country entered into the final stage of such a readiness creation. The process includes the National REDD+ Strategy, wich consider the safeguards instruments to a Reference Emissions Level and a Monitoring, Reporting, and Verification system (MRV system) including Safeguard Information System (SIS) and Grivance Redress Machanism (GRM).

The readiness process went hand in hand with the preparation of three safeguard instruments, namely: (i) this document, i.e. the Social and Environmental Strategic Assessment (SESA); (ii) the Environmental and Social Management Framework (ESMF), which includes a Pest Management Plan (PMP); and (iii) a Process Framework (PF). **The SESA and the REDD+ National Strategy were prepared concomitantly and both will inform how upcoming REDD+ initiatives will be structured to ensure that they take into account the social and environmental risks and identify mitigation actions**.

The Environmental and Social Management Framework and the Process Framework for the implementation of REDD+ iniciatives were based on the findings gathered during the elaboration of the SESA and the National REDD+ Strategy. It is, however, expected that environmental and social assessments would be carried out in specific landscapes according to the needs and the identification of not observed impacts at local level.

The formulation of both the REDD+ Strategy and of the safeguard instruments involved extensive consultation and covered six provinces across the three mains regions of Mozambique, North, Center and South. In the south were covered Maputo and Gaza Provinces, the central zone, Zambezia and Sofala Provinces; and in the north, Cabo Delgado and Nampula Provinces. These provinces were selected in their capacity as deforestation drivers, which are representative of the issues that characterize this phenomenon in Mozambique

From March 2013 to November 2016, the process included 61 (sixty one) public consultation meetings of wich 10 (ten) were community consultation. In total, 3370 participantes were envolved, of wich 978 were female. As part of the consultation process men, women and the youth were also consulted separetely in focus groups discussions to get a better understanding of their different perspectives in regard to deforestation. (See the summary public consultation report: http://bit.ly/2g1bjoj).

The consultation process included: (i)Four technical consultation seminars on main areas of intervention for the strategy (a) analysis of strategic objectives and approach, (b) analysis of the causes of deforestation and forest degradation, (c) identification of strategic options for the reduction of deforestation and forest degradation, and (d) analysis of environmental and social safeguards; (ii) a national consultation session (Maputo); and (iii) harmonization with Ministry of Land, Environment and Rural Development (MITADER) and other ministries/sectors decision making bodies.

The Technical Revision Committee (CTR) or the National REDD+ Steering Committee, played an important role in the process in replacement of the SESA Task Force that was non-existent at this stage. This committee includes 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.

The SESA preparation process involved the coordination between National Directorate of Environment (DINAB) and National Directorate of Forestry (DINAF), which also actively participated in public consultations at the central, provincial and community levels, through the representation of the Department of Community Management from DINAF and, Department of Licensing and Climate Change Department from DINAB.

SESA Objectives

The objective of the SESA for the REDD+ National Strategy is to integrate key environmental and social considerations in the design and actual establishment of forest development initiatives, considering a long-term perspective in which integrated rural development and improved wealth and well-being of rural communities and the country in general are based on the sustainable use of natural resources, particularly land and forests. It identifies priority environmental and social considerations to guide design, implementation and operation of forest development and investment programs by establishing the legal, institutional and governance framework within which such programs should take place.

Development Context

The formulation of the REDD+ National Strategy happens when Mozambique shows signs of a significant level of deterioration of the main economic and financial indicators such as inflation, exchange and interest rates. These are informed by unfavorable domestic and external circumstances particularly (i) a reduced level of demand and prices for commodities that the country is and was becoming a potential exporter (e.g. coal, gas and other high value mineral resources), (ii) continued low domestic production, as well as (iii) reduced level of foreign assistance. As part of the deceleration in 2015, the economic growth went down to 6.5% and in 2016 it did not go beyond 4.5% (IMF, 2016). This is in dire contrast with the past decade and half during which the country's economy witnessed accelerated growth rates on an annual average of 7% in real terms. This was supported by high levels of assistance from Development Partners, efforts in the field of macroeconomic policy management and strengthening the enabling environment for promotion of domestic and foreign private investment including (i) foreign direct investment in mega projects and operating large-scale high-value agricultural products such as cotton, sugar and tobacco, (ii) the favorable agricultural growth at the family sector level, and (iii) infrastructure rehabilitation projects, including roads.

Despite that remarkable past growth, the country continues to be among the poorest in the world. It is placed in the 180th position among 188 countries in terms of human development index. Many institutional and other constraints continue to hamper the delivery of basic social services and poverty alleviation remains as the main challenge. Close to 70% of the population rely on subsistence agriculture and live in rural areas.

Forest and Natural Resources Including Deforestation and Forest Degradation

Mozambique is one of the most endowed countries in Africa and the world in terms of natural resources. 49% of the country's total wealth is natural capital, as opposed to the average of 24% in the other sub-Saharan African countries. If used sensibly these resources, which include land, water, mining, forests, fisheries, etc. can serve as a strong basis for inclusive economic growth and development as well as poverty alleviation, with strong repercussions in rural areas where resources are concentrated and the majority of the people live.

From the forest point of view the country has four phyto-geographical areas with Miombo, Mopane, undifferentiated woodland and vast coastal mosaic. The most important biodiversity areas include the Gorongoza Mountains, Great Isenberg Archipelago of Quirimbas and the Chimanimani Massif. There are three biodiversity hotspots- Coastal Forests of Eastern Africa, the Maputaland-Pondoland-Albany and the Eastern Afromontane. Additionally, there is the Zambezian Coastal Flooded Savannah, which is an eco-region unique to Mozambique.

70% of Mozambique territory (54.8 million of hectares) is covered by forest and other woody formations. The forest area covers about 40.1 million of hectares (close to 51% of national territory), while other woody formations (scrubs, thickets and forests with shifting cultivation) cover approximately 14.7 million of hectares, which correspond to 19% of territory.

The existence of several types of soils, climate and hydrology along the country contributes for the development of several types of vegetation, including four main types: coastal mosaic, dense afro mountain vegetation, undifferentiated woodland and miombo vegetation. At the local scale there are other vegetation types such as coastal dune and littoral vegetation such as Mangroves and Acacia vegetation in the lowland. Along most of the river beds there are also discontinuous stands of reed vegetation throughout most of their length.

A combination of factors means that these forest resources have been subject to significant degradation.

The main drivers of deforestation and forest degradation in the country include: (i) commercial agriculture (S1), which is associated with the clearing of extensive areas of forest cover to open space for large farming without the necessary compensatory actions; (ii) small-scale or family itinerant farming (S2), which is the most significant cause of deforestation and forest degradation associated with the fact that with poor farming technologies and particularly inability to use advanced technologies to maintain land fertility the country traditional farmers resort to the incessant opening of new cultivation areas to meet their interests. They also do not engage in any forms of compensatory actions for the devastation of forest cover; (iii) exploitation of forest products (S3) the country is being subject to different forms of exploitation of forest products to meet domestic and above all international demand. In addition to these forms not engaging in adequate management including systematic restoration of the lost forest they are mostly illegal in nature, what makes it difficult to regulate and control; (iv) firewood and charcoal (S4), due to economic and technological conditions a significant proportion of Mozambique's population and particularly the country's urban centers rely on firewood and coal for energy; (v) urban expansion and other infrastructures (S5), urbanization in Mozambique has been growing rapidly and massively in the last 2-3 decades. The phenomenon is associated with vegetation clearance to open space for housing and other urban infrastructure. In most cases this is done without proper consideration for sound land use planning requirements, which see areas improper for development being used. In addition to deforestation and forest degradation this is also associated with land degradation including other environmental risks such as floods; (vi) mining (S6), large scale mining but also artisanal

mining are associated with extensive clearance of vegetation to open space for their operation. In this case compensatory actions have also been ignored; and (vii) Livestock (S7). After many years of civil war that ended in 1992 there was extensive elimination of livestock, from both commercial and family sector farmers. In the last two decades there have been concerted efforts to restore the losses and among other aspects this is also done by clearing large extensions of trees to open space for grazing land without the necessary compensatory actions.

Underlying causes 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; and (iii) demand for food and wood products in the domestic and international markets and inadequate employment and income opportunities in the rural areas; (iv) and population increase.

National REDD+ Strategy

The National REDD+ Strategy in Mozambique is aimed at reversing these negative trends and promoting the sustainable use of forests by all stakeholders.

In line with the identified drivers of deforestation and forest degradation **Mozambique's REDD+ Strategy** comprises six strategic pilars and an equal number of main sets of activities: **1: Cross-cutting actions:** to establish an institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation; **2: Agriculture:** to promote alternative sustainable practices to shifting cultivation, ensure increased productivity of food and cash crops; **3: Energy:** to increase access to alternative sources of biomass in urban areas and increase the efficiency of production and use of biomass energy; **4: Conservation Areas:** to strengthen the system of protected areas and find safe ways of generating income; **5: Sustainable Forest Management:** to promote the system of forest concessions, community management and strengthening forest governance; and **6: Restoration of degraded forests and planting trees:** to establish a favorable environment for forest businesses, restoration of natural forests and planting of trees for various purposes, production and use of biomass energy.

The Strategy will prioritize two main components: (1) avoid deforestation, which includes (i) the reduction of deforestation and forest degradation through the intensification of agriculture and increasing the efficiency in the production and use of biomass energy; and (ii) improving the conservation of forest ecosystems, by increasing the efficiency of the management of the system of conservation areas; and (2) Enhancement of carbon sequestration capacity through reforestation and restoration of reduction of carbon emissions from trees and shrubs.

The National REDD+ Strategy (2016-2030) aims to reduce deforestation and forest degradation, improved conservation of forest ecosystems and increased reserves of forest carbon, thus avoiding the emission of 170 MtCO2/year until 2030.

As envisaged by the United Nations Framework Convention on Climate Change (UNFCCC) Monitoring, Measurement, Reporting and Verification (M & MRV) procedures of REDD + activities and results, will be crucial and carried out in a transparent manner and will have the following pre-condtions: (i) develop an updated National Land Use Map and conduct the analysis of change in forest cover; (ii) design and carry out the National Carbon Inventory of forest areas; (iii) develop specific national tools and parameters on Carbon M&M; (iv) test and validate the REDD+ M&MRV system, including aspects of PMRV in the Conditions of

Mozambique; (v) design and implement a capacity adequacy and development plan Specific to REDD+ M&MRV; (vi) establish institutional arrangements to ensure effective implementation and Adaptation of REDD+ activities and its M&MRV system; (vii) create a functional platform for the management, production, storage and sharing of Data and information on the REDD+ mechanism and its M&MRV system. The entire process is expected to be supported by stable financial incentives in materialization of the commitments made under the UNFCC and particularly those from Paris, during the COP 21, in 2015.

Potential negative impacts, risks and mitigation measures

REDD+ materialization will depend, among other aspects, on the continued support by industrialized countries or private entities to finance the protection of forests in developing countries including Mozambique through the purchase of REDD+ credits or payments for environmental services. Failure to do so constitutes a potential risk outside the country's control.

The involvement of multiple institutions and the need to update laws, regulations and practices to materialize the Strategy also mean that managing the process will be a serious challenge not exempt from risks.

If not managed adequately and systematically, REDD+ initiatives could have a negative environmental and social impacts on important areas such as: (i) poor delimitation of land and forest resources and aggravation of conflicts and problems in these areas; (ii) habitats and biodiversity alteration and loss; (iii) other impacts on natural resources (e.g. poor species selection and poor quality plants; poor management of plantings with a high failure rate; inadequate training of plantation workers; inadequate fire protection measures; inadequate management and supervision); (iv) impacts on water resources (reduced soil moisture in the immediate vicinity, which could have harmful implications on local farming and livestock production activities; progressively incremental uptake of ground water via the tap-root; increased local temperatures due to decomposing grassland plants); (v) Soil (decomposing leaf litter may reduce soil pH; an acidic environment increases nutrient solubility but increases potential for leaching; destruction of soil organisms that cannot tolerate abnormal acidity; detritus dries/oxidizes or decays/decomposes releasing CO_2 and methane; altered soil pH creates conditions where alien invasive plants may thrive – often spreading out of plantations).

Potential adverse socio-economic impacts include (i) alienation of local communities and people; (ii) mobility and accessibility; resettlement that could be directly associated with different categories of interventions, namely land requalification and demarcation; installation of forest plantations; certain commercial harvesting forest operations; construction of small rural infrastructures; (iii) increase in HIV/AIDS and STDs Cases and Communicable Diseases; (iv) conflicts around business opportunities and/or work/jobs between local people and external work force (national, regional and international); (v) conflicts around land tenure and use of land between local people and private sector.

Potential positive impacts

Agri and forests businesses and improvement of local business environment will lead to adding value for local forests and agricultural products.

In line with the six strategic options that inform the National REDD+ Strategy, the following positive impacts can be expected, and further expanded:

- Updated inventories of land and forests resources, which can then be used for multiple purposes by different stakeholders, including consistent monitoring and evaluation
- Possible expansion of natural forest as part of the land and resource demarcation and delimitation that will be conducted
- Improve and deepen collaboration between the government, private sector, civil society organizations and communities to reverse the current negative trends in the forest sector and other related sectors (e.g. agriculture)
- Update and review of forests legislation to address the issues that have been arising in more recent times and recognized as impediments to the realization of the sector potential
- Promotion of forest plantations to meet the various needs including the sustainable supply of biomass for energy
- Offer yet another opportunity for the involvement of civil society organizations in supporting communities in the delimitation of community lands in order to strengthen them. This will expand the areas of collaboration and lessons learnt between local communities and CSOs
- Increasing the sense of ownership by communities of natural resources, which will be reflected in the partnerships between them and the private sector, including the government.
- Encourage and promote the establishment of associations as well as forest resource management committees in as many places as possible for the exploitation of firewood and charcoal with reforestation responsibility
- Introduction of a more efficient charcoal production technology and reforestation of cut forest plots for charcoal production and sustainable management of replanted forest areas. Organize charcoal producers in associations and engage them in local sustainable social forest activities
- Better monitoring of forest operators by the government, with community involvement, to ensure that forest legislation is adhered to in practical terms. This will result in benefits for all and not only for the deviant elements of the society
- Increased awareness among community members and groups about the existing forest resources and their importance, which will translate into their active involvement to protect them
- Introduction of alternative activities to generate income for charcoal and firewood producers. Promotion of activities such as bee-keeping, including beekeeping in cashew nut plantations and in other commercial and natural forest areas, aquaculture and other activities less harming to natural resources;
- Introduction of improved/energy efficient techniques for charcoal production and use (good practices);
- Better water management through small scale irrigation systems with positive implications on the increase of crops and time availability by men and women throughout the year to engage in plant and animal production;
- Positive impacts of processing, storage and packaging facilities;
- Strengthening of Provincial and District governments' capacities to promote landscape management and value chains development, which can also be expected to generate positive "sustainability spin-off" effects at the local level;

- Significant positive impacts on natural habitats, as it will promote integrated sustainable natural resource management; restoration of degraded areas and promoting ecological corridors through improving forest connectivity.

This document (the SESA for the REDD+ National Strategy) makes an identification of all these impacts and recommends the best ways of dealing with them in the design and establishment of the Strategy's initiatives.

In summary, the REDD+ programme provides guidelines to address possible social and environmental challenges that involve the forestry sector and consequently deforestation and forest degradation in Mozambique. The program has a national strategy which includes an action plan with short, medium and long term guidelines (link: http://bit.ly/2wTGSIk), an MRV system, a safeguards information system and a grievance redress mechanism.

According to the study on Causes of Deforestation, it was identified the practice of shifting agriculture and the unsustainable exploitation of biomass coal as one of the main causes of deforestation, considering the challenge of raising awareness of technological interventions, especially in the promotion of conservation agriculture practices, agroforestry systems and coal production and the sustainable use of biomass energy.

At the national level, awareness of REDD + is low. The realization of a training and dissemination program on the subject in the areas of implementation of REDD + initiatives is pertinent and is foreseen in the scope of the implementation of the program that must be done through landscape development platforms, community radios, online systems, training programs at community level, etc.

Institutional arrangements for the implementation of REDD + include a REDD + Technical Unit safeguards team, which in collaboration with different sectors at central, provincial and district levels (Agriculture, Environment, Licensing, Lands, Forests and Energy) should ensure compliance guidelines for risk mitigation and promotion of the positive impacts.

The country counts on the forestry investment program and, strategically, the MozFIP forestry investment project was developed to contribute to the REDD + national strategy action plan (link: http: // bit. l / 2wTGSIk) considering aspects such as incentives in the forestry sector to improve the environment, implementation of integrated landscape management programs in the provinces of Cabo Delgado and Zambézia, to address the main drivers of deforestation while reducing rural poverty;ojects.

The list of responsibilities of the safeguards team include, but are not limited to follow-up of community consultations for systematic land use regularization, dissemination, management and monitoring of the dialogue and grievance mechanism, support for project screening, as well as monitoring the different REDD + initiatives through field visits and SIS implementation.

UT-REDD + has a communication team that must ensure the dissemination and sharing of information at all levels, especially in communities with special attention to the local language, where the projects and programs are implemented

SUMÁRIO EXECUTIVO

O período de 2009-2012 foi marcado por uma fase decisiva para a preparação do REDD+ em Moçambique. Desde 2013 com o apoio do Banco Mundial (BM) no valor de $3.6 milhões através do Fundo de Parceria para o Carbono Florestal (FCPF), do subsídio de Readaptação do REDD+ (P129413) e do financiamento adicional de $5 milhões, em 2016. Moçambique aprovou a sua Estratégia Nacional do REDD +, que prevê, a elaboração dos instrumentos de salvaguardas ambientais e sociais, a um Nível de Referência de Emissões um Sistema de Monitoria, Relatórios e Verificação (MRV) que inclui o Sistema de Informações de Salvaguarda (SIS).

O processo de preparação foi acompanhado pela elaboração de três instrumentos de salvaguardas, nomeadamente: (i) este documento, ou seja, a Avaliação Ambiental e Social Estratégica (AASE); (ii) o Quadro de Gestão Ambiental e Social (QGAS), que inclui um Plano de Gestão de Pragas (PMP); e (iii) um Quadro Processual (QP). **AASE e a Estratégia Nacional do REDD+ foram praticamente preparados concomitantemente e ambos irão informar a maneira como as próximas iniciativas REDD+ serão estruturados para garantir que os mesmos tomem em consideração os riscos sociais e ambientais e identifiquem as acções de mitigação relacionadas**

A concepção do Quadro de Avaliação Ambiental e social e o Quadro do processo participativo para implementação de iniciativas REDD+, foi baseada nas constatações observadas na elaboração do SESA e da Estratégia Nacional REDD+. Contudo, espera-se que avaliações sócio-ambientais sejam desenvolvidas em paisagens específicas em função da necessidade e identificação de impactos típicos a nível local que não tenham sido observados.

A formulação da Estratégia Nacional do REDD+ e dos instrumentos de salvaguarda envolveu um extenso processo de consultas a nível central, provincial e comunitário. De Março de 2013 a Novembro de 2016 o processo de consultas envolveu 3370 participantes dos quais 978 são mulheres. Como parte do processo de consulta, homens, mulheres e jovens também foram consultados separadamente em grupos focais de discussão como forma de obter uma melhor compreensão das suas diferentes perspectivas em relação ao desmatamento.

Seis províncias foram abrangidas: distribuídas uniformemente pelas três principais regiões de Moçambique (Cabo Delgado e Nampula para a região norte, Zambézia para a região centro e Gaza para a região sul). Estas províncias foram seleccionadas com base no seu papel de áreas de maior destaque em matéria de desmatamento, no sentido de serem representativas das questões que caracterizam esse fenómeno em Moçambique;

Os processos de consultas incluíram: (i) quatro seminários de consulta técnica sobre as principais áreas de intervenção para a estratégia (a) análise dos objectivos e abordagem estratégicos, (b) análise das causas do desmatamento e degradação florestal, (c) identificação de opções estratégicas para a redução do desmatamento e da degradação florestal, e (d) análise de salvaguardas ambientais e sociais; (ii) uma sessão de consulta nacional (Maputo); e (iii) harmonização entre o Ministério da Terra, Ambiente e Desenvolvimento Rural (MITADER) e os órgãos de decisão de outros ministérios/sectores envolvidos.

O Comité Técnico de Revisão (CTR)para o Comité de Gestão Nacional do REDD+, desempenhou um papel importante no processo, em substituição do Task Force (Força-Tarefa) da AASE que ainda não existia nessa altura.

Objectivos da AASE

O objectivo da AASE para a Estratégia Nacional do REDD+ é o de integrar as considerações ambientais e sociais fundamentais na concepção e estabelecimento das iniciativas de desenvolvimento florestal no terreno, partindo de uma perspectiva de longo prazo em que o desenvolvimento rural integrado e a melhoria da riqueza e bem-estar das comunidades rurais e do país em geral se baseiam na utilização sustentável dos recursos naturais, em especial no que diz respeito à terra e florestas. Ela identifica considerações ambientais e sociais prioritárias para orientar a concepção, implementação e funcionamento dos programas de desenvolvimento e investimento florestal, estabelecendo o quadro jurídico, institucional e de governação no âmbito do qual esses programas devem ter lugar.

Contexto de desenvolvimento

A formulação da Estratégia Nacional do REDD+ acontece numa altura em que Moçambique está a mostrar sinais de um nível significativo de deterioração dos principais indicadores económicos e financeiros, tais como as taxas de inflação, câmbio e de juros. Estes são informados por circunstâncias internas e externas desfavoráveis, particularmente (i) um nível reduzido de demanda e preços para as *commodities* de que o país é e estava a tornar-se num potencial exportador (por exemplo, carvão, gás e outros recursos minerais de alto valor); (ii) redução da produção interna, bem como (iii) redução do nível de assistência externa. Como parte da desaceleração em 2015, o crescimento económico desceu para 6,5% e em 2016 não ultrapassou os 4,5% (FMI, 2016). Isto está em contraste com o que se passou na última década e meia, durante a qual a economia do país testemunhou taxas de crescimento aceleradas a uma média anual de 7% em termos reais. Isto foi favorecido por altos níveis de assistência dos parceiros de desenvolvimento, esforços no domínio da gestão da política macroeconómica e fortalecimento do ambiente propício para a promoção de investimentos privados nacionais e estrangeiros, incluindo (i) o investimento directo estrangeiro em mega projectos e investimentos em produtos agrícolas de alto valor e de grande escala tais como algodão, açúcar e tabaco, (ii) o crescimento agrícola favorável ao nível do sector familiar, e (iii) projectos de reabilitação de infra-estruturas, incluindo estradas.

Apesar do crescimento notável no passado, o país continua a ser um dos mais pobres do mundo. O mesmo situa-se na posição 180.ª de entre 188 países em termos de índice de desenvolvimento humano. Muitos constrangimentos institucionais e outros que continuam a dificultar a prestação de serviços sociais básicos e a redução da pobreza permanecem como sendo o principal desafio. Cerca de 70% da população depende da agricultura de subsistência e vive nas zonas rurais.

Florestas e Recursos Naturais Incluindo Desmatamento e Degradação Florestal

Moçambique é um dos países mais dotados em África e no mundo em termos de recursos naturais. 49% da riqueza total do país é constituída por capital natural, contra a média de 24% nos outros países da África subsaariana. Se utilizados de forma sensata, esses recursos, que

incluem terra, água, minérios, florestas, pescas, etc., podem servir de base sólida para o crescimento e desenvolvimento económico inclusivo, bem como para o alívio da pobreza, com fortes repercussões nas áreas rurais onde os recursos estão concentrados e onde vive a maioria das pessoas.

Do ponto de vista da floresta, o país tem cinco áreas fito-geográficas com Miombo, Mopane, floresta indiferenciada e vasto mosaico costeiro. As áreas de biodiversidade mais importantes incluem as Montanhas da Gorongosa, o Grande Arquipélago Isenberg das Quirimbas e o Maciço de Chimanimani. Há três grandes áreas destacáveis de biodiversidade - florestas litorais da África Oriental, o Maputaland-Pondoland-Albany e o Afromontane oriental. Para além disso existe a Savana Inundada da Costa do Zambeze, que é uma eco-região única de Moçambique.

70% do território moçambicano (54,8 milhões de hectares) é coberto por florestas e outras formações lenhosas. A área florestal abrange cerca de 40,1 milhões de hectares (cerca de 51% do território nacional), enquanto outras formações lenhosas (arbustos, matas e florestas com cultivo itinerante) cobrem aproximadamente 14,7 milhões de hectares, o que corresponde a 19% do território.

A existência de vários tipos de solos, clima e hidrologia ao longo do país contribui para o desenvolvimento de vários tipos de vegetação, incluindo quatro tipos principais: mosaico costeiro, vegetação densa da montanha afro, floresta indiferenciada e vegetação de miombo. Ao nível local existem outros tipos de vegetação, como dunas costeiras e vegetação litoral, como Mangal e vegetação de Acácia na planície. Ao longo da maioria dos leitos do rio, existem também manchas descontínuas de vegetação de caniço em toda a maior parte do seu comprimento.

Uma combinação de factores significa que esses recursos florestais tenham sido e estejam a ser sujeitos a degradação significativa.

As principais causas do desmatamento e da degradação florestal no país incluem: (i) a agricultura comercial (S1), que está associada ao desmatamento de extensas áreas de cobertura vegetal para criar espaços abertos para grandes campos de cultivo sem as necessárias acções de compensação; (ii) a agricultura itinerante de pequena escala ou familiar (S2), que é a causa principal importante de desmatamento e degradação florestal associada ao facto de que com tecnologias agrícolas precárias e particularmente incapacidade de usar tecnologias avançadas para manter a fertilidade da terra, haja abertura incessante de novas áreas de cultivo para atender aos interesses dos produtores. Eles também não se envolvem em quaisquer formas de acções de compensação em relação à devastação da cobertura vegetal; (iii) exploração de produtos florestais (S3), o país está a ser submetido a diferentes formas de exploração de produtos florestais para atender à demanda interna e acima de tudo internacional. Para além do facto de que essas formas não envolvem uma gestão adequada, incluindo a restauração sistemática da floresta perdida, são na sua maioria de natureza ilegal, o que torna difícil a sua regulamentação e controlo; (iv) lenha e carvão (S4), devido a condições económicas e tecnológicas, uma proporção significativa da população moçambicana e particularmente os centros urbanos do país dependem de lenha e carvão para energia; (v) expansão urbana e de outras infra-estruturas (S5), a urbanização em Moçambique têm vindo a crescer rápida e massivamente nas últimas 2-3 décadas. O fenómeno está associado com a eliminação da vegetação para abrir espaço para a habitação e outras infra-estruturas urbanas. Na maioria dos casos, isso é feito sem consideração adequada para requisitos de planeamento de uso de terra sólidos, o que se traduz em áreas impróprias para o desenvolvimento a ser usadas. Para além

do desmatamento e da degradação florestal, isso também está associado à degradação da terra, incluindo outros riscos ambientais, como inundações; (vi) a mineração (S6), a mineração em grande escala, mas também a mineração artesanal, estão associadas à remoção extensiva da vegetação para abrir espaço para as suas operações. Neste caso, as acções compensatórias também são sistematicamente ignoradas; (vii) pecuária (S7). Depois de muitos anos de guerra civil, que terminou em 1992, houve uma extensa eliminação de gado, tanto o dos agricultores comerciais como familiares. Nas duas últimas décadas, houve esforços concertados para restaurar as perdas e, entre outros aspectos, isso também é feito com recurso à remoção de grandes extensões de árvores para abrir espaço para pastagens sem que haja acções compensatórias necessárias.

As causas subjacentes incluem: (i) acesso limitado a tecnologias de alta produtividade por parte de pequenos agricultores ou meios para implementá-las, incluindo uma rede de extensão escassa; (ii) problemas de governação e a fraca aplicação da legislação sobre terras, florestas e ambiente; e (iii) procura por alimentos e produtos de madeira nos mercados doméstico e internacional e oportunidades de emprego e renda inadequadas nas áreas rurais.

Estratégia Nacional do REDD+

A Estratégia Nacional do REDD+ em Moçambique tem como objectivo reverter essas tendências negativas e promover o uso sustentável das florestas por todas as partes interessadas e envolvidas.

Em conformidade com as causas de desmatamento e degradação florestal identificadas a Estratégia do REDD+ de Moçambique compreende seis objectivos estratégicos e um número igual de grupos principais de actividades: 1: **Acções transversais**: que visam estabelecer uma plataforma institucional e jurídica para a coordenação interinstitucional para assegurar a redução do desmatamento; 2: **Agricultura**: promover práticas sustentáveis alternativas para a agricultura itinerante, garantir o aumento da produtividade das culturas alimentares e comerciais; 3: **Energia**: para aumentar o acesso a fontes alternativas de biomassa em áreas urbanas e aumentar a eficiência da produção e utilização de energia da biomassa; 4: **Áreas de Conservação**: para fortalecer o sistema de áreas protegidas e encontrar formas seguras de geração de renda; 5: **Gestão Florestal Sustentável**: para promover o sistema de concessões florestais, gestão pela comunidade e fortalecimento da governança florestal; e 6: **Restauração de florestas degradadas e plantio de árvores**: estabelecer um ambiente favorável para as empresas florestais, restauração de florestas naturais e plantio de árvores para diversos fins, produção e utilização de energia de biomassa.

A Estratégia priorizará dois componentes principais: (1) evitar o desmatamento, que inclui (i) a redução do desmatamento e a degradação florestal através da intensificação da agricultura e do aumento da eficiência na produção e uso de energia de biomassa; e (ii) melhorar a conservação dos ecossistemas florestais, aumentando a eficiência da gestão do sistema de áreas de conservação; e (2) aumento da capacidade de sequestro de carbono através do reflorestamento e restauração da redução das emissões de carbono por parte das árvores e arbustos.

A Estratégia Nacional REDD+ (2016-2030) tem como objectivo reduzir o desmatamento e a degradação florestal, melhorar a conservação dos ecossistemas florestais e aumentar as reservas de carbono florestal, evitando a emissão de 170 MtCO2/ano até 2030.

Tal como previsto na Convenção-Quadro das Nações Unidas sobre as Alterações Climáticas (CQNUAC), os procedimentos de monitorização, medição, notificação e verificação (M & MRV) das actividades e resultados de REDD+ serão cruciais e realizados de forma transparente e terão as seguintes precondições: (i) desenvolver um Mapa Nacional de Uso da Terra actualizado e levar a cabo a análise da mudança na cobertura florestal; (ii) conceber e realizar o Inventário Nacional de Carbono das áreas florestais; (iii) desenvolver instrumentos e parâmetros nacionais específicos sobre Medição e Monitoria (M&M) de Carbono; (iv) testar e validar o sistema de Medição, Monitoria, Relatórios e Verificação (M & MRV) do REDD+, incluindo aspectos do PMRV nas Condições de Moçambique; (v) conceber e implementar um plano de adequação de capacidade e desenvolvimento específico para a M & MRV do REDD+; (vi) estabelecer arranjos institucionais para assegurar a efectiva implementação e adaptação das actividades do REDD+ e o seu respectivo sistema de M & MRV; (vii) criar uma plataforma funcional para a gestão, produção, armazenamento e partilha de dados e informações sobre o mecanismo REDD+ e o seu sistema de M & MRV. Espera-se que todo o processo seja apoiado por incentivos financeiros estáveis na materialização dos compromissos assumidos no âmbito da UNFCC e, em particular, os que foram feitos em Paris, durante a COP 21, em 2015.

Potenciais impactos negativos, riscos e medidas de mitigação

A materialização da Estratégia do REDD+ dependerá, entre outros aspectos, do apoio contínuo dos países industrializados ou entidades privadas para financiar a protecção das florestas em países em desenvolvimento, incluindo Moçambique, mediante a compra de créditos de REDD+ ou pagamentos por serviços ambientais. O não cumprimento desta obrigação constitui-se num risco potencial fora do controlo do país.

O envolvimento de múltiplas instituições e a necessidade de actualizar leis, regulamentos e práticas para materializar a Estratégia também significam que a gestão do processo se vai constituir num desafio sério e não isento de riscos.

Se não forem administradas adequada e sistematicamente, as iniciativas REDD+ podem ter impactos ambientais e sociais negativos em áreas importantes, tais como: (i) delimitação deficiente dos recursos florestais e de terra e agravamento de conflitos e problemas nessas áreas; (ii) alteração e perda de habitats e biodiversidade; (iii) outros impactos nos recursos naturais (por exemplo, selecção de espécies deficientes e plantas de baixa qualidade; má gestão das plantações com alta taxa de insucesso; formação inadequada dos trabalhadores das plantações; medidas inadequadas de protecção contra incêndios; gestão e supervisão inadequadas; (iv) impactos sobre os recursos hídricos (reduzida humidade do solo nas imediações, o que poderia ter implicações nocivas nas actividades locais de produção agrícola e pecuária, aumento progressivo da captação de água subterrânea através das raizes, aumento da temperatura local devido à decomposição de plantas de pastagem); v) solos (decomposição de lixo vegetal que pode reduzir o pH do solo, um ambiente acídico aumenta a solubilidade dos nutrientes, mas aumenta o potencial de lixiviação, destruição de organismos do solo que não podem tolerar a acidez anormal, detritos secos/oxidam ou decaem/decompõem libertando CO_2 e metano, o pH cria condições em que as plantas invasivas podem prosperar - muitas vezes espalhando-se para além das plantações).

Os potenciais impactos socioeconómicos adversos incluem (i) alienação de comunidades e pessoas locais; (ii) perturbação da mobilidade e acessibilidade; reassentamento que pode estar directamente associado a diferentes categorias de intervenções, nomeadamente a requalificação e a demarcação de terras; instalação de plantações florestais; certas operações florestais de

exploração comercial; construção de pequenas infra-estruturas rurais; (iii) aumento dos casos de HIV/AIDS e DSTs e Doenças Transmissíveis; (iv) disputas sobre oportunidades de negócios e/ou conflitos de trabalho/trabalho entre a população local e a força de trabalho externa (nacional, regional e internacional).

Potenciais impactos positivos

A presença e as operações das empresas agro-florestais e melhoria do ambiente empresarial local levará à adição de valor às florestas locais e aos produtos agrários.

Em conformidade com as seis opções estratégicas que informam a Estratégia Nacional do REDD+, os seguintes impactos positivos podem ser esperados e expandidos:

- Inventários actualizados dos recursos terrestres e florestais, que podem então ser utilizados para múltiplos fins pelas diferentes partes interessadas, incluindo monitorização e avaliação coerentes;
- Possível expansão da floresta natural como parte da demarcação e delimitação de terras e recursos que será realizada;
- Melhorar e aprofundar a colaboração entre o governo, o sector privado, as organizações da sociedade civil e as comunidades para reverter as actuais tendências negativas no sector florestal e outros sectores relacionados (por exemplo, a agricultura);
- Actualização e revisão da legislação florestal para abordarem as questões que têm surgido nos tempos mais recentes e reconhecidas como impedimentos à realização do potencial do sector;
- Promoção de plantações florestais para satisfazer as diversas necessidades, incluindo o aprovisionamento sustentável de biomassa para a energia;
- Oferta de mais uma oportunidade para o envolvimento das organizações da sociedade civil no apoio às comunidades na delimitação de terras comunitárias, a fim de fortalecê-las. Isto irá expandir as áreas de colaboração e lições aprendidas entre as comunidades locais e as OSCs;
- Aumentar o sentido de apropriação por parte das comunidades em relação aos recursos naturais, o que se reflectirá nas parcerias entre elas e o sector privado, incluindo o governo;
- Incentivar e promover o estabelecimento de associações e comités de gestão de recursos florestais em tantos lugares quanto possível para a exploração de lenha e carvão com responsabilidade de reflorestamento;
- Melhor acompanhamento dos operadores florestais pelo governo, com envolvimento da comunidade, para garantir que a legislação florestal seja adoptada em termos práticos. Isso resultará em benefícios para todos e não apenas para os elementos desviantes da sociedade;
- Maior conscientização entre os membros da comunidade e grupos sobre os recursos florestais existentes e sua importância, o que se traduzirá no seu envolvimento activo para protegê-los;
- Introdução de actividades alternativas para geração de renda para os produtores de carvão e de lenha. Promoção de actividades como apicultura, aquicultura e outras actividades menos prejudiciais aos recursos naturais;
- Introdução de técnicas melhoradas/eficientes em termos energéticos para a produção e utilização de carvão (boas práticas);

- Melhor gestão da água através de sistemas de irrigação em pequena escala com implicações positivas no aumento das culturas e disponibilidade de tempo por parte dos homens e das mulheres ao longo do ano para se envolver na produção vegetal e animal;
- Impactos positivos das instalações de processamento, armazenamento e embalagem;
- Fortalecimento das capacidades dos governos Provinciais e Distritais para promover a gestão da paisagem e desenvolvimento de cadeias de valor, que também se pode esperar que tenha efeitos positivos de promoção da "sustentabilidade" ao nível local;
- Impactos positivos significativos nos habitats naturais, na medida em que se promoverá a gestão integrada e sustentável dos recursos naturais;
- Restauração de áreas degradadas e promoção de corredores ecológicos através da melhoria da conectividade florestal.

O presente documento (a AASE para a Estrategia Nacional do REDD+) realiza uma identificaçao de todos estes impactos e recomenda a melhor maneira de abordá-los no desenho e estabelecimento das iniciativas da Estrategia.

Em resumo, o programa REDD+ possui as linhas mestras para enfrentar possíveis desafios sociais e ambientais que envolvem o sector florestal e consequentemente o desmatamento e degradação florestal em Moçambique. O Programa conta com uma estratégia nacional que inclui o plano de acção com descrição de orientações a curto, médio e longo prazo (link: http://bit.ly/2wTGSIk), um sistema MRV, um sistema de informação de salvaguardas e um mecanismo de diálogo e reclamações.

De acordo com o estudo sobre Causas de Desmatamento foi identificada a prática de agricultura itinerante e a exploração insustentável de carvão de biomassa como uma das principais causas de desmatamento, considerando-se um desafio a sensibilização para intervenções tecnológicas, principalmente na promoção de praticas de agricultura de conservação, promoção de sistemas agro florestais e promoção de produção de carvão e uso sustentável de energia de biomassa.

A nível nacional, a conscientização sobre o REDD+ é baixa. A realização de um programa de capacitação e disseminação sobre o assunto nas áreas de implementação de iniciativas REDD+ faz-se pertinente e esta prevista no âmbito da implementação do programa que deve ser feita através de plataformas de desenvolvimento de paisagens, rádios comunitárias, sistemas online, programas de capacitação a nível comunitário, etc.

Arranjos institucionais para a implementação do REDD+, inclui uma equipe de salvaguardas da Unidade Técnica do REDD+, que em colaboração com os diferentes sectores a nível central, provincial e distrital (Agricultura, Ambiente, Licenciamento, Terras, Florestas e Energia) devem assegurar o cumprimento das directrizes para mitigação de riscos e promoção dos aspectos positivos dos projectos.

A fase piloto de implementação do REDD+, o país conta com o programa de investimento florestal e de forma estratégica foi desenvolvido o projecto de investimento florestal MozFIP que contribui para atendimento do plano de acção da estratégia nacional REDD+ (link: http://bit.ly/2wTGSIk) considerando aspectos como incentivos no sector florestal para melhoria do ambiente propício, implementação de programas de gestão integrada de paisagens nas províncias de Cabo Delgado e Zambézia, para abordar os principais motores do desmatamento, reduzindo simultaneamente a pobreza rural;

A curto prazo actividades como estabelecimento e operacionalozação do sistema integrado MRV & SIS; programas de capacitação sobre agricultura de consservação; legislação (Lei de terra e florestas) orientado a grupos alvo; criação e funcionamento da plataforma de desenvolvimento integrado de paisagens alvo (Zambezia e cabo Delgado) têm merecido especial atenção e têm sido levadas a cabo.

Constam mas não se limitam a lista de responsabilidades da equipe de salvaguardas, o acompanhamento de consultas comunitárias para regularização sistemática de uso e aproveitamento de terras, disseminação, gestão e monitoria do mecanismo de diálogo e queixas, apoio na triagem para licenciamento de projectos, bem como a monitoria das diferentes iniciativas REDD+ atraves de visitas de campo e implementação do SIS.

A UT-REDD+ conta com uma equipe de comunicação que deve assegurar a disseminação e partilha de informação a todos os níveis, principalmente nas comunidades com especial atenção a língua local, onde são implementados os projectos e programas.

1 INTRODUCTION

1.1 REDD+ in Mozambique

The 2009-12 period marked a decisive stage in Mozambique's establishment of readiness to implement the National REDD+ agenda. From 2013, with support from the World Bank (WB) through a $3.6 million Forest Carbon Partnership Facility (FCPF), REDD+ Readiness grant (P129413) and additional $5 million, in 2016, the country entered into the final stage of such a readiness creation. The process includes the National REDD+ Strategy, wich consider the safeguards instruments (SESA, ESMF, PF and GRM) a Reference Emissions Level and a Monitoring, reporting, and verification system (MRV system) including Safeguard Information System (SIS).

The National REDD+ Strategy was approved by the Ministry of Land, Environment and Rural Development (MITADER) in October and subsequently by the Cabinet in November 2016 at the same time that two **safeguards instruments (ESMF and PF)** were being finalized particularly to guide the Mozambique's Forest Investment Program (MozFIP). The Mozambique Forest Investiment Program, is an investment project that will implement the National REDD+ Strategy and will also serve as the basis for other upcoming forest programs and projects.

As a way of addressing the identified drivers of deforestation and forest degradation in the country **Mozambique's REDD+ Strategy** comprises six strategic pilars and an equal number of main sets of activities: **1: Cross-cutting actions:** to establish an institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation; **2: Agriculture:** to promote alternative sustainable practices to shifting cultivation, ensure increased productivity of food and cash crops; **3: Energy:** to increase access to alternative sources of biomass in urban areas and increase the efficiency of production and use of biomass energy; **4: Conservation Areas:** to strengthen the system of protected areas and find safe ways of generating income; **5: Sustainable Forest Management:** to promote the system of forest concessions, community management and strengthening forest governance; and **6: Restoration of degraded forests and planting trees:** to establish a favorable environment for forest businesses, restoration of natural forests and planting of trees for various purposes, production and use of biomass energy.

Three safeguard instruments were prepared related to the REDD+ activities: (i) this document, i.e. the Social and Environmental Strategic Assessment (SESA); (ii) the Environmental and Social Management Framework (ESMF), which includes a Pest Management Plan (PMP); (iii) and a Process Framework (PF). In the case of Mozambique, the SESA and the REDD+ National Strategy were prepared concomitantly and both will inform how upcoming REDD+ programs/projects will be structured to ensure that they take into account the social and environmental risks and to identify mitigation actions. Environmental and Social Safeguard specialists are assigned to identify and manage environmental and social risks.

For a period of close to two years an extensive consultation process was conducted to develop the set of the above-mentioned safeguards instruments to materialize REDD+. The consultation process covered: (i) three provinces evenly distributed across the three main regions of Mozambique (i.e. in Cabo Delgado and Nampula for the northern region, Quelimane for central and Xai-Xai for the southern region); (ii) four technical consultation seminars on main areas of intervention for the strategy (a) analysis of strategic objectives and approach, (b) analysis of

the causes of deforestation and forest degradation, (c) identification of strategic options for the reduction of deforestation and forest degradation, and (d) analysis of environmental and social safeguards; (iii) a national consultation session (Maputo); and (iv) harmonization with Ministry of Land, Environment and Rural Development (MITADER), which is the host institution for the entire process and other ministries/sectors decision making bodies. CTR, the National REDD+ Steering Committee played an important role in the process in substitution of the SESA Task Force that was non-existent in Mozambique at this stage. The consultation process was used to explore issues around the drivers of deforestation and forest degradation, land use and land tenure, social and environmental protection and sustainable forest management. In addition to open and general meetings there were also focus groups discussions in which men, women and the youth were consulted separately to ensure that their often different perspectives were captured adequately to inform the actions forward. Activities that were carried out are presented in Annex 1. Additional consultations also took place during project design at both Maputo and province level. So far, 3370 people were consulted, of which 978 were women[1]. (Public consultation report availible : www.redd.org.mz).

1.2 The SESA

The objective of the SESA for the REDD+ National Strategy is to integrate key environmental and social considerations in the design and actual establishment of forest development initiatives, considering a long-term perspective in which integrated rural development and improved wealth and well-being of rural communities and the country in general are based on the sustainable use of natural resources, particularly land and forests.

The SESA identifies priority environmental and social considerations to guide design, implementation and operation of forest development and investment programs. It establishes the legal, institutional and governance framework within which such programs should take place. The SESA is also anchored in long-term economic and social development objectives, and sets a strategic framework for individual forest development programs. It identifies priority environmental and social considerations that are important at national level.

With a focus on forest development and improved and sustainable forest management, more specifically the objective of the SESA is to (i) promote the harmonization of the forest, agriculture, energy and rural development specific strategies and policies in order to support the integration of sustainable resource management and use in forest and rural development planning processes; (ii) contribute to streamlining forests, agriculture, energy and rural development in the long-term integrated development planning for sustainable economic growth and poverty reduction; (iii) identify environmental, social and local economy investment opportunities, and promote environmentally sustainable and socially responsible development; and (iv) support the understanding and inclusion of priority environmental and social considerations in the preparation of forest investment programs that will stem from the country's REDD+ Strategy.

[1] A summary of all consultations can be found here: http://www.redd.org.mz/page.php?id=59

2 BRIEF REVIEW OF THE REDD+ CONCEPT AND ITS PRINCIPLES

2.1 The Origin of the REDD+ Concept

REDD+ stands for *Reduced Emissions from Deforestation and Forest Degradation*. This is a mechanism that has been under negotiation by the United Nations Framework Convention on Climate Change (UNFCCC), since 2005, with the objective of mitigating climate change by means of reducing net emissions of greenhouse gases through enhanced forest management in developing countries. In 2007, the Forest Carbon Partnership Facility, a multi-donor trust fund, was created. This Fund supports tropical and sub-tropical developing countries in preparing themselves to participate in a future, large-scale, system of positive incentives for REDD+. This includes: adopting national REDD+ strategies; developing reference emission levels (RELs); designing measurement, reporting, and verification (MRV) systems; and setting up REDD+ national management arrangements, including proper environmental and social safeguards. Currently, it includes 36 forest developing countries, 18 financial contributors (including two private companies and one NGO), active observers from indigenous peoples and civil society, and several international organizations as delivery partners. The government of Mozambique received a US$3.8M grant in 2103 and an additional funding of US$5M in 2016 from the FCPF to create its own readiness to embark on REDD+.

2.2 Forests, REDD+ and Climate Change

2.2.1 Forests in General

Forests form one of the most complex natural ecosystems with considerable influence on the quality of the environmental components such as air, water, soil, climate and different forms of life and biodiversity in general. It also has a strong weight on recreation, landscape scenery, noise and general wellbeing of humans and other species. The health of the environment in general has strong relations with forests in vast and complex ways.

Forests improve the environment in different forms such as: (i) relative humidity of air that is increased; (ii) increased fertility of surface soil by adding large quantities of organic matter in soil by which water and nutrient holding capacity of soil is increased; (iii) quality and diversity of life of wild and domestic animals, including humans.

The forest environment or site consists of the physical environment surrounding the aerial portions of the tree (climatic factors) and that surrounding the subterranean portion (edaphic factor) and the third one is the biotic factor. External influences, particularly fire, grazing and browsing animals and humans, significantly have an impact on the nature of sites and their capacity to support tree growth.

As the forest becomes established and develops, the site itself undergoes changes. Forest cover moderates the extreme daylight temperature regime of open sites resulting in more uniform conditions. Wind velocity is slowed in the vicinity of tree crowns and becomes negligible within the forest.

Trees crowns intercept sunlight and alter the quantity and quality of radiation reaching forest floor compared with that reaching open sites. On the forest floor, accumulating layers of leaves,

twigs and other litter attract a characteristic grouping of plants and animals that live on decaying organic matter and on each other.

There is increasingly more evidence to the effect that forests have the following influence on air temperature: (i) lowering the daily mean temperature in the hot season and raising it slightly in the cold season; (ii) lowering the daily maximum of air temperature and raising the daily minimum; (iii) diminishing the daily range of air temperature; and (iv) influencing precipitation

Forest air is cooler and moister, than the air in the open. Forest increases the precipitation of any area. As air cools while rising, precipitation increases with increase in elevation.

The beneficial influence of forest vegetation on soil is due to its beneficial effect and its power of increasing fertility of the land by adding nutrients. In general the influence of forest vegetation on soil is related to the producing of a new substratum of soil and the changing of soil structure. Forest vegetation assists in the formation of soil by the accumulation of plant remains by stimulating weathering through the action of acids formed by vegetation, and by the resistance which forest vegetation offers to moving air and water.

Forest vegetation also plays and important role in water retention by reducing surface runoff, and thus increasing the amount of water that percolates into a soil and controlling erosion. Forest cover also increases seepage by increasing the volume of soil in mountainous regions over the solid rock foundations. The humus layers, characteristic of every well-managed forest, absorb from two to four times their weight of water. Forest soil, with its overlaying organic layers is in a real sense a vast sponge capable of absorbing much more water per unit area than soil in the open.

Plants also have a role to play in controlling air, water and noise pollution, cleaning the air, etc.

From the biotic point of view plants are undoubtedly the most important feature in the environment of terrestrial animals. All animals are dependent directly or indirectly upon plants for food. Forests also provide many animals with shelter from bad weather, protection from enemies, sites for shelter, and materials for nests.

2.2.2 Forests and Climate Change

After many years of focusing on the influence of forests on climate at the microclimate or local level in recent times there is increased attention at the potential, impact of forests on global conditions.

Forest have a positive or negative impact on climate change (CC) through their influence on the global carbon cycle. Forest are being recognized as playing important roles in global biochemical cycle. Major pools of carbon are the atmosphere, fossils fuels, oceans and terrestrial biota and soils. Forests are often called “carbon sinks” because of the role they play in capturing carbon from the atmosphere through plant photosynthesis, thus diminishing the concentration of carbon dioxide in the atmosphere. Through deforestation this environmental service is lost.

The world's forests contain more than 55% of the global carbon stored in vegetation and more than 45% of that in soil. Most of the carbon Pools in forest vegetation is located in tropical forests (62%), whereas most of the carbon pool in forest soils is located in boreal forests (54%).

Carbon sequestration in the forest is reversed by tree and vegetation cutting, burning and the degradation that leads to the death of trees and their decomposition, which lead to the release of the sequestered carbon into the atmosphere. Converting forests into agricultural land releases the carbon contained in the soil. Around 13 million hectares of forests are devastated each year in the world. The annual GHG emission caused by this deforestation and other types of land use changes represent between 10 to 18% of the worldwide greenhouse gas emissions, turning it into the second largest source, after the energy sector. This is a phenomenon that can no longer be ignored as it is known for being responsible for at least 20% of GHG forestry emissions, even though it is more difficult to quantify than the pure and simple loss of a forest. At the global level, the carbon stored in the forest biomass has decreased by around 0.5 Gt each year over the 2005–2010 period, essentially because of the deterioration of worldwide forest cover.

3 DEVELOPMENT CONTEXT

3.1 General Development Context in Mozambique

3.1.1 Strategic Orientation

In 2016, Mozambique approved its National Sustainable Development Strategy (2015-2030). Under the strategy specific development, sectors are expected to translate the priority lines into specific strategies, programs, projects and implementable actions. In addition to the 2025 Agenda, the The National Development Strategy (NDS) is informed by the then Millennium Development Goals (MDG (2000-2015)), now Sustainable Development Goals (SDG (2015-2030)), the National Indicative Prospective Plan, the SADC Strategic and Indicative Plan; The African Peer Review Mechanism; The Sectoral and Territorial Strategies, National Poverty Assessment Reports, among other national and international strategic development instruments.

After identifying that the national economy has considerable potential in the primary sector, driven by the existence of natural resources, the National Development Strategy (NDS) states that the main challenge is the development of industries that allow sustainable exploitation and transformation of these resources. The diversification of the national economy to provide the basis for more stable, comprehensive and sustainable growth is also pinpointed as essential. The country needs to expand and diversify the industry beyond mineral resources through the creation of industrial parks in areas with potential for agricultural, fishing and forestry exploitation, as well as harnessing the potential of fauna, energy and tourism.

The two main pillars of the National Development Strategy are: (i) **industrialization** as the main way to achieve the vision of prosperity and competitiveness, based on an inclusive and sustainable growth model; and (ii) **mechanisms for operationalization of priority areas**, which advocates that the development process requires a significant amount of public spending either with current expenditures associated with government programs and possible incentives to the private sector, or in investments in public works and projects, or in the financing of financial institutions and mechanisms for private sector financing. The industrialization process is seen as being sustained by (i) the creation of the institutional basis, (ii) the development of human capital, (iii) organization and construction of the physical base.

Agriculture including forests and fisheries occupy a top position among the priority areas. This is justified by the fact that the country's economy is based on direct and integrated exploitation of natural resources, with very little transformation. In vast areas of the country plant and animal production, forests and fisheries are integrated in a single economic system of multiple relationships. These are combined to guarantee the survival of the overwhelming majority of individuals, the families and the communities in Mozambique.

3.1.2 Current Situation and Context

Together with the achievement of peace, 1992 consolidated the reforms towards the end of the centralized economy that had become predominant soon after independence in 1975 as well as the new stage of accelerated growth rates of the economy that reached an annual average of 7% in real terms, from early-mid 2000s.

Up until recently (2013-14) growth had been supported by high levels of assistance from Development Partners, efforts in the field of macroeconomic policy management and strengthening the enabling environment for promotion of domestic and foreign private investment including (i) foreign direct investment in mega projects[2] and operating large-scale high-value agricultural products such as cotton, sugar and tobacco, (ii) the favorable agricultural growth at the family sector level, and (iii) infrastructure rehabilitation projects, including roads.

In more recent times (from 2014-15 up to now (2016)) there have been signs of a significant level of deterioration of the main economic and financial indicators such as inflation (above 20%), exchange and interest rates. These are informed by unfavorable domestic and external circumstances particularly (i) a reduced level of demand and prices for commodities that the country is and was becoming a potential exporter (e.g. coal, gas and other high value mineral resources), (ii) continued low domestic production, as well as (ii) reduced level of foreign assistance. Deceleration meant that in 2015 the economic growth went down to 6.5% and in 2016 it is expected to not go beyond 4.5% (IMF, 2016).

Notwithstanding the remarkable past and ongoing growth progress, the country continues to be among the poorest in the world. The United Nations[3] indicates that Mozambique is in the 180th position among 188 countries in terms of human development index (0.416). This is a slight improvement when compared with the rating in the last 4-5 years, when Mozambique was among the worst 3-5 countries, but it continues to be in indication of the precarious situation in which the country finds itself in. Several institutional constraints and other constraints continue to hamper the delivery of basic services (e.g. water supply, sanitation, and education and health services).

A series of reforms in the areas of agriculture, mining, and business environment in general are in place to reverse the trend that explains that the country's economy has been characterized by a very small number of mega projects on the one hand, and the family and informal sector, on the other in a context in which there are no significant intersections between the two extremes. This dichotomy encourages imbalances in development and particularly with respect to the diversification of production and access to the benefits of the development by a significant proportion of the population. It also fuels the continued degradation of natural resources including forests and subsequently the overall quality of the environmental components and represents a long term threat to the quality of life including the survival of its inhabitants.

Strengthening micro, small and medium size enterprises (MSMEs) is also seen as key to changing the predominant situation. MSMEs (both formal and informal) represent about 98.6% of all enterprises, employing 43% of the workers and accounting for 76% of the total sales. Trade and service sectors form the bulk of business units, with commerce and retail businesses accounting for close to 60%, restaurants and accommodation 20% and manufacturing less than 10%.

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[2] e.g. Aluminium Smelter (Mozal), gas exploration (SASOL), Moma heavy minerals and coal in Tete province for many actors and more recently gas explorations.

[3] Latest report released on 14 December 2015 compiled based on estimates for 2014 by the UNDP

The “Strategy for the Development of Small and Medium Size Enterprises in Mozambique”, approved by the government in 2007, highlights the central role of MSMEs as drivers of employment, competitiveness, diversification and innovation, including mobilization of social resources. The strategy relies on three major pillars: (i) improve the business environment for SMEs; (ii) strengthen SMEs’ technological and management capacities (capacity building); and (iii) give strategic support (e.g. to exporters and high-tech firms, etc.). Priority is also given to the reduction of transaction costs for MSMEs.

Most of these MSMEs typically grow informally and as a reaction to immediate market deficiencies and lack a long term perspective, which is also reflected in the unsound way in which, where these are involved, they relate to natural resources, including land and forests.

Like many other developing countries around the world, Mozambique has in deforestation including the burning of biomass, its main source of green gases emissions, which is acknowledged to be a strong contributor to climate change.

3.1.2 1 The Climate Change Challenge

A significant proportion of Mozambique territory has favorable natural conditions for the occurrence of natural disasters, notably floods, droughts and cyclones. In recent times sea-level rise (SLR) and temperature increases are being added. Losses of lives, public and private assets which translate into GDP losses are a direct consequence of these disasters. These offset the country’s efforts to eliminate poverty and promote development.

Vulnerability in general and particularly to flooding and SLR is related to heavy rainfall, hypsometry which explains that extensive plains are lower in relation to the rivers and sea levels, high flood flows from neighboring countries, in shared river basins, changes in vegetation cover and land use.

As specified in the country’s Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC), in Paris, 2015, the main mission is to “reduce climate change vulnerability and improve the wellbeing of Mozambicans through the implementation of concrete measures for adaptation and climate risk reduction, promoting mitigation and low-carbon development, aiming at sustainable development, with the active participation of all stakeholders in the social, environmental and economic sectors”. The National Adaptation Plan (NAP (2015-2019)) is being updated to make it more responsive to increase local resilience, fighting poverty and identifying opportunities for adaptation and low-carbon development at community level through its mainstreaming in the process of district planning and budgeting. Evaluation shows that the goal has not been accomplished in 2014, and thereby requires delaying the term of the first phase to 2019.

In the medium (2020 to 2025) and long (2026 to 2030) terms Mozambique intends to update its NAP in which the goals will be similar to those in the shorter term, but referring to the provincial and national level, respectively. Therefore, from 2020 to 2025, the country intends to increase its resilience at the provincial level and to include adaptation in that scope of planning and from 2026 to 2030 to do the same at the national level, achieving in this way the vision of the NCCAMS – “A prosperous and climate change resilient Mozambique, with a green economy in all social and economic sectors”.

The strategic actions to be included in the NAP are:

- Reduce climate risks through the strengthening of the early warning system and of the capacity to prepare and respond to climate risks;
- Improve the capacity for integrated water resources management including building climate resilient hydraulic infrastructures;
- Increase the effectiveness of land use and spatial planning (protection of floodplains, coastal and other areas vulnerable to floods);
- Increase the resilience of agriculture, livestock and fisheries, guaranteeing the adequate levels of food security and nutrition;
- Increase the adaptive capacity of the most vulnerable groups;
- Reduce people's vulnerability to climate change related vector-borne diseases or other diseases;
- Ensure biodiversity's protection
- Reduce soil degradation and promote mechanisms for the planting of trees for local use;
- Develop resilient climate resilience mechanisms for infrastructures, urban areas and other human settlements and tourist and coastal zones;
- Align the legal and institutional framework with the NCCAMS;
- Strengthen research and systematic observation institutions for the collection of data related to vulnerability assessment and adaptation to climate change;
- Develop and ameliorate the level of knowledge and capacity to act on climate change; and;
- Promote the transfer and adoption of clean and climate change resilient technologies

Mozambique is part of the group of countries which are implementing the Pilot Program for Climate Resilience (PPCR), which encompasses support for the institutional and policies' reform, for the funding of pilot projects (roads, agriculture, early warning systems, coastal cities and irrigation) and for knowledge management. In addition to the PPCR, the World Bank is also funding actions in water resource sectors and conservation areas. Other funding agencies/programs/projects, e.g. Least Developed Countries Fund (LDCF), the PASA3, the African Development Bank, the JICA, the USAID and the Portuguese Carbon Fund, among others are funding other initiatives to achieve the same objective.

4 NATURAL AND SOCIAL ENVIRONMENT STATE OF FORESTS; DEFORESTATION AND FOREST DEGRADATION DRIVERS

1.1 4.1 Physical Environment

4.1.1 Physiography

The Republic of Mozambique is situated between 10° 27' and 27° 00'S latitude and 30° 12' and 40° 51'E longitude as shown in the figure below. It is bounded on the east by the Indian Ocean/Channel of Mozambique for a length of 1,965 km and on the west and land side by six countries, from south to north: South Africa, Swaziland, Zimbabwe, Zambia, Malawi and Tanzania. The greatest width is about 1,130 km and the total area is 799,380 km2.

Although the northern area of Mozambique has undulating terrain ranging from 500 to 2,701 m, about 94% of the country is below 1000 m altitude, and south of the Save River, roughly 90% of the terrain is below 200 m as shown in Figure 2. Approximately 40% of the area in Cabo Delgado and Zambézia Provinces and 60% in Manica and Sofala Provinces are also below 200 m altitude. The zone of 200-500 m altitude, which is more or less undulating, occurs mainly over northern parts of the country. Altitudes of 500-1000 m occupy only 25% of the country with the largest proportion occurring in the north.

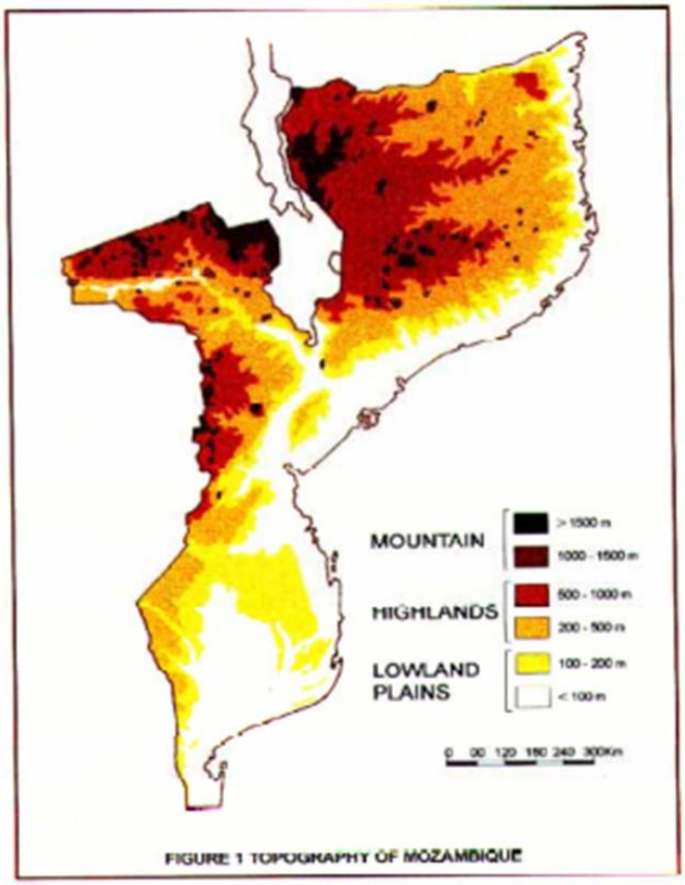


Figure 1: Physiography of Mozambique

A mountain chain forms the eastern escarpment of the continental plateau, and in Mozambique it descends abruptly to the plains in some locations, and in others, as in the lower Zambezi, slopes gradually to the coast. The Lebombo Mountains, behind Delagoa Bay, nowhere these exceed 631 m in height; the Manica Plateau, farther north, is higher. Mt Doe rises to 2,400 m and Mt Panga to 2,320 m. The Gorongoza massif with Mt Miranga 1,996 m, Enhatete, 1,844 m, and Gogogo,1,798 m lies north-east of the Manica plateau, and is of granitic formation.

The chief mountain range lies north of the Zambezi, and east of Lake Chilwa, namely, the Namuli Mountains, in which Namuli Peak rises to 2,701 m, and Molisani, Mruli and Mresi attain altitudes of 1,981 to 2,438 m. These mountains are covered with magnificent forests. More to the north the river basins are divided by well-marked ranges with heights of 914 m and above. Near the south-east shore of Lake Malawi (in Mozambique this lake is called Lake Niassa) there is a high range (1,524 to 1,829 m) with an abrupt descent to the lake - 914 m in 9.7 km. The plateau lands west of the escarpment are of moderate elevation - averaging 610 to 762 m. It is only along the Zambezi and north of that river that Mozambique's territory reaches the continental plateau. This northern plain has been categorized by the WWF as part of the Eastern Miombo woodlands ecoregion.

4.1.2 Climate

Mozambique has a tropical climate with two seasons, a wet season from October to March and a dry season from April to September. Climatic conditions vary depending on altitude. Rainfall is heavy along the coast and high lands and decreases in the south. Precipitation varies from 350 to 1,400mm depending on the region, with an average of 800 mm (Mafalacusser, 2013).

Seasonal variations in temperature are around 5˚ Celsius (C) between the coolest months (June, July and August) and the warmest months (December, January and February). Temperatures are warmer near the coast, and in the southern lowland regions compared with the inland regions of higher elevation. Average temperatures in the lowland areas are around 25-27˚C in summer and 20-25˚C in winter. Average temperatures in the highlands range from 20-25˚C in summer and 15-20˚C in winter.

Annual temperature and precipitation averages for the country for the period spanning 1900 to 2009 are shown in the Figures 3 and 4 below:

Figure 2: Mozambique's average precipitation rates

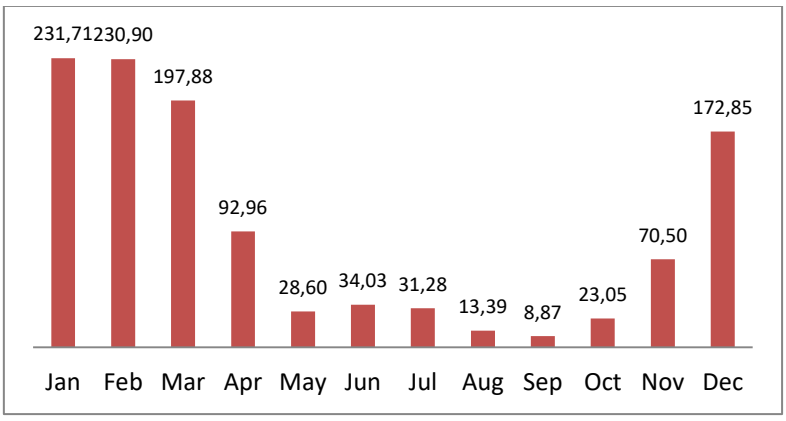
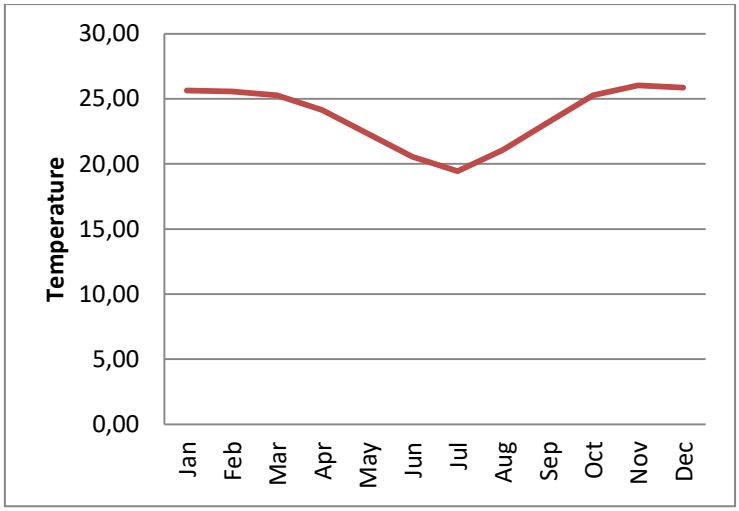


Figure 3: Mozambique average temperature rates in °C, 1990-2012



As summarized below, there is fairly significant climate variation between the two landscape provinces that are the focus of MozFIP/MozDGM, as well as between these two provinces that represent the northern and central regions and the southern region here represented by Gaza province:

- **Cabo Delgado** (in the northern region of the country) has a tropical climate with much less rain falling in winter than in summer. The climate here is classified as Tropical savanna (Aw) by the Köppen-Geiger system. Namaua is the wettest region of Cabo Delgado province, with an average of 1,148 mm rain per year, and an average temperature of 23.1ºC. Chefe Bacar's is the driest region of Cabo Delgado, with less than 815 mm of rain per year, and an average temperature of 25.6ºC;
- **Zambézia** (in the central region of the country) has a tropical climate with much less rain falling in winter than in summer. The climate here is classified as Tropical savanna (Aw) by the Köppen-Geiger system. Gurue is the wettest region of Zambézia province, with an average of 1,857 mm rain per year, and an average temperature of 22.2 ºC. Biyar is the driest region of Zambézia, with less than 955 mm of rain per year, and an average temperature of 24.7 ºC.

According to the Köppen-Geiger system, **Gaza** province (in the southern region) has three different climate zones, but is dominated by Tropical savanna (Aw). Gaza province also has a hot summer Mediterranean climate (Csa), and a hot semi-arid climate (BSh). Praia de Bilene is the wettest region of Gaza province, with an average of 916 mm rain per year, and an average temperature of 22.6 ºC. Praia de Bilene is classified as Tropical savanna. In contrast, the prevailing climate in Makandezulo A is known as a local steppe climate (Bsh). There is little rainfall throughout the year, with an average of only 448 mm. The temperature here averages 22.7 ºC.

Wind studies conducted by the Ministry of Energy, Mozambique in 2008, to determine the feasibility of developing wind farms in the country, utilized 30 years of data from the United States National Weather Service's (NWS) National Center for Environmental Prediction (NCEP) and National Centre for Atmospheric Research (NCAR). The studies identified annual and seasonal variations in wind direction and speed, and indicated prevailing winds are always from the easterly directions. The island of Madagascar clearly breaks up the wind blowing from across the Indian Ocean to the continent, and effects the direction and strength of the winds that reach the coast of Mozambique. As such, the coast of Mozambique lies in the rain shadow

of Madagascar. Prevailing summer winds (DJF) are from the northeast, whereas winds in all other seasons are predominately from the southeast (MAM and JJA) and east (SON). This shift in wind directions reflects the movement of the Intertropical Convergence Zone (ITCZ), which brings tropical rains to the region during the summer. Destructive cyclones also occur during the summer season.

4.1.3 Geology and Soils

The geology of Mozambique comprises mainly ancient crystalline rocks in the north and young, Tertiary and Quaternary sediments and volcanic rocks in the south. The southern limit of the East African Rift Valley extends down through neighboring Malawi. Crystalline Precambrian basement covers almost the whole area north of the Zambezi River, over approximately 500,000 km^2. The basement rocks consist mainly of gneiss, schist, quartzite and limestone. Intrusions of Precambrian granite also occur, mainly in Tete Province and western Zambézia. Younger dykes of mafic composition cross-cut the crystalline rocks, particularly around the town of Tete and along the western Zimbabwean border (Dias and Wilson, 2000). Parts of the crystalline basement contain mineral veins and associated alluvial gold deposits have been found in the valleys of the Cocone, Metuisse and Namarroi Rivers (Dias and Wilson, 2000).

The basement rocks are covered by a surface weathered (‘overburden’) layer of variable thickness. Sediments and volcanic rocks of Karroo age (180– 300 million years) crop out in a narrow band along the western border. Karroo formations consist largely of conglomerate, sandstone, schist and coal seams with some basalt (UN, 1989). Jurassic sediments (135–180 million years) include sandstones, conglomerates and limestones. These are minor but are found in Lupata, Nampula and Cabo Delgado Provinces. Cretaceous sediments (65–135 million years) form the westerly limits of the lowland areas. These sediments consist of sandstones, some being calcareous, as well as clays and carbonates with occasional conglomerate that outcrops to the south-east of the town of Tete, along the southwestern border and in a narrow elongate strip along the north-east coast of Mozambique. Tertiary sediments (2–65 million years) mainly consist of marine carbonates and sandstones and are found in the coastal region of Cabo Delgado and in large parts of southern Mozambique (UN, 1989). Quaternary sediments consist mainly of unconsolidated sand, clay and limestones and are found in coastal dunes, river alluvium and lacustrine deposits.

Africa’s ancient basement complex of granitic rock underlies most of northern and west-central Mozambique, whereas the soils of the southern and east-central regions are sedimentary. Mozambique’s soils are diverse in quality and type, but the northern and central provinces have generally more fertile, water-retentive soils than does the south, where sandy, infertile soils prevail. The northern soils, whose qualities allow agricultural potential to extend beyond the river valleys, have a higher content of red clay, with varying ranges of fertility; in contrast, the central region has a broad expanse of rich alluvial soils along the Zambezi delta. South of Beira, fertility is largely limited to alluvial soils in the valleys of the Save, Limpopo, Incomáti, Umbelúzi, and Maputo rivers, although several pockets of fertile but heavy soil occur southwest of Inhambane.

4.1.4 Water Resources

4.1.4.1 Surface Hydrology

Most of the rivers in Mozambique flow in a W-E direction, draining the water of the central African high plateau into the Indian Ocean. Mozambique has 104 identified rivers basins, considering only catchments of rivers that flow into the Indian Ocean. The coastal zone is considered as one catchment (Tauacale, 2002). With the exception of the small rivers draining the coastal zones, the majority of the rivers have a torrential regime, with high waters during 3-4 months and low flows for the remainder of the year corresponding to the marked wet and dry seasons.

The Rovuma (Ruvuma) River defines most of Mozambique's northern border with Tanzania. The Zambezi River and its tributaries dominate the central region, and the Maputo River forms part of the southernmost boundary with Swaziland and South Africa. Rivers—including the Lúrio, Ligonha, Save (Sabi), Changane, and Incomáti (Komati)—also define many of the country's local political boundaries. Other important drainage systems include the Messalo River in the north, the Púngoè (Púnguè), Revuè, and Búzi rivers, which enter the Mozambique Channel together just south of the port of Beira, and the Limpopo River in the south.

The Zambezi (140,000 km^2) and Rovuma (101,200 km^2) river basins each occupy over 100,000 km^2 of Mozambique. Eleven other river basins cover more than 10,000 km2, including the: Limpopo (79,600 km2) Lúrio (60,800 km^2) Púnguè (28,000 km^2) Licungo (27,700 km^2) Búzi (25,600 km^2) Messalo (24,000 km^2) Ligonha (16,300 km^2) Incomáti (14,900 km^2) Gorongoza (13,200 km^2), Inharrime (11,900 km^2), Govuro (11,200 km^2) (Tauacala, 2002). River basins of less than 10,000 km^2, but important to the country include: Maputo, Umbelúzi, Save, Monapo and the Montepuez basin. In total, these 18 river basins cover approximately 572,500 km^2 (75%) of the total area of Mozambique.

The Zambezi is the longest river in Mozambique (850 km), followed by the Limpopo (560 km), Save (330 km), Búzi (320 km), Púnguè (320 km), Licungo (336 km) Molócuè (325 km), Lúrio (605 km) Montepuez (315 km), Messalo (530 km) and Rovuma (650 km) (Tauacale, 2002). Of the 18 main river basins, 9 are shared with other countries:

- Maputo: Republic of South Africa (RSA) and Swaziland
- Umbelúzi: RSA and Swaziland
- Incomáti: RSA and Swaziland
- Limpopo: RSA, Botswana and Zimbabwe.
- Save: Zimbabwe
- Púnguè: Zimbabwe
- Zambezi: Angola, Namibia, Botswana, Zambia, Zimbabwe, Malawi and Tanzania
- Rovuma: Tanzania

Surface water is the country's main water resource. Mean annual runoff is estimate at 216,000 million cubic meters (Mm^3), of which only 100,000 Mm^3 originates in rainfall inside Mozambique. The remainder originates in countries upstream, and is reliant on joint agreements on water management practices to ensure a safe, secure water supply.

Tauacale (2002) noted that the management of the shared river basins and reaching agreements with other countries on integrated water resources management must be a priority for Mozambique. At the time of the preparation of his article, inter-boundary water resources management faced the following issues:

- Floods and droughts routinely occur during the rainy season on the rivers of the region;
- In a vast area of the interior of south-central Mozambique (Incomáti, Umbelúzi, Limpopo and Púnguè) there has been a loss of land caused by salt-water intrusion, resulting from increasingly lower river discharges;
- There has been a loss of bio-diversity in the river basins, resulting from increasingly lower river discharges.

There are four significant lakes in Mozambique -- Lake Niassa, Lake Chiuta, Lake Cahora Bassa and Lake Chirwa, all in the central and northern regions. The country shares the borders of Lakes Nyasa, Chiuta, and Chilwa with Malawi. The Cahora Bassa Lake is created by the country's hydroelectric dam network —particularly the extensive system created by the Cahora Bassa Dam at Songo on the Zambezi River.

Several chemicals that occur in nature, as well as those created by human activities, are monitored in drinking water. Human activities that contribute to pollutants in surface water include percolation and accidental release of contaminated water from agricultural runoff, sewage treatment facilities, operation of processing plants and pipelines, oil and gas leaks from vehicles, as well as un-lined trash dumps, poorly managed mine pits and waste rock piles. Various studies conducted in Mozambique for Environmental Social Impact Assessments (ESIAs), as well as academic theses and dissertations have identified surface water pollutants associated with agriculture (pesticides and fertilizers), industry (oils, lubricants, heavy metals and chemicals), and trans boundary pollution of the Munene River from a dumpsite in Zimbabwe. Additionally, increased siltation and sediment loading occurs in areas affected by deforestation, degradation and erosion and saltwater intrusion occur near the coast.

Figure 4: Rivers of Mozambique

4.1.4.2 Groundwater Hydrogeology

Cenozoic sediments form by far the most productive aquifers in Mozambique. In the south, these form an extensive unconfined aquifer which is well replenished as a result of high rainfall and is easily exploited. Miocene carbonates also form good aquifers where they are karstic. These cover around 25,000 km^2 south of the Save River. The water table in this aquifer occurs at around 50 m depth (UN, 1989). Quaternary alluvium has in places been exploited for urban

supplies in the coastal areas. Much lower yields are found in the crystalline basement rocks, volcanic formations and indurated sediments, except where weathered overlying layers are well-developed. Groundwater yields in the crystalline basement rarely exceed two liters per second and groundwater storage is restricted to fractures. Boreholes in northern Mozambique are often deep as a result of poor groundwater yields. A number of boreholes in Cretaceous and Cenozoic formations in Cabo Delgado Province exceed 100 m depth as a result of poor yields (UN, 1989).

As with surface water, groundwater quality is typically monitored by the WHO especially if the water is being used for urban/rural water supply. In Mozambique, little information is available on the quality of groundwater in the aquifers. That which is available, suggests that groundwater is for the most part fresh, although significant salinity problems are experienced in some parts of the Tertiary aquifers in the south as a result of seawater intrusion. In addition, potential for pollution exists in the vicinity of industrial and urban developments (including that from sewage effluent and from centers of petroleum and chemicals manufacture and ports) as well as from agricultural activity. Pollutants associated with industry and agriculture are likely to be greatest in the coastal lowlands.

Other elements in water supply that are monitored by the World Health Organization (WHO) that occur naturally in rocks and can be released to aquifers through weathering, or anthropogenic activities (i.e., mining), include arsenic (As), nitrates (NO_3), fluoride (F), iron (Fe), manganese (Mn) and iodine (I). Not including the effects of anthropogenic activities that result in breaking up and weathering of rock, the distribution of these naturally occurring elements in groundwater is directly linked to regional geology and groundwater flows and levels.

Of the aquifers in Mozambique, those most vulnerable to contamination by arsenic are likely to be mining areas of mineralization associated with gold, including alluvial gold deposits. Areas of young alluvium, particularly along the river valleys, the Zambezi delta and the coastal marshes may also be at increased risk.

Ground waters from fractured crystalline rocks and from the unconfined Cenozoic aquifer of southern Mozambique are likely to be aerobic such that any nitrate derived from pollution sources can be maintained in solution in the groundwater rather than being removed by chemical and microbiological processes. Concentrations of NO_3-N may be expected to exceed the WHO guideline value for drinking water of 11.3 mg/l in some groundwater supplies.

The geology of Mozambique is such that minerals and rocks containing high fluoride concentrations are likely to exist in the northern upland areas. These include the granitic outcrops in particular. The southern limit of the East African Rift Valley also extends along the border area with Malawi. Since this is a well-known high-fluoride province, there is clearly potential in northern Mozambique for ground waters to contain high fluoride concentrations, in excess of the WHO guideline value for drinking water of 1.5 mg F/l. However, high rainfall and hence high infiltration rates in northern Mozambique are likely to reduce the risk of high fluoride concentrations significantly.

No reports of groundwater water quality are known to have identified high concentrations of iron and manganese as a problem in Mozambique. High concentrations of these elements are only expected in anaerobic or in strongly acidic ground waters, neither of which have been reported in the country. Some areas of young (Quaternary) alluvium and coastal marshes may

contain anaerobic ground water, but these are of limited lateral extent and the degree to which they are exploited is not known. Salinity is likely to be a prime factor limiting potability in ground water from the coastal lowlands.

No iodine data could be found for groundwater. Given the maritime location, abnormally low (and potentially detrimental) concentrations are not expected. Highest concentrations (several tens of µg/l or higher) are expected to be present in the saline groundwater of the south.

4.2 Biological Environment

4.2.1 Flora and Forests

Mozambique has five phyto-geographical areas with Miombo, Mopane, undifferentiated woodland and vast coastal mosaic. The most important biodiversity areas include the Gorongoza Mountains, Great Isenberg Archipelago of Quirimbas and the Chimanimani Massif. There are three biodiversity hotspots- Coastal Forests of Eastern Africa, the Maputaland-Pondoland-Albany and the Eastern Afromontane. Additionally, there is the Zambezian Coastal Flooded Savannah, which is an eco-region unique to Mozambique.

The 2,770 km of coastline has a wide diversity of habitats, which include sandy beaches, coral reefs, estuarine systems, bays, mangroves and sea grass beds. There are four coastal eco-regions in Mozambique: the coral coast, which spans from the Rovuma river in the north to Pebane in the South (at latitude 17˚20'S) comprising 770 km, characterized by dominance of limestone and corals, the swamp coast which extends from Angoche (16˚ 14'S) in the north to Bazaruto Archipelago (21˚ 10'S) in the south, with the length of 978 km characterized by occurrence of several estuaries and extensive mangrove formation. This part of the coast has the largest continental shelf and the very turbid water highly influenced by the sediment discharged by river and an intense wave action. The third eco-region is the parabolic dune coast stretching from Bazaruto Archipelago to Ponta do Ouro and beyond into South Africa (28˚57'S). It has a length of 850 km. It has high parabolic dunes and north oriented capes and barrier lakes. These dunes which may attain 120 m are the highest vegetated dunes of the world. The Delta coast is the fourth eco-region observed at the Zambezi and Save River Deltas, and consists of mangrove forests and adjacent inland inundated grassland and palm woodlands.

Although there are a variety of ecotones in Mozambique, ranging from bushland, grassland and savannah to forest this document focuses on forests for the SESA for REDD+. This is undertaken so that key biodiversity features requiring special consideration can be identified and addressed in future programs/projects to help protect these key biodiversity features. There are coastal, inland and upland forests in Mozambique. The structure of the forests are effected by the proximity to the ocean, geology and soils, elevation, humidity, temperature, precipitation and these variables in turn effect the type of wildlife found in the forest, as well as human uses of the forests.

The country has a rich and variety of ecological systems and endemic species, which are protected under the conservation areas. These areas are made of parks, national reserves and hunting reserves and are clearly demarcated under state jurisdiction and representative of the natural national heritage. The conservation areas aim to preserve the biodiversity and fragile ecosystems or certain species of fauna and flora. Decree 10/99 of 7th of July establishes the Forestry and Wildlife Department to secure a participative management of forestry and wildlife resources while promoting community sustainable development. Presently the conservation

system covers approximately 15% of the surface of the country, consisting of 8 parks and 9 reserves (Figure 7 and Annex 2).

The table below makes a broad characterization of the forest sector in Mozambique, which is then described in more details this Chapter.

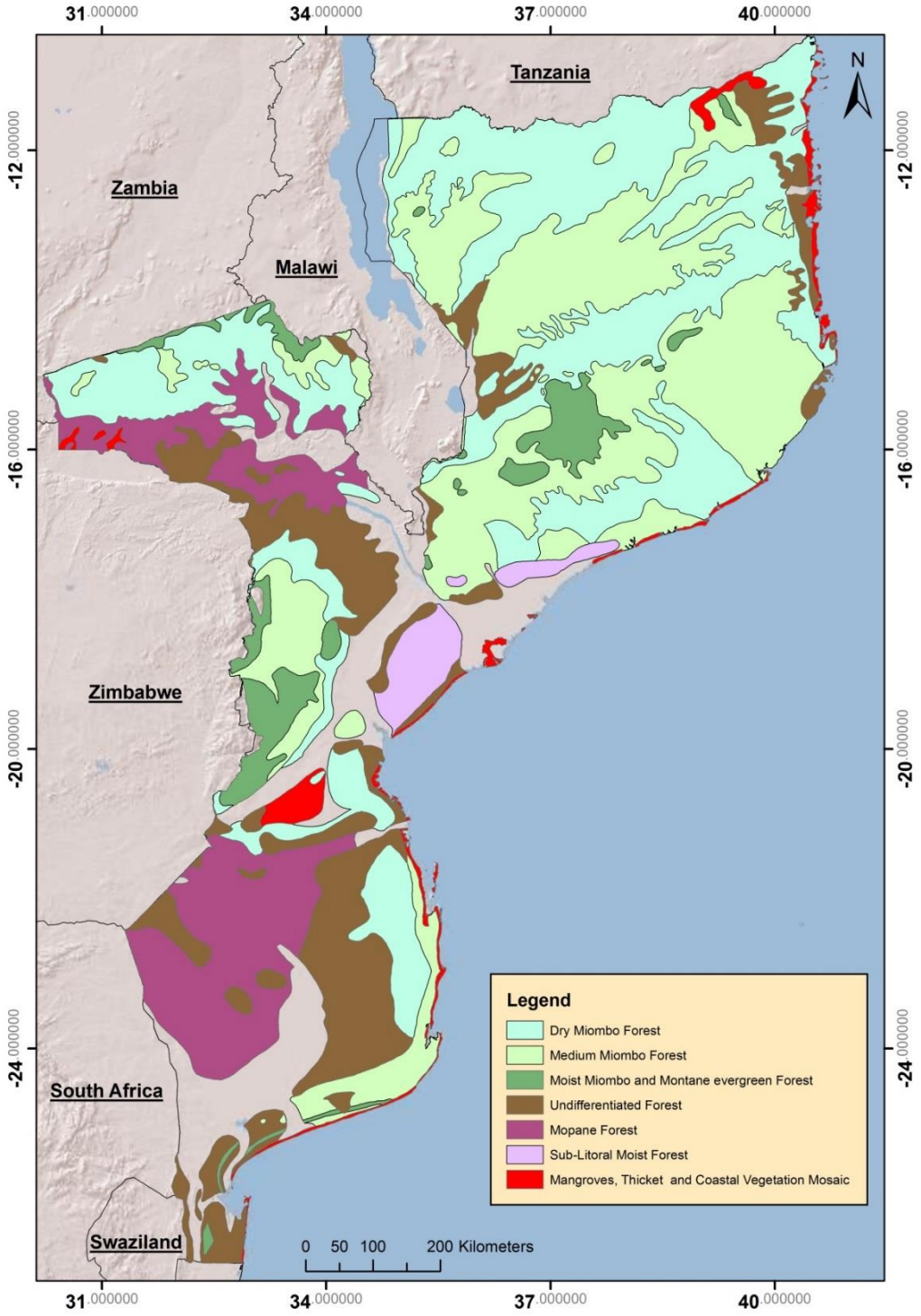
Table 1: Broad characterization of the forest sector in Mozambique

Group	N° of species	Areas of endemism and primary occurrence of fauna	N° of species in the red data list	Drivers of deforestation and forest degradation	Trends
Flora	5500 (4800 of higher plants)	▪ Maputaland Center of Endemism ▪ Chimanimani ▪ Center of Endemism ▪ Coastal Forests; and ▪ Inselbergs sub centers (yet to be confirmed)	300 (122 under consideration)	▪ clearing of vegetation, ▪ slush & burn agriculture, ▪ human settlements, ▪ uncontrolled fires	Reduction of primary vegetation and its transformation into a secondary land.

Mozambique has 70% of its territory (54.8 million of hectares) covered by forest and other woody formations. The forest area covers about 40.1 million of hectares (close to 51% of national territory), while other woody formations (scrubs, thickets and forests with shifting cultivation) cover approximately 14.7 million of hectares, which correspond to 19% of territory (Marzoli, 2007).

The existence of several types of soils, climate and hydrology along the country contributes for the development of several types of vegetation. The figure below is an attempt of describing the 4 main types of vegetation existing in the country, as stated above: coastal mosaic, dense afro mountain vegetation, undifferentiated woodland and miombo vegetation. Nevertheless, at the local scale there are other vegetation types such as coastal dune and littoral vegetation such as Mangroves and Acacia vegetation in the lowland (Albano 2008). Along most of the river beds there are also discontinuous stands of reed vegetation throughout most of their length. Dambos (vegetation in low and wet land) are another vegetation formation, which are very common at the base of the inselbergs and act as a buffer, capturing water and releasing it slowly throughout the year (MAE, 2005). Most of the dambos have been converted into rice fields, which are cultivated during the rainy season (MAE 2005).

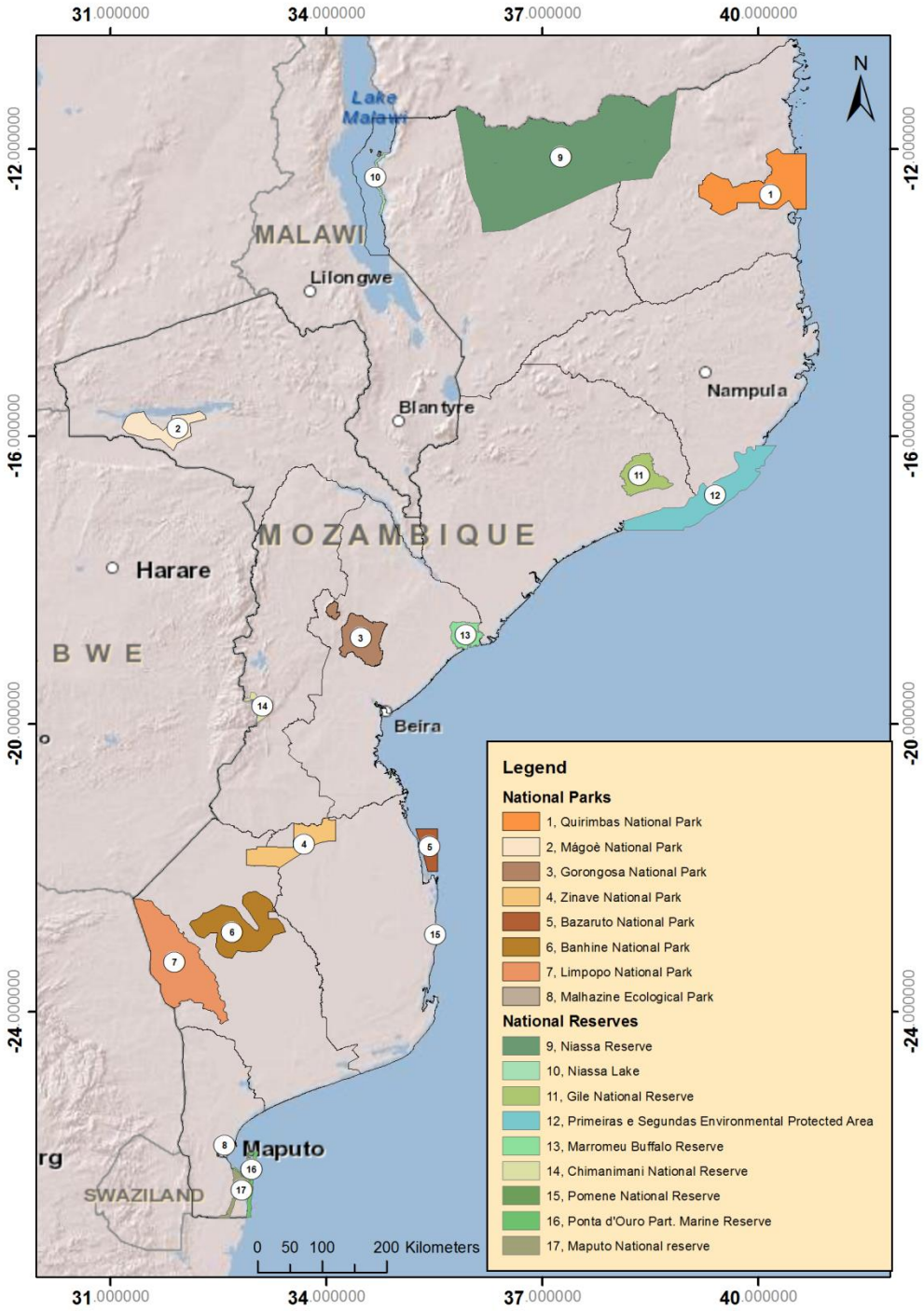
Figure 5: Distribution of vegetation types in Mozambique



Marzoli also indicated that only 26.9 million hectares of land are covered by productive forests (forest with potential for timber production). This productive forest is concentrated in central and northern regions of Mozambique; and the provinces with high contribution for productive forests include Niassa (6 million of hectares), Zambezia (4.1 million of hectares), Tete (3.3 million of hectares) and Cabo Delgado (3.2 million of hectares). Although the Zambezia and Cabo Delgado provinces are in second and fourth position in terms of extension of productive forests, it is noted that they occupy the first (Zambezia) and second (Cabo Delgado) position with 7.7m^3/ha and 7.3m^3/ha of commercial volume, respectively. The species of commercial

value that present high volumes include: mopane (*Colophospermum mopane*), umbila (*Pterocarpus angolensis*), jambirre (*Millettia stuhlmannii*) and chanfuta (*Afzelia quazensis*). In terms of commercial classes, 4% of available commercial volume belongs to precious timbers producing species, 21% for the 1st class, 44% for the 2nd class, 14% for 3rd class and 17% for the 4th class.

Figure 6: Overview of conservation areas in Mozambique



4.2.1.1 A Few Specific Traits about the Coastal Resources

Mangroves

Mangrove forests are widely distributed along most of the Mozambican coast, from north to south. South the Save river they occur extensively in Morrumbene estuary, Inhambane Bay and Maputo Bay (including Inhaca Island) where four main rivers discharge (Barbosa et al., 2001). The central sector is for excellence a muddy coast, with the most extensive and well established mangrove areas of the country. 18 main rivers flow between Save River and Angoche, including the Zambezi, Púngue, Save and Búzi deltas. The mangroves of the Zambezi delta cover close to 180 km of the coast line and can go up to 50 km inland. Mangroves in the northern section go from the Angoche up to Rovuma River. Natural conditions here are less favourable to the establishment of tidal forests, but well developed forests are found in Lumbo, Mecúfi, Ibo and Pemba City.

The main issue concerning mangrove conservation in Mozambique is deforestation. Mangroves are important sources of domestic fuel and wood in coastal communities (Saket e Matusse, 1994; Barbosa et al., 2002; de Boer, 2004). This pressure tends to be particularly high close to urban areas, where population densities are higher, rising the demands for mangrove wood products. Information on mangrove cover area and deforestation rates for the whole country is outdated. The most complete study was that from Saket and Matusse (1994), and it showed a general trend of decrease of total mangrove area from 408.079 ha in 1979 to 396.080 ha in 1990 (although there were also new areas of mangrove). More recently other studies were conducted in localized areas – e.g.: Northern Mozambique in Cabo Delgado (Ferreira et al., 2009), Maputo Bay (de Boer, 2000) and Incomati estuary (Bandeira et al., unp). The results of the study in northern Mozambique (Cabo Delgado) are showed in Table 15. It was estimated that the total mangrove area was of 357 km2 in 1995 and of 368 km2 in 2005, showing an increase of about 3% in the total cover area. Around 336 km2 remained intact in these ten years, while 21 km2 were lost and 32 km2 were gained. Main alterations on mangrove cover area occurred in Quiterajo and Rovuma estuary, and Pemba Bay, the last one probably a result of construction and exploitation of mangrove wood products mainly for house building.

Seagrasses

The 13 species of seagrass that occur in Mozambique abound in the sandy and limestone regions of southern and northern coasts respectively, generally in mixed stands in the intertidal area. In southern Mozambique the main stands are composed by combinations of *Thalassia hemprichii*, *Halodule wrigtii*, *Zostera capensis*, *Thalassodendron ciliatum,* and *Cymodocea serrulata* (Bandeira, 2002). Pure stands of *Z. capensis* are found in Maputo Bay, Bazaruto Archipelago and Quirimbas Archipelago. Northwards the seagrass beds occur mixed with seaweeds such as *Gracilaria salicornia, Halimeda spp*., *Laurencia papilosa*, and *Sargassum spp*. Common seagrass species are *T. hemprichii, H. wrigtii* and *T. ciliatum*. *Enhalus acoroides*, *Halophila stipulacea* and *H. ovalis* can be only found in this side of the country. In the subtidal area, the dominant species are *T. ciliatum* and *E. acoroides*.

The most important seagrass beds occur in Fernão Veloso, Quirimbas, Inhaca and Ponta do Ouro. Table 16 shows estimated cover areas in the main seagrass beds around the country. In Maputo Bay the total area was estimated in 80 km2, which corresponds to 50% of the intertidal area (Bandeira, 1995; Bandeira, 2002). However, *Z. capensis* was reported to be declining, and beds in general are being threatened by erosion, sedimentation and human activities (Bandeira,

2002; Bandeira and Gell, 2003). This last includes pollution from sewage discharge, overfishing, destructive fishing practices, trampling and heavy concentration of tourist activities (Bandeira and Gell, 2003).

4.2.1.2 Main Drivers of Deforestation and Forest Degradation

Main causes (also designated as systems (S)) of deforestation and forest degradation in Mozambique are identified as being associated with:

- Commercial agriculture (S1)
- Small-scale or family itinerant farming (S2)
- Exploitation of forest products (S3)
- Firewood and charcoal (S4)
- Urban expansion and other infrastructures (S5)
- Mining (S6)
- Livestock (S7)

Of the seven main causes of deforestation and forest degradation shifting agriculture representing close to 7.8 MtCO2/year and 65% of total emissions, is the dominant. This is followed by urban expansion (12%) and exploitation of forest products ((8%). These three drivers represent 85% of total. As shown below the above-mentioned causes and related systems are interlinked in multiple ways and interactions that explain the incessant deforestation and forest degradation that have been occurring in Mozambique for a number for years now.

Table 2: Main drivers of DFD and linkages

Systems of multiple agents and causes of D & D	Direct and indirect causes	Main activities causing degradation	Main deforestation activities	Results
Commercial agriculture	Increased demand for agricultural products (tobacco, cotton, soy, ...) Infrastructure expanding Political factors	Related to small-scale of family itinerant agriculture (S2) o Selective wood cutting o Firewood Collection o Hunting o Grazing land o Uncontrolled fires	Large-scale production of sugarcane, horticultural production, maize, soybeans, bananas Small-scale agriculture under out grower arrangement of cotton, cashew and tobacco	Deforestation for the establishment of commercial agriculture Forest degradation related to small-scale of family itinerant agriculture
Small-scale or family itinerant farming	Population growth Increased domestic demand for agricultural products Technological development	Selective wood cutting (S3) Collection of firewood (S4) Hunting Pastures (S7) Fires •	Itinerant agriculture Cash crops (link to S1) Housing areas	Deforestation for shifting agriculture Forest degradation S3
Exploitation of forest products	Increasing international demand for wood and related by-products Political and governance factors Population growth	Illegal cutting Selective cutting Collection of firewood	Forest concessions (native woods) Forest plantations	Deforestation for extraction of timber and derived products Forest degradation4
Firewood and charcoal	Population growth Expansion of infrastructure Increased energy needs	Firewood collection Production of charcoal	Firewood collection and production of non-sustainable charcoal Expansion of residential areas and infrastructure (connection to S5)	Deforestation by cumulative impact over time of firewood collection and charcoal production Forest degradation5
Urban expansion and other infrastructures	Population growth Economic factors Migration to rural areas Tourism	Relations with	Expanding infrastructure (e.g. roads, housing, tourist accommodation) Expanding industry	Expansion of urban settlements Forest degradation (connection to S2 and S4)

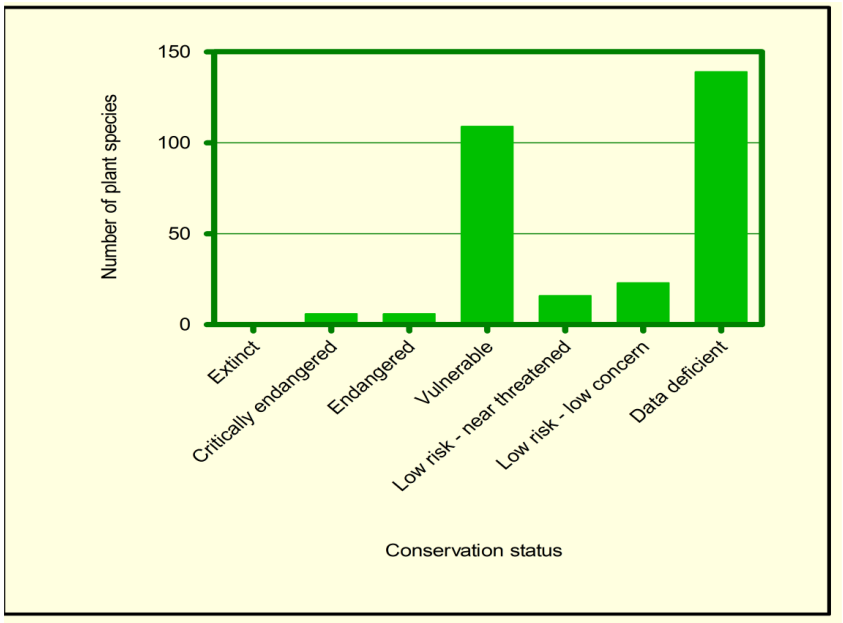
Systems of multiple agents and causes of D & D	Direct and indirect causes	Main activities causing degradation	Main deforestation activities	Results
	Political factors			
Mining	Increasing international demand for natural products Job search/migration	Connection to S2 and consequently other systems	Mineral extraction Resettlements and housing areas Infrastructure for exploration and disposal	Deforestation related to mineral extraction Forest degradation (link to S2)
Livestock	Increase in the consumption pattern of local population Animal products for domestic consumption • Technological development	Small-scale animal husbandry and in forested areas; By connection to S2 and consequently other systems: o Collection of firewood (S4) o Hunting (S2) o Fires (S2	Extensive cattle grazing	Deforestation related to cattle breeding, goat, pig, and poultry. Forest degradation

4.2.1.1 Plants Listed in the Red List

Among other aspects, the combination of all the sources of deforestation and forest degradation listed above also means that the number of species of plants listed in Mozambique Red List stood at 300 in 2009[4] (see table below). One out of these is extinct in the wild (*Sueda sp.*), 6 are critically endangered (*Encephalartos lebomboensis*, *E. munchii*, *E. ngoyanus*, *E. pterogonus*, *E. senticosus*, *E. umbeluziensis*) and 6 are endangered (*Crassula maputensis*; *Icuria dunensis*, *Cyphostema barbosae*, *Encephalartos aplanatus*, *E. chimanimaniensis*, *Sarcocornia mossambicensis*). Recent studies conducted in the centre and north of Mozambique (Timberlake et al., 2009, 2011) show that there is a relatively high number of endemic species. For example, the number of plant species recorded in Mozambique, about 800 species are endemic and nearly endemic (Timberlake, personal communication, 2014). The mountainous areas of Mozambique are relatively rich in endemic species with at least 45 species of plants that are only found in Chimanimani. The Figure 8 shows the conservation status of plant species in the IUCN Red List. (Source: Fifth National Report on the Implementation of Convention on Biological Diversity in 2014).

Figure 7: The conservation status of plant species in the IUCN Red List

[4] MICOA (2009) National Report on Implementation of the Convention on Biological Diversity in Mozambique



The Cabinet Decree 40 issued in November 2015 suspending the giving out of new permits for logging for a period of two years to reverse the allocation process of logging areas containing the intense deforestation occurring in the country, and also banned the cutting of *Swartzia madagascarensis* (rose wood), which although not included in the Red List has been subject of intensive cutting in the last few years and risks to disappear. It is very precious and in high demand.

The mapping of the red list plant species is also imprecise, which also makes it difficult to indicate the respective incidence around the country. What is a known fact is that in its more than 2,770 km of coastline the country has several marine and coastal habitats with the most critical being the coral reefs, mangroves and seagrass meadows. The coral reefs cover about 1,860 km2 of area of the coast, mostly concentrated in the northern Mozambique coastline.

4.2.2 Fauna

4.2.2.1 Terrestrial

Although faunal studies are scarce particularly in regard to the northern and central regions of Mozambique and many montane areas are still largely unexplored the country has been recognized as one of the richest countries in the world in terms of wildlife biodiversity.

The table below also makes a broad characterization of the fauna in Mozambique, which is briefly described below.

Table 3: Broad characterization of fauna in Mozambique

Group	N° of species	Areas of endemism and primary occurrence of fauna	N° of species in the red data list	N° of species in the red data list	Trends

Fauna	4 271 (72% insects, 17% birds, 5% mammals, 4% reptiles, 2% amphibians)	Lager mammals mostly confined to conservation Areas	Around 8 species of mammals threatened	Hunting, uncontrolled fires/ forest fires, destruction of habitats	Confinement of large mammals to conservation areas

Source: MICOA (2009)

Mozambique has a total number of 4,271 terrestrial animal species registered (MICOA, 2009), of which 72% are represented by insects, 17% by birds while mammals and reptiles account for only 5% and 4%, respectively. The remaining 2% is filled by amphibians. According to the 2008 wildlife census, there are five main areas where richness of wildlife species is particularly high. Apart from the western region of Tete province (north and south of Lake Cahora Bassa), all are protected areas or their surroundings. In northern Mozambique (Niassa Reserve, Chipanje area and its surrounding) there are considerable populations of buffalos, elands, impalas, wildebeests and zebras. Three sub-species of large terrestrial mammals are endemic to this region: *Equus burchelli subs*. *Boehmi* (zebra); *Connochaetes taurinus johnstonii* (blue Niassa wildebeest) and *Aepycerus melampus subs*. *Johnstonii* (johnstonii impala). Other areas with substantial numbers of wildlife are central Mozambique (Gorongosa NP, Marromeu Reserve and coutadas 6, 7, and 9 to 5), Limpopo-Banhine-Zinave NP's complex and Maputo Elephant Reserve.

Herpetofauna (reptiles and amphibians): diversity, threats and trends

Only 167 species of reptiles are registered (MICOA, 2009), which belong to 20 families. 6 species are endangered as documented for Chimanimani Mts. (e.g: the flat rock lizard *Platysaurus ocellatus* and a snake of a genus *Dromophis*); coastal forests of Zambezi province (a dwarf gecko *Lygodactylys sp*.) and Serra Mecula (a new species of lizard) (Hatton et al., 2001, Branch et al., 2005). The number of amphibian species is not well known and most species that occur in the highlands are believed to be endemic, such as *Bufo vertebralis* and *Anthrolrptis troglodytes*, both species from the Chimanimani Massif. These two species are in the red list for South Africa, as well as *Afrixalus aureus*, the last one a rare species. A known place of high diversity of herpetofauna is the Zambezi basin, where 200 species of reptile and 90 species of amphibians have been identified (Timberlake, 2000). In Maputaland Centre of Endemism 21 species of frog were identified in permanent and seasonal pans. This number corresponds to 16.28% of the total species occurring in southern Africa (SABONET, 2001). Threats to herpetofauna include apprehension for food, skin and medicinal purposes, pet trade and habitat destruction, although quantitative data on this is unknown. Due to perceived danger to man and livestock, snakes and cobras are more frequently killed.

Avifauna: threats, trends and birds of special concern

The number of bird species of Mozambique has reached 735 (MICOA, 2009). Most of the species are migratory and shared with neighbourhood countries. Freshwater ecosystems and wetlands are important sites for migratory and resident aquatic bird species. The Marromeu Complex supports one of the largest populations of aquatic birds in Mozambique; highlight for the great white pelican (*Pelecanus onocratalus*) and pink-backed pelican (*Pelecanus rufescens*), great cormorant (*Phalacrocorax carbo*), yellow billed stork (Mycteria ibis), african open bill (*Anastomus lamelligerus)*, sacred ibis (*Threskionris aethipoicus*) and many species of heron. It also supports a number of species of wild ducks (spur winged goose; white-faced whistlingduck; fulvous whistling duck). Thousands of migratory Palaearctic and intra-African

species depend seasonally on these habitats, including the flamingos. A number of species in the different habitats of the complex are endangered and threatened, or are of important commercial value (Bento & Beilfuss, 2003). The wide variety of coastal habitats also provides suitable feeding and breeding habitats for many bird species. The coastal barrier lakes are potential hotspots for avifauna (Parker, 1999). Many endemic, rare and threatened species identified up to date are associated with isolated mountain habitats, highlight to the inselbergs Chiperone, Namuli Mts., Serra Mecula, Gorongosa Massif and Chimanimani Mts.

Most of the threats to birds are rooted in anthropogenic activities: deforestation, hunting (serious threat to larger species such as ostrich), cage-bird trade, trade in traditional medicine and use of poisons to protect crops against insect pests and problematic animal. The degradation of floodplains and wetlands due to the exploitation of water resources for agriculture and construction of dams is likely to affect negatively the bird populations living in these habitats (Parker, 1999; Bento & Beilfuss, 2003; www.iucnredlist.org). Management of the water resources is required to prevent further degradation and consequences on the avifauna (Bento & Beilfuss, 2003).

The last national wildlife census of indicates great changes in number and distribution of the main large mammals in the country, when compared to the 1970's. The terrestrial fauna has undergone a major change in the last 40 years due to population increase, development and the past political instability that confined most of the large mammals to existing conservation areas. The terrestrial fauna of Mozambique suffered massive decline during the civil war period, when many herds fled to neighborhood countries. Other animals were killed during the conflict, since hunting was uncontrolled and many conservation areas were not operating. After the end of the war in 1992 efforts have been underway to recover lost populations, especially within conservation areas.

There have been reports of human-animal conflicts in many parts of the country, especially in those communities living inside or around conservation areas[5] (National Census of Wildlife, 2008). Animals most frequently involved in conflicts are crocodiles, lions, elephants and hippos. Long term responses to this phenomenon include the development of land use plans and creation of areas where wildlife can be managed with sustainability and provide benefits to the population without competing with people for resources.

4.2.2.2 Aquatic and Marine

The marine fisheries resources are mostly located in the two major shelves, the Sofala Bank in the center and the Delagoa Bay in the south. The main fishing areas are located at the Sofala Bank, Inhambane, Vilankulos, Chiluane and Beira.

The most important marine species include:

- Deep water crustaceans
- Crustacean (prawns, deep water shrimp, crayfish, lobsters and crabs)

[5] Mozambique legislation allows people to live inside and around conservation areas. Land use plans in these areas then specify which the criteria (temporal and locational) for using existing resources, in line with the management requirements.

- Marine finfish (demersal and pelagic species mainly grouper, snapper, emperor and sea bream also high migratory tuna species of yellow fin, big eye and albacore, swordfish and shark)
- Cephalopods and Mollusks (squid, octopus, sea cucumbers, bivalves)

The most valuable stocks of prawn, demersal fish and kapenta, have been assessed to be highly or fully exploited while the remaining including large and small pelagic are lightly exploited or underutilized in remote areas along the coast. Prawns are the most important species for the fishing sector in Mozambique and are caught primarily in the Sofala Bank area. Deep-water prawn fishing is still not well developed.

Marine fisheries account for more than 90% of Mozambican total fish production. In average, the annual catch from marine resources is about 150,000 tons of which 90% are caught by artisanal fishers. The main marine resource comprises crustaceans (prawns, deep water shrimp, crayfish, lobsters and crabs), marine finfish (demersal and pelagic species mainly grouper, snapper, emperor and sea bream also high migratory tuna species of yellow fin, big eye and albacore, swordfish and shark) and cephalopods and mollusks (squid, octopus, sea cucumbers, bivalves).

Inland water bodies include Lake Niassa/Malawi, the third largest in Africa and third deepest worldwide, the manmade Cahora Bassa Lake and a great number of rivers. Lake Cahora Bassa and the Mozambican part of Lake Malawi provide fishing-related livelihood to about 20,000 people. A total of about 10,000 tons of small pelagic are caught, processed and marketed from Lake Cahora Bassa each year, of which 4,000 tons is caught by artisanal and small-scale fishers. Inland fisheries are dominated by small pelagic - kapenta, tilapia and carps and are the most important freshwater species harvested for human consumption.

4.3 Main Socioeconomic Traits

4.3.1 General Subsistence Economy

Within its total area of approximately 800,000 km², in 2007 it was found to have 20.4 million inhabitants (INE, 2007), which under current annual growth rates (2.8% average) is estimated to be slightly around 26.5 million at present. After standing at barely US$ 80.00 in 1992, when the ceasefire agreement was achieved after close to 16 years of an armed conflict, the country´s GDP per capita is currently estimated at US$ 1,123.40 (UNDP, 2015). The main economic sectors are precisely agriculture, fisheries and forests.

Agriculture contributes 25.9% of total GDP and is the source of livelihood for 75% of the population. The sector has been displaying a rapid growth averaging 6.8% over the period 1996 to 2010 which was less than the growth of the GDP of around 7% over the same period. A main contributing factor has been the high vulnerability of agriculture to natural disasters, mainly droughts and floods in the southern and central regions.

In the same manner as the general economy, the structure of the agricultural sector consists of three main actors: the business sector, the household commercial sector, and the household self-consumption sector (or family sector). The household sector, comprising both the commercial and family sector, represents 94% of the total agriculture. The business sector is small (only 5.3% of the total) but it has been particularly dynamic, growing on average at

47.9% over the period 2001-2003. The business sector includes tobacco, cotton, and sugar and has attracted foreign investment.

The family sector embodies the vicious cycle in which the country is immersed. This is made of natural conditions, lack of capital and adequate financial services, production technologies and services responsible for their development and dissemination, poor marketing systems and other factors that define the environment in which local economic activities are carried out and explain the prevalence of the subsistence economy. The economy is based on direct and integrated exploitation of natural resources, with very little transformation. Plant and animal production, forests and fisheries are integrated in a single economic system of multiple relationships. These are combined to guarantee the survival of the individuals, the families and the communities.

Some of the aspects that define the practice of agriculture in the area, which are typical of the so-called "family sector" are:

- Cultivation of very limited areas: 0.5 to 1 ha is the common size of most of the farms in the country[6].
- Use of farming technologies that are rudimentary: Cultivation is primarily undertaken using hoes and virtually no external inputs, such as improved seed, fertilizers and chemicals are used[7].
- Over the years the family sector farmers have developed livelihood strategies oriented towards minimizing risk through crop diversification, which takes place in a variety ways including:
  - Growing several crops and the dominance of intercropping;
  - Preferring to grow two or more consecutive crops rather than a single one of a longer cycle, even if the potential total yield is higher for the latter, to obtain advantage of moisture availability during the short rainy season; and
  - Growing crops in as many diverse environments (topography/relief/soil) as possible, e.g., in sandy flat areas, in medium textured alluvial deposits of slopes (transition zones), in the fine textured dark colored soils of the river beds (*dambos)* and in open valleys and alluvial soils.

This results in burning vegetation residues after slashing exposes the soil surface to direct contact with rain. Exposed soil surface erode easily with rainfall impact leaving gullies on your field. Erosion takes away the fertile topsoil of the field. More so, you expose the soils and wind can easily erode them too.

Then, the practised land rotation, where after some time, when the soil has lost its fertility. They communities leave the land and move to a fertile one while the previous regain its fertility. After burning the land severally, it takes between 10 to 25 years and sometimes even 40 years

[6] The informal character of agriculture and animal production, which are dominant economic activities in the project-related areas, explains the present land use and land tenure patterns. Ancestral laws establish the distribution and use of land by existing families. Lineage plays a crucial role in the process. Each family and groups of families do their best to secure enough land and to have direct access to areas for housing, fauna, forests, pastures, fertile grounds and water.

[7] Due to the monopolistic structure of the market for these products, they are rather very expensive in Mozambique.

to regain its fertility. The practice of leaving the land fallow for that long is more difficult with the growing population and increasing demand for food.

Efforts have been underway to change this unsatisfactory situation and to use the wealth of resources in the agriculture sector to meet important development goals such as diversification of the economy in general and that of agriculture itself, increased productivity, food security, employment, attract foreign direct investment, feed internal and external markets with a variety of agricultural goods, etc. and ultimately increase the weight of agriculture in the country's GDP in a way that would be in line with its potential.

As highlighted in the Development Strategy for the Rice Sector in Mozambique[8] "the presence of different actors (business, household-commercial, and household self-consumption) highlights three important aspects. First, the predominance of the household sector suggests the need of focusing on this sector for major government interventions: one per cent increase in the growth of the household sector is equivalent to more than 6 per cent increase in the growth of the business sector. Secondly, both the household commercial and household self-consumption sectors are important contributors of overall growth, given their large weight on the structure of production. Thirdly, an overall policy of encouraging private (domestic and foreign) investment has positive aspects on creating dynamism of the overall agriculture, spearheading rapid growth in specific subsectors and creating the conditions for the emergence of a commercial agriculture and other industries. Therefore, an agricultural development strategy that is focused on the smallholder sector and promotes linkages between the smallholder sector and the dynamic business sector could accelerate growth and development of commercial agriculture".

In 2011 the government approved the agricultural strategic plan (2011), better known as PEDSA with the aim of: (a) producing synergies that will transform the agriculture sector from being predominantly one of subsistence farming into being more competitive; (b) embodying a vision that is shared by the sector´s key actors; and (c) dealing with the issues that affect investor confidence.

Irrigation

Mozambique has enormous potential for irrigated farming, with an estimated 3.6 million ha being potentially irrigable. The total irrigated area (equipped with irrigation infrastructure) fell from around 120,000 ha in the mid-1970s, after the country's independence, to close to 40,000 soon after the end of the civil conflict in 1992, and little has been done since then to rehabilitate existing irrigation systems. There are currently around 50,000 ha of land that are irrigated, of which 60% are used for sugarcane and increasingly some banana production. Only 8.8% of family sector farmers use some form of irrigation (TIA, 2008). The country's irrigation strategy gives an orientation on how to establish the irrigation schemes and the property rights of the infrastructure. A growing recognition of the importance of irrigation in the development of the

[8] MINAG/Agrifood Consulting International (September 2005)

country's agriculture led, among other, to the establishment of a National Institute of Irrigation (INIR) in 2012.[9].

Together with the establishment of INIR with a credit from the International Development Agency (IDA – World Bank Group) the Government of Mozambique is currently implementing the Sustainable Irrigation Development Project, better known as PROIRRI. During a period of six years and with a focus on three provinces (Zambezia, Sofala and Manica) as well as on small and medium farmers PROIRRI will pilot interventions aimed at drawing lessons on the best ways of reviving irrigation in the country. PROIRI's **project development objective** (PDO) is *to increase marketed agricultural production and raise on-farm productivity in new or improved irrigation schemes in Central Mozambique.*

Over a six-year period, it is envisaged that the project will develop an innovative and sustainable approach to market-led irrigation in Mozambique, with strengthened public institutions at various administration levels, and with a legal and regulatory framework conducive of private sector participation. Institutional and human capacity development is an important component of the project. The government is open to consider innovative ways of using public and private partnerships (PPP) to develop large scale irrigation schemes that go beyond sugar cane production.

Fisheries

The fisheries sector contributes significantly directly and indirectly to poverty alleviation and socioeconomic development in Mozambique. At around 4%, the direct contribution of the sector to the GDP might be moderate, but it has a considerable weight in food security and particularly access to animal protein (i.e. 50% of animal protein consumed in the country) by a significant proportion of the country's population in rural and urban areas, balance of payment, public revenues, employment and gender equity. Around 850,000 households, or about 20% of the population, rely on fisheries for part of their income and a larger proportion relies on fishing for subsistence and food security

The small-scale and artisanal fisheries in Mozambique play a significant role in the national economy. The sector accounts for about 90% of the total marine catches. The artisanal fisheries consist of individuals or small groups of fishermen with very weak economic power. They make use of non-motorized fishing vessels/boats of 3-8 m in length. They use beach seine, gillnet and long line to catch fish. The sector also consists of fish collectors and divers. It is estimated that the number of fishing boats and canoes is approximately of 15,000, of which 3% are equipped with engines, using beach seine and gillnet fishing gears.

Given the importance of the coastal and marine areas and resources the country's entire coastal line is under a series of measures to protect and conserve the marine and coastal environment, particularly in terms of preventing and combating pollution and the protection of the regions' flora and fauna against the growing threats caused by many human activities including fisheries, navigation, tourism, urban and industrial development, etc. Efforts have been underway to harmonize the interests of a series of stakeholders including local communities with the ultimate goals of protection and preservation of recognized special areas and living

[9] Decree 09/2012, of May 11.

species. Particular importance is being given to the Community Based Natural Resources Management (CBNRM) in partnership with the public and private sector. Among other aspects the ratification, by the GOM, of the Convention on the Protection, Management and Development of Marine and Coastal Environment in East Africa (Resolution n.º 17/96, of 26 of November) embodies this commitment. It should be pointed out that of the eighteen priority areas for investment in tourism, identified within the national tourism strategy, ten are in coastal areas. The integrated coastal zone management as such is not embodied in a single legal document. It is rather spread over a series of laws and regulations that will be better described in Chapter 5, of this document

4.3.2 Main Socioeconomic Uses of Forests

The majority of Mozambicans live in rural areas, relying on natural resources for daily livelihoods. The latest GOM poverty survey made public in October 2016 shows that although the percentage of people living in poverty has fallen in the past 18 years from 69.4% to below 50%, population has been growing faster, what made the actual number living in poverty rising from 11 million to 12 million[10]. Niassa, Nampula and Zambezia provinces are the hardest hit by the phenomenon.

Subsistence agriculture is practiced by the majority of the rural poor, and commercialization of products only takes place when there is surplus production. The collection of firewood and the production of charcoal for cooking and heating represent 85% of the total energy consumption in the country. People in rural areas collect various products for subsistence from the forest, including timber and non-timber forest products.

The timber products collected from forests include:

- **Fuel wood and charcoal:** More than 80% of the energy requirements in rural areas in Mozambique are met on fuel wood. The high level of wood biomass requirement in both rural and urban areas means that there is a great pressure on the forest resources to provide the energy needs firewood;
- **Construction material:** Most of the houses in the rural areas and peri-urban areas are of traditional nature made up of poles and laths for the frame, and grass for roofing. The species *Diasporas rotund folia, Catunaregam spinosa, Apodytes dimitiata* are among the most valuable for poles in southern Mozambique due to their resistance to insects and high durability. All these species are found in coastal forests;
- **Wood for carving:** The carving industry can be divided into two parts. First, the commercial carving and the production of household utensils (which involves selected species such as *Dalbergia melanoxylon* and *Spirostachys Africana Trichilia emetica, olaxdissitiflora, Apodites dimitiata*).

Non timber products derived from forests include:

- **Food plants:** Edible fruits -- Wild fruits from coastal forests such as *Strychnos spinosa*, *S. madagascarienses*, *Trichilia emetica*, *Vangueria infausta*, and *Mimusops caffra* are highly valued by local people. Tubers supplement carbohydrates, vitamins and minerals to rural communities. Species of *Dioscorea* sp. are the most readily available

[10] MEF (2016) Inquérito aos Agregados Familiares – IAF (2014/2015).

food reported to be eaten by local communities around the coastal forests in northern Mozambique during the famine periods. Women are the most active in the collection of edible tubers for the household consumption;

- **Medicinal plants:** About 80% of the people in Mozambique use traditional medicine to treat or cure various ailments. Despite the existence of specialized people involved in the collection and administration of traditional medicine, knowledge about the use of medicinal remedies is widespread. Nowadays, some plant species found in the coastal areas of Matutuine District are being protected due to their perceived scarcity. *Cladestemon kirkii, cardiogyne africana, and acridocarpus natalensis* are the most sought after species due to their perceived value;
- **Game:** Bush meat or game is a source of protein for rural communities. Although hunting of animals for commercial purposes is illegal, the practice is widespread throughout the country. However, hunting of some species for household consumption is granted by the Decree 12/2002 (DNFFB, 2002). These species are found in the coastal forests.

Other products and services derived from forests include**:**

- **Beekeeping:** Beekeeping has been used to improve the livelihood of the communities. In most parts of the country honey is collected from the underground and the beehives. Same communities use traditional hives made with the bark of the trees and in other with financial support use improved hives, which assist in the forest conservation for the production of honey;
- **Honey:** has been used for both food and medicinal purposes. The production of honey depends on the availability of flowering plants. The flowers provide the substances (e.g. nectar) for production of the honey;
- **Sacred values:** Certain forest formations have special value for local communities. There are several cultural assets along the Coastal Forests. The Chirindezene and Licuati sacred forests in the south are some of the well-protected sacred groves by local custom and used for ceremonies and cerebrations. In Catuane a forest inventory for a local community identified four cultural areas in the forest, normally used for meeting (Banjas) and other community activities. These local cultural assets are equally important compared with sacred groves. Many local cemeteries are also found in the Coastal Forests and communities treat them as cultural and spiritual values.

There are at least two types of sacred coastal forests in southern Mozambique: the "gwendzelo" and "phahlelo" (ceremony act/place). The Gwendzelo is made on places on sites where the graves of the ancestors ("régulo") are located. The local communities use these forests for sacrifice ceremonies. The "phahlelo" are the ceremonies made at the household level for the wellbeing of a restricted family. The family headmen or a traditional medicine practitioner performs the ceremonies. The phahlelo can also be undertaken under a sacred tree. The most common sacred trees in the coastal areas of southern Mozambique includes *Sclerocarya birrea*, *Garcinia livingstonei* and *Manilkara discolor*. In northern Mozambique, local communities use baobab (*Adansonia digitata*) tree for the ceremonies.

Tourism: The utilization of forests for tourism purposes is taking shape in Mozambique. Communities are establishing an Eco touristic center in Madjadjane area as a livelihood strategy. This initiative is based on the conservation of coastal forest for enhancing better life for the local communities. The initiative is being funded by IUCN. Similar initiative is emerging in the Quirimbas National Park. The overall idea is to use the conservation of coastal

forests as the means to earn income for improvement of standards of living of the local communities. WWF-Mozambique and other organizations are funding the idea.

Many tree species of the miombo woodlands have multiple uses. Some of them are protected by local communities because of their importance on the basis of traditional beliefs. These trees are normally left in the agriculture fields ("machambas") or simply not cut for firewood because they produce fruits or medicines. Some trees are protected as it is believed that they "produce water" because they grow in the river streams and "because if you cut them the water source will dry out" (Soto and Sitoe, 1994 in Muller et al., 2005). Woody species (dbh _10cm) identified inside the miombo woodland sample plots at the Bárue study site, Manica, Mozambique. Shaded species are the ten most frequent and the number in parenthesis after is the average number of stems per ha (Adapted from Muller et al., 2005). Annex 3 presents the list of miombo forest products protected at community level.

Examples of species protected by communities are *Dolichandrone alba* used to make wooden cooking spoons, *Sclerocarya birrea* and *Trichilia emetica* for fruit in the southern region of Mozambique. Medicinal plant species from miombo woodlands include *Brachystegia spiciformis, Markhamia obtusifolia*, *Kigelia africana*, *Annona senegalensis* and others. There also other specific uses of the miombo plant species such as *Ancylobrotus kirkii* for gum, *Albizia versicolor* for soap, *Grewia monticola* for toothbrush and *Rhoicissus reviolli* and *Lannea stuhlmannii*.

Building materials are commercialized in a scheme closer to that of firewood. Other products such as wild foods (including fruits, leaves, meat and honey) are commercialized in local markets in the cities or close to the roads by rural population, generally by women and children. Medicinal plants are generally given by traditional healers to their clients under prescription or sold in suburban and urban markets. Woodcarvings are another important product from miombo woodlands. Woodcarvers are normally people living in rural areas and some of these crafts are household utensils such as wooden spoons and pestles that are necessary equipment for each rural and suburban (and some urban) households. Other woodcrafts are carvings of different kinds of things used as adornment objects for people in the cities. The most famous woodcrafts of Mozambique are made of *Dalbergia melanoxylon* and *Spirostachys africana,* and are commercialized all over the world.

In addition to being an important source of employment, income, etc. the use of a variety of forest products by local communities reduces expenses in the order of billions to the government that might import medicines, energy and other forest-based products. For many years villagers kept the tradition of using forest resources sustainably, but because of the circumstances - population increase and the consequent need for more agricultural areas, the need for more income, etc. - this has led to a modification of traditional resource uses which are increasingly less sustainable. Promotion of other income-generating activities, alternative sources of energy, improved technologies and particularly improvement of the agricultural systems con contribute to improve the living standards of rural communities at the same time that they preserve the value of the forest ecosystems.

5 LEGAL AND INSTITUTIONAL SETTING FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT

5.1 Mozambique Legal and Institutional Framework

In the same way as many other developing countries Mozambique started adopting a more comprehensive set of systems to promote sustainable development after the Rio Conference on this subject in 1992. This happened in the form of: (a) adherence to and adoption of a series of international and regional environmental protection and conservation conventions and protocols; (b) approval of a significant set of legislation with direct and indirect implications to environmental protection; (c) creation of specific public institutions or strengthening of existing institutions dedicated to both environmental and social management.

More than 20 years after the process has reached a considerable level of maturity. At present the country is more concerned about ensuring that the set of laws, regulations and institutions that have been established are adhered to in practical terms rather than formulating new sets of such instruments. However, the recent institutional transformation in the management of the environmental components in Mozambique that culminated with the establishment of a new ministry of environment with a wider mandate over land, forests, conservation areas and rural development (MITADER), also means that a number of legal and institutional changes and adjustments are identified as needed.

In addition to the recent updating of the Regulation on the Environmental Impact Assessment[11] the current context is informed by the desire of the GOM to update some of its environmental legal provisions such as those governing land, forests and wildlife management. The extent to which the process will go ahead and have practical effects for REDD+ is still to be determined. Nonetheless, while looking at how things are governed at present, which is what is and legally valid, the need and possibility for changes to occur should not be ignored.

5.1.1 The Current Legal Framework

5.1.1.1 Adherence to International and Regional Conventions and Protocols

With relevance for REDD+ the adherence to and adoption of a series of international and regional environmental protection and conservation conventions and protocols the following should be mentioned:

General principles:

Mozambique has been adhering to a series of international legal instruments that relate to the need of being proactive in environment protection and conservation. Under line 2 of article 18 of the country'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

[11] Decree Nº 45/2004 has been replaced by Regulation 54/2015, as from 1st April 2016 (date of enactment after publication in January 2016)..).

acts. As per point 1 of article 18, of the Constitution "*treaties and international agreements duly approved and ratified, are enacted in the Mozambican legal order*".

International and regional Conventions, Protocols and Treaties with relevance for REDD+ and not only have been ratified, namely:

- The **UN Convention on Biodiversity** ratified by Resolution n.º 2/94, of 24 of August: this is aimed at "the conservation of biological diversity, the sustainable use of its components and fair and equitable sharing of benefits arising from the use of genetic resources, including by appropriate access to genetic resources and appropriate transfer of relevant technologies, taking into account all rights over those resources and technologies, as well as through adequate funding". This international instrument, advocates the conservation of ecosystems and natural habitats and 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 the country, which sometimes can be endangered by carrying out oil and gas operations and other industrial operations without due regard to the provisions of environmental legislation. The Convention is underlined as it is of extreme relevance for **REDD+** when taking into consideration that forests in Mozambique and elsewhere are the most biologically diverse systems. They embody some of the richest biological areas in the World. It is in the forests that the largest diversity of habitats for plants, animals and micro-organisms can be found. Forests sustain important aspects of natural and socioeconomic life in countries like Mozambique while they offer global goods including contributing to climate change, which depending on how forests resources are used can be a positive or a negative contribution. At present forest biodiversity is increasingly threatened as a result of deforestation, forest degradation and other stressors that REDD+ seeks to assist to reverse;

- **Convention on the Protection, Management and Development of Marine and Coastal Environment in East Africa**, ratified by Resolution n.º 17/96, of 26 of November: it highlights a series of measures to protect and conserve the marine and coastal environment of the Party States, particularly in terms of preventing and combating pollution and the protection of the regions' flora and fauna against the growing threats caused by many human activities. At the national level and taking into account a series of factors including the fact that 60% of the country's population lives in coastal areas efforts have been underway to harmonize the interests of a series of stakeholders including local communities with the ultimate goals of protection and preservation of recognized special areas and living species. The concentration of people in the coastal areas combined with the fact that half of the country's territory is found at an altitude of not more than 100 m above sea level, also means that people and assets are increasingly vulnerable to episodes of sea level raise (SLR) and frequent and severe floods and cyclones. All facts combined also contribute to reducing ecological resiliency to climate change and threaten food security. Particular importance is being given to the Community Based Natural Resources Management (CBNRM) in partnership with the public and private sector;
- **African Convention on Nature and Natural Resources Conservation** ratified by the Parliament's Steering Committee through Resolution n.º 18/81, of 30 December: is aimed at ensuring the conservation, use and development of land, water, forest and

wildlife resources of Member States, bearing in mind not only the general principles of nature conservation, but also the best interests of the communities themselves. The importance of this convention for REDD+ can be at the same level as the **UN Convention on Biodiversity**, described above;

- Protocol related to **Wildlife Conservation** and its application in the **SADC**, ratified by Resolution n.º 14/2002, of 5 of March: it is aimed at establishing common approaches and support 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. This as well as other SADC regional protocols on natural resources such as water and shared water courses and other are also important for REDD+ and should be highlighted and their implementation supported. The SADC region has been instrumental in its attempts to bring about practical elements to protect resources of common interests in the region. This involves information sharing, technical cooperation, joint efforts to mobilize resources and to make strategic investments and to take concerted actions, including joint monitoring of the state of resources and the environment. It is a known fact that biodiversity and ecosystems know no boundaries. What is done in each country has the potential of affecting a wider geographical space;
- **Ramsar Convention on Wetlands of International Importance**, ratified by Resolution No. 45/2003 of 5 November. Under this Convention countries, including Mozambique prepare a list of Wetlands of International Importance. The governments commit themselves to sustainably use such areas by promoting territorial planning, policy development and publication of legislation, management actions and education of their people, as well as the proper and effective management of such areas in an integrated approach *vis a vis* international cooperation particularly regarding transboundary wetlands, the shared wetland systems, common species and development projects that may affect wetlands. Mozambique has two renowned Ramsar sites, i.e. the Zambezi Delta/Marromeu in the confluence zone between the Shire River and the Zambezi River. It supports 119 species of waterfowl and partially aquatic, including species of global interest, large breeding colonies of various species, and numerous migrants *Palaearctic* and intra-African (Benedict, 2000). Species in the Red List include world *carunculatus Grus* and *Rynchops flavirostris* (Bento, 2000; IUCN 2002). Thousands of pairs of white pelicans in the delta, and large breeding colonies of storks and herons, including *Anastomus lamelligerus*, *Threskiornis aethiopicus*, *Ardea cinerea*, *Squacco Heron*, *Platalea alba and Egretta spp*. The populations of waterfowl, probably declined in the last 30 years because of the loss of natural flood cycle due to Kariba and Cahora Bassa dams. Floods that affected the extensive mosaic of habitats in the delta now rarely occur and thus the quality and quantity of waterfowl habitat decreased (Bento, 2000). The Zambezi Delta is a Wet Land of International Importance under the Ramsar Convention ratified by the Government of Mozambique. The other important Ramsar site in Mozambique is the Lake Niassa, in Niassa province. It spans for 1,363,700 hectares and 700 meters deep and is Mozambique's part of the third largest and the second deepest lake in Africa (referred in different ways between the countries that share it, i.e. "Lake Malawi" in Malawi, and as "Lake Nyasa" in Tanzania). Lake Niassa tropical waters and shores are home to an estimated 1,000 species of cichlids, with only 5 percent found elsewhere. It is also home to significant and diverse bird populations, mammals and reptiles;
- **Resolution n.º 21/81**, of 30 of December, by the Cabinet that turns Mozambique into an **UICN member**: among other aspects this resolution is aimed at encouraging and facilitating cooperation amongst governments, international organizations and people interested in nature conservation and its resources. Mozambique becomes a member of

the international community committed with the sound management of natural resources. It facilitates the sharing of information, knowledge and practices;

- **Climate Change**: as a continuation of previous engagements and resolutions, e.g. Resolution No. 1/94 of August 24 (UNFCCC) and Resolution No. 10/2004 of 28 July, 1994 (Kyoto), Mozambique is one of the 196 countries that signed and ratified the new international agreement in Paris, in December 2015, in order to reduce greenhouse gas emissions to contain global warming to 2°C. COP 21 was a decisive meeting, 3 years after the end of the commitment period of the previous international agreement, the Kyoto Protocol (COP 3). Indications are that this is yet to be turned into a specific resolution in order for the adherence to be enacted as a national legal provision. Irrespective of what the future holds the country's Intended Nationally Determined Contribution (INDC), of September 2015, is clear about the fact the country's mission is to contribute to "**reduce climate change vulnerability and improve the wellbeing of Mozambicans through the implementation of concrete measures for adaptation and climate risk reduction, promoting mitigation and low-carbon development, aiming at sustainable development, with the active participation of all stakeholders in the social, environmental and economic sectors**". The implications of this commitment can be expected to have repercussions on the REDD+ National Strategy and Plan of Action as well on any forest development program.

Other important international and regional conventions and protocols ratified by the Mozambican State include:

- Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer (Resolution No. 8/93 of 8 December);
- United Nations Framework Convention on Climate Change – UNFCCC (Resolution No. 1/94 of August 24, 1994);
- Kyoto Protocol (Resolution No. 10/2004 of 28 July);
- Convention on International Trade in Endangered Species – CITES (Resolution No. 20/81 of December 30);
- Cartagena Protocol on Biosafety (Resolution No. 11/2001 of 20 December);
- United Nations Convention to Combat Desertification and Drought (Resolution No. 20/96 to November 26);
- Stockholm Convention on Persistent Organic Pollutants and (POPs) (Resolution No. 19/96 of November 26, 1996);
- Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal (Resolution 18/96 to November 26, 1996);
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Resolution 10/2009 of 29 September. The Convention entered force in Mozambique in July 2010).

The National REDD+ Strategy is committed to make use of the enacted international and regional legal provisions on environmental and social management to find ways of materializing them as part of the ongoing legal and regulatory reform around land, forests and other resources as well as other initiatives.

5.1.1.2 Approval of Domestic Policy and Legal Instruments

General Legislation

The Constitution

Mozambique's 2004 Constitution includes two fundamental environmental pylons, namely: "(i) the right of every citizen to live in a clean environment; and (ii) the responsibility to protect this right" as well as recognition of environmental protection as a public interest.

The country's fundamental law contains a series of general legal provisions aimed at preventing and controlling pollution and erosion; integration of environmental concerns into sectorial policies; promotion of the integration of environmental values in educational policies and programs; ensuring the rational use of natural resources while maintaining their capacity for renewal, ecological stability and their ability to assist in the fulfillment of essential human rights of present and 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. The expected formulation of the NLUP embodies such concern particularly in what is related with transformation in the forest sector. The National REDD+ Strategy builds on these foundations and will be instrumental in materializing them.

The Environmental Law n.º 20/97, of 1 of October 1997

This Act is "*aimed at defining the legal bases for a correct use and management of the environment and its components for the realization of a system of sustainable development in the country*".

Article 4 of the Environment Law establishes a range of basic legal principles, which highlight: the principle of rational use and management of environmental components, with a view to further improve the quality of life of citizens and the maintenance of biodiversity and ecosystems; the precautionary principle, whereby the environmental management should prioritize the establishment of systems to prevent acts that could be harmful to the environment, to prevent the occurrence of significant negative environmental impacts or irreversible damage, regardless of the existence of scientific certainty about the occurrence of such impacts, and the principle of global and integrated vision of the environment as a set of interdependent natural ecosystems, which must be managed so as to maintain their functional balance.

Environmental Law (Law No 20/97) also provides for the participation of local communities in the formulation of policies and laws related to natural resource management, management of protected areas, which is of relevance for Program.

This law has formed the basis for defining specific environmental laws and regulations.

The Environmental Impacts Assessment (EIA) Regulation, approved by Decree 54/2015 to regulate the same process

Mozambique has developed comprehensive regulations to cover the EIA process, which are included in the Regulation of the Process for Environmental Impact Assessment. The regulations are in line with the world's environmental and social management best practices, including World Bank recommendations and procedures.

There are three main specific objectives of any EA exercise:

- Screening and scoping of the proposed developments in terms of their potential impacts on the natural and social receiving environment, indicating both the beneficial outcomes and adverse effects. The initial screening is meant to determine the scope of the Environmental and Social Impacts Assessment (ESIA) required prior to approval of interventions. If any investment is likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented (Category A), the ESIA will be more stringent than if the investment has impacts which are less adverse, site-specific, mostly reversible and where adequate mitigation measures can be designed (Category B). For investments with multiple subprojects, this screening is often done in the form of a checklist of potential impacts included in standard Environmental and Social Management Frameworks (ESMFs). The new Decree (54/2015), which was enacted on the 1st of April 2016 has introduced a new category, which is A+ followed by a simple Category A. The two Category A projects (i.e. A+ and A) include all the interventions that require stringent ESIA process due to their expected severe impacts. One of the differences is that A+ projects should be reviewed by independent (and more professional) assessors, while simple A projects are expected to be reviewed by the normal review process that has been in use, comprising mainly MITADER technicians and those of other sectors (e.g. agriculture, mining, energy, fisheries, water, etc.) seen as relevant in each specific case. Under the new Decree the two A Category projects are required to assess their impact on biodiversity and present and plan to offset any potential biodiversity losses. Screening is done by the Provincial Directorates of Land, Environment and Rural Development (DPTADER), while projects under Category A and A+ are then supervised by the central MITADER and Category B and C (exemptions) are the domain of the provinces.;
- The actual Environmental Impacts Assessment (ESIA), which assesses the potential impacts of the investment in detail and evaluates alternatives;
- Proposal of measures to be taken in order to avoid, mitigate and/or eliminate adverse effects both at the planning, design and installation stages, and during operation and eventual decommissioning of the project. This is generally done in the form of an Environmental and Social Management Plan (ESMP), which is normally an intrinsic part of the ESIA.

The following activities are included as Annex III of the Decree N.º 54/2015 that regulates the environmental impact assessment process:

- Wood processing units;
- Transformation, clearance of native forests/vegetation in areas between 100 and 200 ha, without irrigation;
- Industrial carpentries;
- Activities in Conservation areas proposed by the entity managing such areas with the aim of improving management.

In line with the system adopted in Mozambique activities under Annex III fall under Category B, which is the category under which a significant part of Community and MSME initiatives in the forest sector fall in.

Figure 2: The ESIA process in Mozambique

The Scoping Exercise, ESIA and the Environmental and Social Management Plan (ESMP) are components of importance in any EA process. Scoping primarily explores fundamental issues and identifies any potentially significant positive and negative environmental (and social) impacts associated with the proposed development, helping to determine the scope of the Environmental and Social Impacts Assessment. An ESMF and an ESMP include in an annex Environmental and Social Clauses (ESC), which serves as a guide for the contractor during construction. One of these clauses is the "Chance Find Procedure" mentioned earlier. These ESC should be included in the bidding documents and in Constructions Companies Contracts for systematic compliance during project construction.

The ESIA regulation also foresees that the Draft Scoping/TOR and Draft ESIA/ESMP should be subject to public debate with the objective of:

- Keeping Interested and Affected Parties (PI&As) informed about key issues and findings of each stage of the ESIA;
- Gathering concerns and interests expressed by various project stakeholders;

- Obtaining contributions/opinions from stakeholders in terms of avoiding/minimizing possible negative impacts and maximize positive impacts of the project; and
- Supporting the social dialogue and identifying from the onset, stakeholders' perceptions and expectations. This can contribute to the action planning and effective communication to minimize the impacts of the project. The process also allows for rethinking the project's technical aspects.

Specific public participation aspects are regulated by Diplomas 129/2006 and 130/2006 and other related regulatory instruments.

Resettlement Issues

Decree 54/2015 of the Environmental and Social Impacts Assessment Process, which governs the EIA process in Mozambique says very little about resettlement, except that Article 20, points b) and c), indicate that an environmental license for construction (point b)) will be issued after approval of the ESIA/ESMP and RAP for projects that require resettlement and that an environmental license for operation (point c)) will also be issued upon approval of the of the ESIA/ESMP and RAP for projects that require resettlement. Annex I from this regulation specifies the factors that determine the classification of a project under Category A+ also indicates in its point b) that projects located in populated areas that require resettlement will fall under Category A+. Seen from a different perspective this also means that projects with resettlement implications fall under Category A+, i.e. the most stringent category.

After many years of not having a unified instrument to guide resettlement planning and action on August 8, 2012 the Cabinet approved ***Decree 31/2012,*** "*Regulation on the Resettlement Process Resulting from Economic Activities*". This regulation fills a longstanding void in this regard.

- *Article 20* indicates that the issuing of an Environmental License is conditional to the approval of a Resettlement Action Plan as part of the Environmental Impact Assessment, as per Decree 54/2015, of December 31 of the latter process, where developments require that to happen;
- *Decree 31/2012* makes no provision of a Framework as a starting point in situations where project intervention area's footprints are not known; nor does it provide (i) basic characteristics to trigger resettlement, (ii) entitlement eligibility criteria, and/or (iii) room for grievance redress mechanism upon which PAP can rely upon for peaceful resolution of their concerns.

Moreover, for the most of this new Decree, it seems worth stressing out that its practical implications are still to be tested and assessed. Preliminary indications are that it does not solve the need to be specific in certain areas of the resettlement process, which continue to be spread over a series of legal documents. Thus, it will continue to be necessary to creatively combine those documents to devise the best measures to be adopted in relation to specific issues. In fact, Mozambique legislation guiding involuntary resettlement is spread over a series of legal documents dealing with land, general rights, compensation, etc.

Regulation to Prevent Pollution and Protect Marine and Coastal Environment, approved by Decree n.º 45/2006, of 30 of November

This instrument has, as its aim: to prevent and limit pollution from illegal discharges from ships, platforms or land-based sources, off the coast of Mozambique and the establishment of legal bases for the protection and conservation of areas in the sea, lake and river, beaches and fragile ecosystems that are public domain. It also categorizes the various activities and determines the levels of their acceptability. It also deals with land-based sources of marine pollution.

The Forests and Wildlife Law (Law n.º 10/99, of 7 of June) and specific regulations

Among other aspects, the law defines the protection and conservation of specific biodiversity components as well as certain 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. Among other aspect related with community participation and involvement it proposes that 20% of concession fees should go to local communities' resident in a concession area. Local Participatory Management Councils (COGEPs) constituted as associations with representation of all stakeholders with interests in the use of natural resources in each area are encouraged to be created as a mechanism for articulating and defending the interests of local communities and all relevant stakeholders. The mechanisms for channeling and utilizing the 20% of fees to benefit local communities was created in 2005 through Ministerial Diploma n.º 93/2005 of May 4th. Beneficiaries can only receive money if their community is organized in a legalized association with a bank account.

This law is likely to be updated and eventually split in two, i.e. one to deal with forests and the other with wildlife. The acknowledgement of the fact that the COGEPs have not been effective and the mechanisms to collect and use the 20% by people living around the concessions also suggests that Ministerial Diploma n.º 93/2005 of May 4th is also likely to be revised and updated. At the practical level, it is noted that COGEP have not been formed or where they exist have not been effective, in some cases the collection of the 20% is done but how the proceeds are used remains open to debate and due to the limitations of the country's financial institutions a significant number of communities do not have access to financial services to open bank accounts and manage funds. A significant level of financial illiteracy further compounds the prevailing situation.

For the time being and after acknowledging that the rate at which forests are being devastated in Mozambique in November 2015 the Cabinet passed a decree suspending the issuing of new permits for logging for a period of two years to contain the intense deforestation occurring in the country. The Decree is also being aimed at saving endangered species in Mozambique's forests, due to strong pressure on timber.

The prohibition of unprocessed timber was turned into law by the Parliament in November 2016 following a submission, in 2016, of the bill in that regard, by the Government.

The Land Law (Law n.º 19/97, of 1 of October)

The law and its Regulation 66/98, provide the basis to define access rights, land use rights and procedures for the acquisition and use of land title and rights by the communities and individuals. The same law and the regulation embody key aspects defined in the constitution in relation to the land such as the maintenance of the land as state property and that land cannot be sold as well as the absence of a "land market" per se in the country. Among other aspects it

defines “areas meant to meet public interest” as belonging to public domain. It also protects customary and community rights over land.

This is also a law that is likely to be updated considering the evidence gathered to the effect that many of its principles are cumbersome and open to endless conflicts that are detrimental to a good business environment, sound management of environmental components and even protection of the poor and vulnerable groups, which form the majority of the people in Mozambique. The formulation of the NLUP will certainly offer a lot of useful elements to update this legal provision and many other related with land and natural resources management.

The Land Planning Law (Law n.º 19/2007 of 18 of July) and its regulation

It establishes many of the important principles for environmental protection in the context of regional planning. Line 1 of article. 5 of this Act, states “land use planning aims to ensure the organization of national space and sustainable use of natural resources, noting the country's economic legal, administrative, cultural and material conditions favorable to social development and, to promote the quality of life, the protection and conservation of the environment. It establishes hierarchical responsibilities among central, provincial, district and local governments in land use planning processes.

National Water Law in 1991 and the National Water Policy from 1995[12]

In regards to the environment, the Water Policy also addresses the following water and water use issues: (a) Economics: water is expected to contribute to the development of important economic sectors and subsectors such as irrigation, hydroelectric power, industry, tourism, fisheries, reforestation, livestock, navigation, among others. (b) Conservation: ecological flows for rivers and estuaries, water quality standards for effluent discharge into water bodies, intakes and catchments, and measures to prevent and mitigate the impact of pollution. (b) Disaster risk reduction: reduction of vulnerability to floods and drought by better coordination and planning, use of structural and non-structural measures and consultation with and training of people, communities and institutions in affected areas.

In regard to water supply and sanitation, under the water law and policy the following principles are adhered to: (i) water supply and sanitation services should be provided in accordance with the demand and economic capacity of the users; (ii) tariffs should allow for the recovery of operational and maintenance costs, and later contribute to investment and sustainability of the systems; and (iii) in as far as possible water supply and sanitation services should be decentralized to autonomous local agencies. Under the water law and policy, water and sanitation are formally dealt with as a unity although sanitation is still being in a situation of relative disadvantage.

Water and sanitation policy is further elaborated in the National Water Policy (PNA), adopted in August 2007. It covers the 2015-2025 timeframe, providing specific targets for the period. The policy’s goals fall into two main areas: a) Water: providing the basic needs of humans, based on the supply of safe and reliable water in urban, peri-urban and rural areas; b) Sanitation: improved sanitation as an essential tool for preventing water-related diseases (malaria, cholera,

[12] Updated in 2007

diarrhea), improved quality of life and environmental conservation. It focuses on different areas and aims at ensuring access to sanitation services (ranging from improved latrines to connection to an urban sewerage system and improvement of storm water and drainage systems).

A process of separation of functions and roles and responsibilities of the various role players has been underway. In water, water resources and bulky water production roles have been separated from water supply asset holding and from water services management. A regulatory entity has also been established with the mandate of keeping a balance between government and private sector management while consumers are given a voice in infrastructure planning and management. The government retains the role of policy formulation and general promotion. However, in practical terms the country is still going through a transition process with government interfering across the entire sector doing cumulatively policy formulation, regulation, implementation and management of services. Nonetheless, there has been enormous progress made in both implementation and institutional adaptation.

The Law on Local State Administration nº 8/2003 and Decree nº 15/2000 on Local Authorities

These legal instruments expand the level of control and responsibility to local authorities for local development and decentralization.

Mining (14/2002) and Oil (3/2001) Laws

The Law n. º 14/2002 of 26 June regulates the terms of exercising the rights and duties relating to the use and exploitation of mineral resources with respect for the environment, considering their rational use and benefit to the national economy. The same law stipulates that "the right to use and exploit mineral resources shall be exercised in accordance with the best and safest mining practices, in compliance with the environmental quality standards established by law and with a view to developing a long-term sustainability". Specific areas in which sustainability should be materialized include: a) reconnaissance b) exploration and research; c) mining; d) treatment and processing, e) marketing or other uses of the mineral product, and f) other related purposes. In its turn Law 3/2001 of February 21 is governed by the same principles as stipulated above and regulates oil production in the country.

Pesticides Regulation (Ministerial Diploma n.º 153/2002, of 11 of September)

This is a joint regulation between the ministries of agriculture, health and environment aimed at regulating the importation, distribution, production, disposal and use of agrarian pesticides for the protection of animal and public health purposes. It requires all operators active in the importation, distribution, production of pesticides to be registered. It also classifies the various pesticides in three major categories, where those of Class III and II are the least lethal and those of Class I are the most lethal. It also regulates the labeling and packaging of pesticides, as ways of facilitating identification and protecting the environment and particularly public health.

Occupational Health and Safety

Occupational health and safety combine provisions from different legal instruments namely: The Constitution, the Labor Law and a series of provisions from subordinate legislation, much of it inherited from the colonial period. ILO conventions, especially Convention no 17, related

with compensation for workplace accidents as well as ILO Convention no 18, regarding compensation for occupational illnesses, also apply.

The Constitution (Article 85) states that all workers have a right to a fair wage, rest and vacation and to a safe and hygienic work environment. The Labor Law (Articles 216 through 236) indicates that workers have the right to work under hygienic and safe conditions and that employers have the obligation to create such conditions and to inform workers regarding the risks associated with specific tasks that they are supposed to perform. This could be in the form of safety equipment and work clothing to prevent accidents and negative effects on workers' health. Under the Labor Law employers and workers are expected to work together to ensure health and safety at the work place. Companies with high risk of accidents or occupational hazards are required to establish workplace safety committees to ensure compliance with health and safety norms investigate the causes of accidents and organize preventive measures. Such committees must include representatives of both the employer and the workers.

The Labor Law also stipulates that industry-specific regulations on health and workers' safety may be established by ministerial diploma, by the Minister of Labor, the Minister of Health or the Minister in charge of the specific sector. It is worth mentioning that in 2008 (December) the Ministry of Health approved its specific guidelines in this regard (MISAU/DNAM (December 2008) – "Guidelines on Safety and Health in the Workplace", Maputo, Mozambique).

Large size companies (i.e. with more than 100 employees) and companies carrying out strenuous, unhealthy or highly dangerous activities must have health units on site. Medical professionals are supposed to regularly examine workers to determine, among others, if they are well enough to do the work called for in their contracts. HIV/AIDS tests fall outside such a provision. For certain sectors and in line with their specific provisions regular health checks are mandatory. Such is the case of workers dealing with food and beverages.

Conservation Areas Law

In April 9, 2014 the Parliament approved the Conservation Areas Law, which will fill a void that prevailed for many years in the subsector. The new law provides for the legal establishment of Conservation Area Management Boards (CGAC), 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. The new law also:

- legalizes public-private partnerships for CA management and for concession contracts;
- presents new categories for the classification of protected areas into a) total conservation areas and b) sustainable use conservation areas;
- management plans for CA must cohere with spatial planning instruments at all levels and special land use plans will be required for the ecological zoning of single or clusters of CAs and their buffer zones, ecological corridors and other areas critical to the preservation of the ecological balance and spatial continuity elements;
- interests and involvement of communities legally inside CAs and their buffer zones, in income generating activities that promote biodiversity conservation will be considered in new CA Strategic Development Plans;
- **c**ommunity conservation areas with land use rights will provide communities with area management options of partnerships and concessions to third parties;

- buffer zones will be guided by CA Management Plans - instruments with the same level of juridical obligation as Land Use Plans and Environmental (and Social) Management Plans. However, **coastal/marine CAs** will be jointly administered by the **CA and the Fisheries sector**, and **terrestrial CAs** by the **CA and the Agriculture sector**;
- opens the possibility for the State to resettle people outside of a CA if their presence is incompatible with the legal status of the conservation area or impedes its good management.

5.1.2 Institutional Framework

As from January 2015 Mozambique established the Ministry of Land, Environment and Rural Development (MITADER). This comes after many years (i.e. from 1994 to 2014) of managing environmental issues through a ministry that was only responsible for environmental coordination (MICOA), without any vertical mandate or direct responsibility for implementing development programs/projects on the ground. MITADER will continue exercising part of MICOA's role of ensuring that all sectors and interventions with environmental (and social) implications work together to promote the sustainable use of the country's resources at the same time that the ministry is responsible for specific sets of resources. Areas that used to be under the responsibility of the Ministry of Agriculture (MINAG), such as land, forests and conservation areas, are now managed directly by MITADER in an integrated manner to promote rural development and ultimately the sustainable use of naturalresources.

For an arrangement that came into effect only in January 2015 it could be still early to tell but expectations are that MITADER will boost the environmental sector capacity to undertake important environmental management responsibilities such as (i) land use planning including the integration of this aspect into decentralized planning and particularly rural development, (ii) reduction of the people living and/or activities being developed in environmentally risky and sensitive areas; (iii) environmental education and promotion; and (iv) regulation and enforcement of natural resources management activities, particularly around land, forests and rural resources in general.

Notwithstanding the relative concentration of management for a vast number of natural resources will certainly extend to important sectors some of which will continue to be outside MITADER direct area of responsibility such as:

(i) Those depending directly on natural resources as their main source of raw materials (inputs) comprise:
    1. Agriculture (land and planted forests), with MITADER ensuring that interventions in these areas contribute to promote rural development;
    2. Fisheries (fisheries and marine/aquatic and coastal resources in general);
    3. Mines (mineral resources);
    4. Public works and housing (water and land).

(ii) Those whose outputs depend largely on the supply of environmental services comprise:
    1. Energy (water, mineral resources, biotic elements for bio fuels, etc.);
    2. Tourism (landscape and wildlife), although conservation areas are under MITADER;
    3. Health (water and infrastructures);
    4. Agriculture and fisheries (pollination, nutrient cycle, mangroves and nurseries and breeding grounds, etc.).

Specifically for forests, conservation areas and rural development the most recent changes also mean that within the government structure forests management now fall under the responsibility of the two ministries, namely (i) agriculture and food security (MASA); and (ii) land, environment and rural development (MITADER). Through the National Directorate of Agriculture and Forests, MASA has the responsibility over planted forests by:

a) Proposing the adoption of legislation, policies and strategies and development of agro-forestry plantations;
b) Implementing subsector (i.e. forest plantations) policies, strategies, plans, and programs;
c) Establishing standards for the implementation of projects and development of agro-forestry plantation programs;
d) Ensuring the development of agroforestry plantations for conservation, energy, commercial and industrial purposes;
e) Promoting forest research programs and dissemination of the results; and
f) Promoting the domestic processing of resources from agro-forestry plantations.

While through its units for (i) forests administration (DINAF), and (ii) wildlife and the network of conservation areas (ANAC) MITADER[13] has the responsibility of:

a) Proposing the approval of legislation, policies and strategies for forests development;
b) Establishing licensing norms for management, protection, conservation, inspection and monitoring of the sustainable use of forests resources;
c) Preparing and implementing norms and procedures for forests resources use and management;
d) Assess forests resources quantitatively and qualitatively including the reduction of emissions by deforestation and forests degradation;
e) Establish prevention and control measures for uncontrolled bushfires;
f) Ensuring sustainable use of biomass;
g) Promote the rational use of secondary plane forests species and non-timber forests products;
h) Promote the processing of forests resources and ensuring the use of appropriate technologies; and
i) Promote community participation in the sustainable use of forests resources.

MITADER is also responsible for the management of national parks and reserves including national conservation areas (ANAC[14]). At present these areas comprise:

- 6 National Parks
- 8 National Reserve
- 14 Hunting Areas
- Community Protected Areas

[13] Other units with a stake in forests related management are the National Directorate of Land (DNT) and the National Directorate of Land Use Planning and Resettlement (DNOTR).

[14] National Administration of Conservation Areas.

- Other Reserve and Protected Areas

The fulfilment of the coordination role is expected to be improved in a situation where MITADER has direct management mandate over a wider number of important natural resources and social issues and particularly to manage rural development and forests in this case. Note is taken of the fact that rural development is again a cross-cutting subject. Its materialization relies on the coordination of multiple interventions that have the potential of changing the circumstances in rural areas such as plant and animal production including forests and irrigation (agriculture); roads, energy, telecommunications, etc. In a sense the coordinating role can be expected to continue under the current structure and will extend to the Program, which is essentially a rural development project. The various interventions under this project will fall under specific sectors and subsectors as enumerated above, but mainly under MITADER itself, which has the bulk of the responsibilities to manage forests and rural development.

Consequently, MITADER will have two roles. On one hand, it will provide environmental licensing for the various interventions including to those initiated directly by itself. The environmental and social licensing of projects falls under the National Directorate of Environment (DNAB). This unit builds on the vast experience that has been developed in Mozambique for more than 20 years of conducting ESIA processes in the country for small, medium and large size projects. The same applies to the mobilization of manpower within MITADER and outside for the various functions related with the environmental and social licensing. Simple forms of adaptation and some capacity building can be expected to go a long way in terms of establishing the basic conditions that will extend to the various initiatives to be developed under the National REDD+ Strategy in the form of practical programs/projects/interventions/subprojects.

To manage resettlement, which has been an important issue lately in Mozambique, the new Ministry has established a specific national directorate (National Directorate of Land Use Planning and Resettlement) that deals with both land use planning and resettlement. Bringing together the two aspects, i.e. land use planning and resettlement, is seen as a significant step forward towards better structured interventions (in the territorial space and time) in dealing with this sensitive and complex matter. Under the programs to come out from the National REDD+ Strategy it can be expected that at times there will the need to resettle people and/or to restrict their access to certain areas and resources. Process Frameworks has been prepared to guide how affected people should be treated.

However, the fact that in certain situations such as under the National REDD+ Strategy the current institutional set up where MITADER is a Developer and at the same time the Environmental Licensing Entity is also seen as an area in need of institutional reform to avoid the situations in which MITADER becomes its own judge. It is possible that changes in this area will happen during the first phase of the implementation of the National REDD+ Strategy, whereupon the necessary adjustments will need to be undertaken.

Irrespectively of the possible changes in the institutional set up it is generally acknowledged that despite the enormous progress that has been made in both implementation and institutional adaptation the country continues to face significant challenges to make its environmental and social management instruments and practices more responsive to the ultimate interests of adopting a sound management of its natural and social base. The processes downstream the issuing of environmental licenses and project implementation are rather weak and/or almost

non-existent. This is an area that requires serious strengthening including putting in place the various systems and procedures to make public and private developers as well as community and Civil Society Organizations (CSO) more compliant with sound environmental and social management requirements.

According to MITADER's organizational structure, the land, environment and rural development sectors operate independently with specific mandates. Potential conflict of interest in relation to the implementation of the REDD+ programme are overcome due to the key principle of transparancy in the processes trough internal and external audits and M&E instruments including SIS, GRM and other participatory initiatives (i.e promoting integrated landscape platforms)

5.2 World Bank Safeguard Policies

In close collaboration with multiple partners, the World Bank (WB) played a crucial role in the entire and long process of creation of REDD+ readiness for Mozambique. Starting from 2008/9 the process culminated with the Readiness Package approved in March 2016 by the FCPF Participants Committee. The Readiness Package (or R-Package) includes the National REDD+ Strategy (2016), safeguards instruments (ESMF, PF and a draft SESA), a Reference Emissions Level and a MRV system. 2016 also marked the formulation of the MozFIP and MozDGM projects (2017-2020) and their respective environmental and social safeguards instruments. Those projects will roll out the country's National REDD+ Strategy in 2 main provinces of the country: Zambézia and Cabo Delgado. These two initial interventions are likely to be followed by other programs funded by the Bank that espouse the WB's principles and policies on environmental and social sustainability. Projects and activities funded by other agencies will apply the government's social and environmental safeguards policies.

WB environmental and social management is based on 10+2 Operational Safeguards Policies as shown in the table below. Due to its focus on rural development, forests and agriculture, most of the projects to be developed under the National REDD+ Strategy will trigger seven of these policies, namely, Environmental Assessment (OP/BP 4.01), Pest Management (OP 4.09), Involuntary Resettlement (OP/BP 4.12), Natural Habitats (OP/BP 4.04), Forests (OP/BP 4.36), Physical Cultural Resources (OP/BP 4.11) and preemptively Safety of Dams (OP/BP 4.37[15]). Other similar projects are likely to trigger the same policies including the possibility of triggering OP/BP 7.50 for Projects on International Waterways, should specific interventions encompass the use of water form international rivers.

The World Bank Group General Environmental, Health and Safety Guidelines (EHS), for Forest Harvesting Operations, and where applicable for Sawmilling and Wood-based Products as well as the applicable Agribusiness/Food Production EHS Guidelines from April 2007 will also be relevant for the National REDD+ Strategy initiatives in the future.

[15] 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.

Applicable Safeguard Policies are identified and briefly described below while Annex 4 makes a summary of all of them for reference.

Table 3: Safeguard Policies Likely to be Triggered by REDD+ Initiatives

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

5.2.1 Environmental Assessment (OP/BP 4.01)

The World Bank's environmental assessment operational policy requires that all proposed Bank-funded programs/projects, be screened for potential environmental and social impacts. The policy is triggered if a project is likely to have adverse environmental and social risks and impacts in its area of influence. Similarly, each proposed subproject activity is required to undergo the same social and environmental screening process to qualify for funding. This is done through the systematic use of the Environmental and Social Screening Form (ESSF). The OP/BP 4.01 the Bank classifies proposed subprojects into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of their potential environmental and social impacts:

Category A: This is the Category for programs/projects likely to have significant adverse environmental and social impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. Environmental and Social Impact Assessment (ESIA) for a Category A project examines the project's potential negative and positive environmental and social impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental and social performance. For a Category A project, the borrower is responsible for preparing safeguards documents, normally either an Environmental and Social Management Framework (ESMF) when the physical footprint of a project is unknown by appraisal, or an Environmental and Social Impact Assessment (ESIA with an Environmental and Social Management Plan [ESMP]), or an Environmental Audit/Risk Assessment whenever the physical footprint of a project activity is known prior/by appraisal stage. The General and sector specific Environmental, Health and Safety Guidelines from 2007, also apply to any subproject financed.

Category B: Is for programs/projects with potential adverse environmental and social impacts on human populations or environmentally and socially important areas, including wetlands; forests, grasslands, and other natural habitats. Impacts under this Category are less adverse than those of Category "A" projects. These impacts are site-specific and easier to deal with; few if any of them are irreversible; and in most cases, appropriate mitigation measures can be readily designed. The scope of ESIA for a category "B" project may vary from project to project, but it is narrower than that of a category "A" ESIA. Like Category A ESIAs, it examines the project's potential negative and positive environmental and social impacts and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts while

improving the project environmental and social performance. For simple Category B projects with very limited/low social and environmental impacts the preparation of Environmental and Social Management Plan (ESMP) that builds upon an ESMF might be sufficient. Similarly, the preparation of an abbreviated RAP that builds upon an RPF might suffice.

Category C: Is for programs/projects likely to have minimal or no adverse environmental and social impacts. Beyond screening, no further ESMF/ESIA or ESMP or RPF/RAP action is required for a Category "C" project. Nonetheless, being a category C project doesn't necessarily prevent a project from ensuring adequate monitoring of both environmental and social aspects of projects that are beyond safeguards.

Category FI: A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental and social impacts."

Activities also need to follow the applicable World Bank Environmental, Health and Safety (EHS) Guidelines of April 2007. These are i) General EHS Guidelines; ii) some of the Agribusiness/Food Production EHS Guidelines; iii) Forest Harvesting Operations; and possibly (iv) Sawmilling and Wood-based Products.

5.2.2 Pest Management (OP 4.09)

Any World Bank financed project that stimulates the use of pesticides will need to prepare and disclose prior to project appraisal a Pest Management Plan (PMP). Additionally, the procurement of any pesticide in a Bank-financed project is contingent on an assessment of the nature and degree of associated risks, considering the proposed use and the intended users. With respect to the classification of pesticides and their specific formulations, the Bank refers to the World Health Organization's Recommended Classification of Pesticides by Hazard and Guidelines to Classification (Geneva: WHO 1994-95). The following criteria apply to the selection and use of pesticides in Bank-financed projects:

- They must have negligible adverse human health effects;
- They must be shown to be effective against the target species;
- They must have minimal effect on non-target species and the natural environment. The methods, timing, and frequency of pesticide application are aimed at minimizing damage to natural enemies;
- Their use must consider the need to prevent the development of resistance in pests.

At a minimum, pesticide production, use and management should comply with FAO's Guidelines for Packaging, Use and Storage of Pesticides, Guidelines on Good Labeling Practice for Pesticides, and Guidelines for the Disposal of Waste Pesticide Containers on the Farm. The Bank does not finance formulated products that fall into WHO classes IA and IB, or formulations of products in Class II, if (a) the country lacks restrictions on their distribution and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly.

OP 4.09 the World Bank Safeguard Policy on Pest Management will be triggered whenever WB funded forest operations will have the potential of being associated with the use of pesticides. Given the focus of the REDD+ National Strategy focus on rural and agricultural

development most initiatives will also support agricultural development and post-harvest pest control to minimize post-harvest pest damage through improved technology adoption by farmers. Procurement of pesticides will not be financed until it becomes evident that local capacity exists to adequately manage their environmental and social consequences in compliance with OP 4.09 as described above, particularly with regards to health and safety aspects that are directly linked to human health conditions affecting women, the poor and most vulnerable groups of the community, such as toddlers, elderly and handicapped.

5.2.3 Involuntary Resettlement (OP/BP 4.12)

Under the World Bank Safeguard Policy (OP/BP 4.12 - "Involuntary Resettlement") resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs. Where it is not feasible to avoid resettlement, related activities should be conceived and executed as sustainable development programs, providing sufficient investment resources and means to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in the planning and implementation of resettlement programs.

Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

The World Bank also adopts a broader view on involuntary resettlement by not restricting it to its usual meaning, i.e. "physical displacement". Depending on the cases, a resettlement action may include (i) loss of land or physical structures on the land, including business; (ii) the physical movement, and (iii) the economic rehabilitation of project affected persons (PAPs), economic displacement, to improve (or at least restore) the levels of income or livelihood prevailing before the action causing the resettlement has taken place". The policy applies whether the person has to move from the area.

The land acquisition will systematically avoided/minimized by WB REDD+ programs/projects. Resettlement Policy Frameworks (RPF) will be prepared to guide involuntary resettlement operations issues such as land acquisition and other losses likely to occur that could be actually associated with the land use planning/demarcations/titling, etc. by setting forth the basic principles and prerogatives to be followed by the recipient once the physical footprints of the project interventions area are known (i.e. elaboration of site specific Resettlement Action Plans-RAPs).

Moreover, and because interventions related with land use and natural resource use plans including mapping, zoning, and delimitations and titling and other similar interventions are likely to be associated with restrictions to access and use of natural resources by local people it will require also the preparation of a Process Framework (PF). The PF elements are meant to be a guide to the overall management of the proposed interventions to ensure that they do not negatively affect people and their legitimate right of access to and use of natural resources. The PF covers the entire program and subproject cycle. It provides the principles and prerogatives the Borrower should follow in program and subproject management to ensure compliance with the WB policies. The PF is particularly relevant in a situation where the selected program/project interventions have not yet undergone the respective feasibility studies and design. The PF outlines several principles, which include:

- A full understanding of the program components, particularly those that translate into restrictions to access to natural resources by local people;
- Public consultation and participation;
- Determination of land use and access to resources rights;
- Screening of the program sites and activities;
- Effective redress of complaints and grievances;
- Monitoring and evaluation of program effects on living standards of the program affected people and communities; and
- A budget to ensure that the Program has adequate resources to support the smooth and sustainable implementation of the participation process.

In addition to the implementation of the program related RPF and PF, the Programs/Projects overall budgets should include sufficient funds to finance the preparation and implementation of site specific RAPs to be prepared for subprojects.

5.2.4 Natural Habitats (OP/BP 4.04)

This policy applies to activities, which could have a potential impact on important natural habitats outside and inside protected areas. Significant conversion of natural habitats is allowed under this policy if there are no viable alternatives, but the affected natural habitat needs to be compensated by an ecologically similar area of the same or larger size and the area needs to be better managed and protected. Activities involving the significant conversion of critical natural habitats, i.e. protected areas or critical natural habitat areas outside protected areas where endemic or endangered species mentioned on the IUCN Red List species are living and which could be severely affected or made extinct cannot be financed. Not only nationally protected areas, habitats and species but also international recognized sites such as under Ramsar Convention or under Important Bird and Biodiversity Areas (IBA) from Birdlife International shall be taken into consideration on assessing each investment proposal. Due to their nature and characteristics REDD+ programs and projects are likely to touch upon protected sites, which explains that this OP/BP is likely to be triggered. Thus, activities should be selected and designed to avoid, minimize, restore resources in special areas to ensure that adequate measures are taken to minimize the negative impacts that may occur, even where interventions will take place in conservation areas. Main activities in these conservation areas will be institutional support, technical assistance to forest sustainable management, supervision reinforcement, etc.

As REDD+ objective is to reach sustainable resource management in the forestry sector in Mozambique institution support, technical assistance and support to activities on the field will be financed such as equipment, multi-use plantations, and restoration of degraded areas, agro-forestry activities, inputs and operational infrastructure (AQUA). In order to develop these activities no conversion of critical natural habitat value or any habitat of high conservation value will be financed. As critical natural habitats any future project must consider: legally protected areas, riparian forests (100m from water bodies), forests with known high biodiversity value (coastal forests and afro-montane forests), sacred forests and areas with slopes of more than 25%. These formations must represent the Negative List of natural habitats to be negatively affected. Eventual conversion of common or degraded natural habitats, due to any activity on the ground (e.g. plantation, agro-forestry), must be with the objective to enhance sustainable development of the area/community, improving landscape and land use sustainable management, allowing for instance conservation of other areas of ecological value, which promote ecosystem services and biodiversity. Any future plantations and agro-forestry project

must implement forestry management plan following internationally recognized forestry good practices to mitigate impacts and enhance environmental value.

5.2.5 Forests (OP/BP 4.36)

This policy is aimed at reducing deforestation, enhancing the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development. This is at the heart of the REDD+.

After realizing the importance of forests in the health of ecosystems, combating deforestation and promoting sustainable forest conservation and management have been occupying a high position on the international agenda since the Rio Conference, in 1992. However, despite all the efforts and advocacy, including law enforcement it is felt that there is still a long way to go to achieve the ultimate objectives of this policy. The world's forests and forest dependent people continue to experience high rates of forest loss and degradation. REDD+, which is meant to mitigate climate change through reducing net emissions of greenhouse gases through enhanced forest management in developing countries, has been underway since the mid 1990's and came into being precisely to address most of the identified problems.

Of particular interest for REDD+ is the fact that "the Bank does not finance plantations that involve any conversion or degradation of critical natural habitats, including adjacent or downstream critical natural habitats". When the Bank finances plantations, it gives preference to siting such projects on sites without forest coverage or lands already converted (excluding any lands that have been converted in anticipation of the project). In view of the potential for plantation projects to introduce invasive species and threaten biodiversity, such projects must be designed to prevent and mitigate these potential threats to natural habitats (paragraph 7 of the Operational Policy Manual 4.36). The Bank also provides funding to certified forests operators after confirming that they have the necessary knowledge, understanding and skills to embark on forest sustainable businesses.

The current OP/BP 4.36 has been in force since 2002 and it is felt that a lot of developments have occurred ever since and that these need to be better considered in the policy.

Success in establishing sustainable forest conservation and management practices is something that can only be achieved by a combination of interventions involving all critical stakeholders who need to change their attitudes and behavior but also on a wide range of partnerships. The Bank's forest strategy includes three interdependent pillars, which will guide future Bank involvement with forests, namely: (i) harnessing the potential of forests to reduce poverty; (ii) integrating forests in sustainable economic development; and (iii) protecting vital local and global environmental services and forest values. This policy also goes hand in hand with that of Natural Habitats OP/BP 4.04 (see above).

To address this OP/BP's requirements under Mozambican reality, which is almost totally lacking forestry certification (only one company has forestry certification) and the absence of a national forestry certification scheme (the GoM is working on creating one), activities to beneficiaries that, amongst others, are legalized, having valid permit and forest management plan in place and commit themselves with future submission to the national forestry certification scheme will be financed. Similar criteria will be followed to target community level beneficiaries, although these must be adequate (eased) to community level beneficiaries' reality.

There are reasons to believe that a lot of the elements that will form the updated WB OP/BP 4.36 on Forests have been widely considered in the Mozambique's REDD+ and as described.

In Mozambique there have been multiple episodes of unsustainable use of forests resources including exclusion of local people from beneficiating from this rich natural resources. Since its establishment in January 2015, MITADER has been at the forefront of counteracting this tendency. WB support has been and will continue making concerted efforts to demonstrate that negative practices can be reversed and that forests resources can be used in an inclusive and sustainable manner and ultimately meet the core objectives of REDD+ of reducing deforestation and forest degradation and forest GHG emissions.

5.2.6 Physical Cultural Resources (OP/BP 4.11)

This policy applies to subprojects where important physical cultural resources (i.e. archeological sites, special architecture, important cemeteries, forests or where unique immaterial cultural resources) exist or are affected. In case none of these physical cultural resources exists in a subproject area, the bidding documents and the contractor contracts need to include a "Chance Find Procedure", which specifies that in case that during construction/installation an important arte-fact is found, construction/installation should be stopped and the responsible Mozambican authorities be warned and involved in an investigation of the site. Construction/installation can only resume after the green light has been given by the responsible Mozambican authorities. Especially because it is normal in Mozambique and many other African countries and beyond to find forests that have special value for local communities, groups or families, this policy should be given special attention under REDD+ national initiatives. The importance of identifying and recognizing such forests in project development and particularly in forests and other agricultural programs/projects has been part of the standard practice and should be streamlined in all REDD+ guiding documents for programs/projects funded by the Bank or its partners.

5.2.7 Safety of Dams (OP/BP 4.37)

Enough evidence has been gathered over the years to the effect that the safe operation of dams has significant social, economic, and environmental relevance. Under REDD+ initiatives dam safety could be a matter of significant importance because of the possible construction and operation of small and medium size dams to boost agricultural value chains and where essential even forests operations. Although it is suggested that for most of the REDD+ initiatives dam construction and operation will be passed on to other programs/projects that will deal more directly with agricultural development (e.g. ANRLMP, PROIRRI and other) precautionary measures need to be taken under the programs/projects to ensure that where dams will be called upon specifically the defined safeguard regulations are ready to be put in place.

The Bank's involvement in dam financing requires that experienced and competent professionals design and supervise construction, and that the borrower adopts and implements dam safety measures throughout the project cycle. The policy also applies to existing dams where they influence the performance of a project. In this case, a dam safety assessment should be carried out and necessary additional dam safety measures implemented.

OP 4.37 recommends, where appropriate, that Bank staff discuss with the borrowers any measures necessary to strengthen the institutional, legislative, and regulatory frameworks for dam safety programs in those countries.

In any case where dams will be involved under REDD+ related programs/projects these will, in most cases, be limited to small irrigation schemes upgrade and maintenance, rehabilitation of water storage facilities, and other types of priority water control structures that can be expected to cause minimal adverse impacts. Although impacts will be minimal all precautions will need to be taken not only to deal with the physical aspects but also the biological and social, such as maintaining environmental flows to preserve the health of the ecosystems and to avoid disturbance to the social activities (water supply for humans, livestock, etc.), downstream the infrastructures including avoiding interfering negatively with people's life styles and assets.

6 REDD+ PREPARATION, CURRENT AND ANTICIPATED STAGES IN MOZAMBIQUE

6.1 Preparation Activities

Taking into consideration that the REDD+ concept has evolved to integrating aspects that go beyond Emission Reductions, but also adaptation to climate change and overall rural development, the preparation of the Strategy focused on the landscape approach[16]. This approach recognizes the diversity and potential of resources (forests, land, water, fisheries, and mineral, among others) that can be found in a certain region. The mode of exploitation and use of these resources influences the type and magnitude of the causes of deforestation and forest degradation. Therefore, dealing with these causes requires interventions that are based on harmonized legislation and coordination of sustainable practices. The landscape approach, which also includes the way under which resources are traditionally used, is aimed at integrating various sectoral and including diversified forms of land use that can cover several districts in the specific areas selected for interventions. This approach is in line with the REDD+ vision of integrated development. In the short to medium term the country's REDD+ Strategy focuses on "Integrated and Sustainable Rural Development".

It is believed that under the country's context **rural development** and **poverty alleviation** become crucial and simultaneously the ultimate objective as well as the means to achieving REDD+ genuine interests. Rural development is a cross-cutting endeavor. It requires a balanced combination of interventions that are relevant in a given context to provide better living standards to people in important areas such as empowerment, participation, health, education, water supply, energy, production, employment and income generation, gender balance in general that ultimately will translate into sustainable livelihoods and use of all resources, including forests.

As indicated above, the National Sustainable Development Program (PNDS) includes projects such as (a) "Floresta em Pé (Standing Forest), (b) Biodiversity conservation (c) Environment

[16] Landscape approaches seek to provide tools and concepts for allocating and managing land to achieve social, economic, and environmental objectives in areas where sectoral activities (e.g. forests, agriculture, mining, conservation, urbanization) and other productive land uses compete with environmental and biodiversity goals. In the particular case of Mozambique the main Sectors considered are Forestry and Wildlife, Agriculture and Food Security, Energy, and Conservation Areas.

in motion, (d) Energy farm, (e) More knowledge, among other aspects. REDD+ actions fit well within this integrated vision embraced by the GOM. Thus, the strategy seeks to frame actions that can be combined in an inter-jurisdictional and cross-sectoral ways and promote the use of land and natural resources, reducing associated emissions, establishing the basis for the inclusion of sectors such as agriculture, forestry and energy as well as Conservation Areas (CA), mines and infrastructures. Among other aspects environmental education and awareness creating in regard to the importance of natural resources, are essential for capacity-building, dissemination of information and putting in place truly participatory and democratic processes, especially transparency and accountability on the use of resources. Lessons from Cabo Delgado and Zambezia landscape Programs (MozFIP/MozDGM)[17], which will be used to pilot interventions will be used in preparation and finalization for REDD+ readiness and subsequent implementation. Other lessons come from the implementation of REDD+ (ie: T-REDD project led by iied) in Manica, Sofala and Zambézia, community participation in the management of natural resources and sustainable use of forests carried out by the private sector. As shown below, due to their favorable agro ecological conditions the Provinces of Niassa and Zambezia, have witnessed a greater demand for land to establish forest plantations.

Table 5: Main private sector forest initiatives

N.º	Name	Province	District	Objective
1	Komatiland-IFLOMA	Manica	Manica	Supply to industries
2	Portucel	Manica	Manica, Gondola, Sussundenga, and Barue	Supply to industries
3	Cefloma	Manica	Manica	Supply to industries
4	IFM	Manica	Gondola	Pulp
5	Moflor	Manica	Manica and Vanduzi	Supply to industries
6	Chikweti Forest (Green Resources)	Niassa	Lago and Lichinga	Supply to industries
7	Companhia florestal Massangulo	Niassa	Ngauma	Supply to industries
8	New Forest	Niassa	Lichinga	Supply to industries
9	Green Resources	Niassa	Sanga	Supply to industries
10	Floresta do Niassa	Niassa	Lichinga	Supply to industries
11	Portucel	Zambezia	Ile, Namarroi, Mulevala	Pulp
12	Green Resources	Nampula	Mecuburi, Ribaue, Nampula	Pulp
13	Ntacua (Green Resources)	Zambezia	Ile	Supply to industries
14	Tectona Forest (Green Resources)	Zambezia	Gurue, Milange, Namarroi	Supply to industries
15	ATFC II	Zambezia	Namarroi	Supply to industries
16	Florestas do Planalto (Green Resources)	Niassa	Chimonila	Supply to industries
17	Komatiland - IFLOMA	Sofala	Muanza	Supply to industries

Source: MINAG 2015

[17] MozFIP and MozDGM will first (2016-2020) be implemented in the provinces of Cabo Delgado and Zambezia.

The Central and North regions have been identified as areas of high potential for emissions from deforestation and forest degradation.

Public consultations

The National REDD+ Strategy has been developed in the context of the implementation of the Readiness activities. A participatory process was adopted in which several segments of the society were actively involved. Focus groups discussions were also held to better capture the different perspectives represented by the main groups, mainly men, women and the youth. The following activities were carried out:

- Three regional consultations were held (i.e. in Cabo Delgado and Nampula for the northern region, Zambezia for central and Gaza for the Southern region). These areas are representative of different types and forms of forests including deforestation and forest degradation patterns,
- Four technical consultation seminars on main areas of intervention for the strategy ((i) analysis of strategic objectives and approach, (ii) analysis of the causes of deforestation and forest degradation, (iii) identification of strategic options for the reduction of deforestation and forest degradation, and (iv) analysis of environmental and social safeguards),
- A national consultation session (Maputo),
- Harmonization with MITADER and other ministries/sectors[18] decision making bodies. The bulk of the consultations under this heading took place within the framework of CTR creation and operation. CTR also acted as the Task Force for REDD+ and SESA formulation. Annex 1 provides details about the process that was conducted. CTR is an inter-ministerial working group created by Decree 70/2013 of December to undertake consultation and steering of the National REDD+ Strategy and forest development in general
- Consultation with civil society and the private sector.

So far (November 2016) 3,370 people were consulted, of which 978 (29%) were women. Notwithstanding the fact that the people reached directly are a small fraction of all the people that should be involved these numbers are significant when taking into consideration that some of the people reached directly, especially leaders at different levels, will play a role in disseminating the messages. The consultation process is continuos.

The media also played a crucial role in the broad dissemination of the issues under discussion. The process also included direct observations, and analyzes were carried out in regard to national thematic studies on (i) the legal and institutional framework, (ii) environmental and social strategic assessment, and (iii) causes of deforestation and forest degradation. Ultimately, with the support of the Technical Review Committee (CTR) and the Inter-institutional Group on Climate Change (GIIMC), the strategy has been harmonized with all the relevant sectoral strategies.

[18] Ministry of Agriculture and Food Security, Ministry of Foreign Affairs and Cooperation, Ministry Economy and Finance, Ministry of Mineral Resources and Energy, Ministry of Industry and Commerce, Ministry of State Administration and Public Administration, Ministry of Culture and Tourism

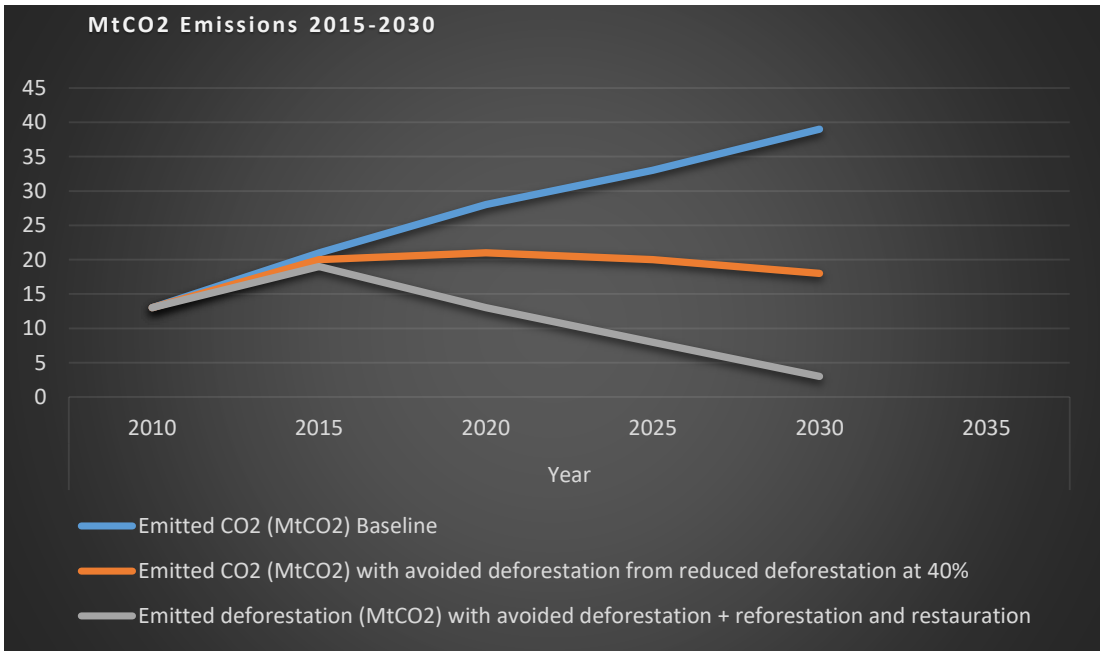
6.1.1 Carbon Accounting and Reference Levels

Currently Mozambique is preparing the first version of the forest reference level that will become the baseline to start measuring the real effects of emissions reduction in connection with deforestation and forest degradation (see Measurement, Monitoring, Reporting and Verification Section). Preliminary estimates based on global data estimate that between 2000 and 2012, the emissions from deforestation and forest degradation were 12MtCO2/year (CEAGRE & Winrock International, 2016). If the current trend is maintained, it is estimated that the emissions from the deforestation and forest degradation could reach 39 MtCO2/year by 2030.

REDD+ actions should prioritize two main components: (1) reducing emissions from deforestation and forest degradation, which includes (i) intensification of agriculture and increasing the efficiency in the production and use of biomass energy; and (ii) improving the conservation of forest ecosystems, by increasing the efficiency of the management of the system of conservation areas; and (2) foster conservation, sustainable management of forests and enhancement of forest carbon stocks (through afforestation and reforestation).

Forests, agriculture and energy sectors have a major immediate impact on the national baseline. The conservation of ecosystems can be achieved through the rehabilitation and reinforcement of the implementation of the management of the system of conservation areas and timber concessions. According to the National Reforestation Strategy (MINAG, 2009), increasing sequestration/removal of carbon at the national level could account for one million hectares, added to the gains from restoration and rehabilitation of degraded forests. As shown in the graph below preliminary estimates indicate a potential of emission reduction from 39 to 3 MtCO2/year (in 2030) resulting from the reduction of deforestation and increase in carbon stocks, totaling around 170 MtCO2 as avoided emissions and carbon sequestration during the reference period.

Graph 1: Scenarios for reducing emissions and increasing carbon stocks by REDD+ activities in relation to the national reference



Source: National REDD+ Strategy (2016)

The current emission reduction and removal estimate of 170 MtCO2 is greater than 76.5 MtCO2 estimated under the INDC. The reference period of this strategy is from 2016 to 2030 and includes the Removal of CO2 through reforestation. INDC has the 2020-2030 reference period and does not specify the sectors where reductions will be made, but taking into consideration the nature of the phenomenon, it implicitly includes energy, industry and transport, as well as agriculture, forestry and other forms of land use.

6.1.2 Reduction Strategies

The consultative process assisted in the formulation of a Vision, Overall Strategic Objective and Mission for REDD+ in Mozambique for the period 2016-2030. The adoption of a large time horizon is in line with the magnitude of the challenges that the process is acknowledged to encompass.

Vision: A society that values its natural capital and recognizes the contribution of environmental social, economic and environmental well-being of current and future generations at local, national and global levels.

Overall strategic objective: Promoting integrated multisector interventions to reduce carbon emissions associated with the use and change of land use and coverage through adherence to the principles of sustainable management of forest ecosystems (natural and planted), contributing to the mitigation and adaptation to climate change and integrated rural development and sustainable development.

Mission: The National REDD+ Strategy aims to reduce deforestation and forest degradation, improved conservation of forest ecosystems and increased reserves of forest carbon, thus avoiding the emission of 170 MtCO2/year until 2030.

Given that actions with potential to reduce deforestation are diverse, an assessment of the priority actions to be promoted under the country's strategy that was used was done by adopting criteria that meet the requirements established in the national vision and mission. The criteria have taken into account the need for integrated actions aimed at improving rural and urban living conditions and the reduction of greenhouse gas emissions. In order to be in line with the nature and characteristics of a national strategy, an attempt was made to address questions of national importance. On a later stage local prioritization should be developed according to the main causes of local deforestation and forest degradation in different regions, landscapes and jurisdictions. The following criteria were used:

Box 1: Criteria used for the prioritization of REDD+ actions in Mozambique

a. Reducing greenhouse gas emissions (reducing the rate of deforestation or increasing the rate of carbon removal)
b. Increase the income and quality of life of rural populations
c. Reduce production costs and risks (loss of access to resources, environmental insecurity, etc.) for communities and local producers
d. Increase synergies with other activities (having importance within the respective sector)

e. Achieve low transaction costs (including promotion and achievement of high adoption level)

As can be seen rural development and the overall improvement of the living conditions of people based on increased incomes, low cost transactions take center stage.

6.1.3 Monitoring, Reporting and Verification (MRV)

As envisaged by the Framework Convention on United Nations Framework Convention on Climate Change (UNFCCC) Monitoring, Measurement, Reporting and Verification (M & MRV) procedures of REDD + activities and results, will be crucial and transparent. The following requirements need to be met:

6.1.3.1 Develop an updated National Land Use Map and conduct the analysis of change in forest cover

The M&M (Monitoring and Measurement) components of REDD+ initiatives will require an updated land use map and specifically of forest types and coverages, which will represent the initial stage from which future changes in forest area and carbon stocks will be determined.

The maps define the limits and extent to which M&M will be made and indicate the areas where compensation for reducing emissions and increasing removals will be possible. Therefore, the maps produced at the beginning of the implementation of REDD+ activities, will be determinant in the monitoring and measurement of the REDD+ initiatives in the country. The updated national land use map shall (i) meet the requirements established by the recent manual or guide from the Intergovernmental Panel on Climate Change (IPCC), (ii) be aligned with the new national definition of forests, (iii) serve as the current basis for carrying out the historical analysis (establishment of the baseline) and the future monitoring of changes in forest cover (iv) should serve as a basis for the sampling design and calculation of carbon stocks and emission factors in carbon inventories or, in general, in forest inventories.

This map based on Sentinel-2 imagery (10m/20m of spatial resolution) and a training dataset derived from the visual assessment with high resolution imagery of the national 4 km grid, is being elaborated by the MRV Unit at FNDS, as an activity financed by the CF additional funds, and it is expected to be finished by March 2017.

6.1.3.2 Design and carry out the National Carbon Inventory of forest areas

Sampling design and carbon inventory should be able to explain changes in reserves of carbon over time, systematically and with the minimum precision required by the most recent manual or guide from the Intergovernmental Panel on Climate Change (IPCC). The magnitude of any emission or removal of carbon claimed by a REDD+ initiative should be verifiable, the M&M components must be based on scientifically robust results and be easily replicable. The combined carbon inventory with land use change maps should enable (i) the setting up of the reference level (FRL) in line with the forest carbon emission and removal; (ii) define the limits and extent of the implementation of REDD+ initiatives; and (iii) mapping and estimating carbon stocks at the outset and during the implementation of REDD+ activities.

The National Forest Inventory (IFN), which is also recommended that it should be prepared as the starting point of the entire process, is the main tool to generate statistically robust and defensible information on the country's forest resources. The data produced will be used, not only as carbon inventory to estimate stocks and emission factors, but also in decision-making on sustainable forest management, and also for the development of a sustainable forestry policy at national level. This could have repercussions in the formulation of an updated rural and urban development policies.

This National Forest Inventory was designed and started its implementation in July 2016, led by DINAF, designed and logistically coordinated by the UT-REDD+ (MRV Unit) in collaboration with DIRF, and implemented by UT-REDD+, DIRF, Serviços Provinciais de Florestas e Fauna Bravia, IIAM and UEM. During 2016, three provinces have been surveyed (Maputo, Nampula and Inhambane) while the provincial inventories of Gaza and Cabo Delgado had already been carried out by JICA during 2015-2016. It is expected to survey 5 remaining provinces during 2017.

6.1.3.3 Develop specific national tools and parameters on Carbon M&M

A number of weaknesses are still prevalent in the establishment of specific national equations and parameters to sustain the implementation of an advanced REDD+ Monitoring and Measurement (M&M) system of activities and results. Extensive research, training and capacity building will be carried out to identify and disseminate the necessary information and knowledge in order to minimize the existing inconsistencies over time.

The implementation of REDD+ initiatives calls for the use of carbon equations, especially national biomass allometric equations and parameters that will allow for the M&M to be reliable. Progressively, the country must create conditions to use more advanced methodologies and predictive models to facilitate and improve the quality of M&M.

Equations and parameters developed for a particular group of species and particular site may not generate reliable estimates elsewhere and for a group of different species. Therefore, in the short term, through testing and validation on a case by case basis, the applicability of equations of available allometric biomass will be verified, in order to be used in similar conditions in other parts of the country. At the same time, there will be the need to develop specific allometric equations for ecosystems and regions that are crucial to the implementation of REDD+.

For the country to migrate from Tier 2 (methodological approach that uses emission factors and other specific parameters for the country) to Tier 3 (models that can use data provided by the periodic inventories where the parameters are monitored over time), specific ecological studies to improve the country’s understanding of control of the carbon dynamics of forest ecosystems will be carried out. For this to happen permanent research plots should be set up in such a way that national parameters of annual carbon stock change rates for major forest ecosystems and carbon pools can be measured. It is only after these exercises that in the medium to long term it will be possible for the country to generate data to develop and calibrate carbon prediction models and, consequently, to use more advanced M&M systems and procedures.

The establishment of a national network of permanent plots is in a design phase by the UT-REDD+ (MRV Unit) in collaboration with IIAM, UEM, DINAF and JICA and it is expected to start its implementation phase during 2018.

6.1.3.4 Test and validate the REDD+ M&MRV system, including aspects of PMRV in the Conditions of Mozambique

The applicability of the REDD+ M&MRV system and its Operational Manual (Guidelines) should be tested and validated in Mozambique before implementation. Ongoing pilot initiatives or those to be carried out during the start-up phase should serve as a platform to test and improve the technical, methodological and educational aspects of the REDD+ M&MRV Operational Manual. At the end of the piloting process of REDD+ initiatives, the foundations for an effective implementation of the REDD+ M&MRV Operational Manual that has been designed and tested for the country's conditions and with the participation of local communities ((PMRV) should be ready.

This activity is expected to pilot the PMRV in 15 districts of Zambezia and Cabo Delgado during 2018 and should be implemented in collaboration between the MRV-Unit, the Safeguard specialist and the teams working on REDD+ projects and programs in both provinces.

6.1.3.5 Design and implement a capacity adequacy and development plan Specific to REDD+ M&MRV

The M&MRV of REDD+ initiatives will, among other aspects, require: (i) expertise on technical aspects such as forest carbon dynamics, advanced statistical techniques for sampling and data processing, as well as geographic information systems and remote sensing approaches; and (ii) understanding of methodologies and tools, including principles and M&M quality control procedures and specific REDD+ reporting. Under such a context, it will be necessary to: (iii) combine the knowledge and technical capabilities of different actors (State, local communities, private sector and civil society) to provide the necessary support for the implementation of the REDD+ mechanism and its System of Measurement, Monitoring, Reporting and Verification; (iv) to promote specific training to the different actors, in crucial matters on REDD+, such as M&MRV and PMRV; (v) promote teaching and research (and extension) in support of the REDD+ initiatives and their Monitoring, Reporting and Verification System.

6.1.3.6 Establish institutional arrangements to ensure effective implementation and Adaptation of REDD+ activities and its M&MRV system

It is necessary to establish relevant institutional arrangements that are commensurate with the complexity and cross-cutting nature of the implementation of the REDD+ mechanism and its M&MRV system, as well as to strengthen coordination among the key sectors for a successful implementation. The actors and institutional arrangements to be adopted should: (i) ensure consistency, comparability and transparency in the implementation of the M&MRV system; (ii) ensure flexibility and adaptive implementation of the system, assuming that there will be a need to improve and adjust the quality of the system over time; and (iii) ensure that the implementation of the M&V system is aligned with the instruments for monitoring and evaluating policies and programs in other development contexts.

The institutional framework design for M&MRV was integrated into the R-package (January 2017).

6.1.3.7 Create a functional platform for the management, production, storage and sharing of Data and information on the REDD+ mechanism and its M&MRV system

In this regard, a webpage for REDD+ M&MRV should be designed and implemented in Mozambique. The platform to be created should allow for the data to be maintained and made accessible to provide information on the REDD+ mechanism, the M&MRV system and its respective Operational Manual, as well as on REDD+ initiatives, activities and results,

This platform is being designed and now with the procurement of the required equipment (GIS and DB servers) and software (ArcGIS Enterprise and PostgreSQL) and the results from the various MRV activities (AD analysis, LULC map, EFs from NFI) will be operational during 2018 with specific applications.

6.1.4 Financial Incentives

In line with the international character of the REDD+ initiative, within the framework of the United Nations Framework United Nations Framework Convention on Climate Change (UNFCCC), mechanisms for financing mitigation and adaptation to climate change, there are international funds to promote and support the implementation of the various initiatives. Reducing emissions from deforestation and forest degradation and improving the status of the environment in general through forests are referred to in Article 5 of the Paris Agreement (COP21) as one of the ways of mitigating climate change.

Various programs and platforms have been created and commitments made to promote and implement REDD+ activities in tropical countries, by making funds available for tropical countries to prepare and implement REDD+. The Fund Forest Carbon Partnership (FCPF) is a platform with two funds: the Readiness Fund and the Carbon Fund, managed by the World Bank, which is funding activities in several countries. The Readiness Fund supports tropical and sub-tropical developing countries in preparing themselves to participate in a future, large-scale, system of positive incentives for REDD+. This includes: adopting national REDD+ strategies; developing reference emission levels (RELs); designing measurement, reporting, and verification (MRV) systems; and setting up REDD+ national management arrangements, including proper environmental and social safeguards. The Carbon Fund will remunerate the selected countries in accordance with negotiated contracts for verifiably reducing emissions more than in the reference scenario. The Carbon Fund’s payments are intended to provide an incentive to the recipient countries and the various stakeholders—including forest-dependent indigenous peoples, other forest dwellers or the private sector—within each of these countries, to achieve long-term sustainability in financing forest conservation and management programs.

The Forest Investment (FIP) is dedicated to supporting developing countries in the preparation and implementation of Policies for reducing deforestation and forest degradation and promoting sustainable development of forests and increasing carbon stocks. It can finance REDD+ activities and programs, sustainable forest management and support to local communities as is the case with MozFIP (2017-2021).

In addition to the funds from the multilateral agreements indicated above, Mozambique benefits from Bilateral agreements such as: (i) Norway's funds, which financed a number of studies for the evaluation of the potential for REDD+ implementation in Mozambique, with Reference to the Beira Corridor region, training of technicians, as well as the testing of Models for reducing emissions from deforestation and forest degradation; (ii) Japanese funds, which

financed the establishment of a forest information management system, equipment and training of technicians at the national and provincial levels and forest inventories at the provincial level. Access to funds from both multilateral and bilateral agreements requires the preparation of documents, filling in of complex forms, among other aspects, that need capacities from the interested parties, i.e. governments, NGOs, CBO, private operators, etc. to be developed. This is a line of work that should be part of the overall REDD+ National Strategy

The recognition by the GOM of the fact that in the short term carbon trade per se may not offer the necessary incentives for the various entities to get involved is one of the reasons why the focus of REDD+ Strategy in the first phase will focus on rural development in general with concrete effects on improved forests management as well as access to benefits by larger sections of the society, i.e. government, communities, MSME, and other economic and social agents. By the time the stage of getting direct benefits from carbon trade is achieved the country is expected to have a strong base to derive benefits from other contributions that sound forests management can offer.

6.2 The National REDD+ Strategy

The approval by MITADER of the National REDD+ Strategy marks the end of many years of intensive work at the same time that challenging stages are being started to consolidate preparedness and implementation of the strategy in a full scale, including the monitoring and evaluation. The time horizon of 15 years can be subdivided in three main phases, i.e. short (2016-2020), medium (2020-2025) and long (2025-2030), which largely correspond to (i) preparatory phase and establishment of MRV tools and systems; (ii) testing of the tools; (iii) full scale implementation and preparation of the subsequent phase.

6.3 Main Institutions Involved

6.3.1 Central Level

MITADER will be responsible for overall strategic guidance and will promote, coordinate the formulation and implementation of REDD+ programs and initiatives. The lead unit for Project coordination in MITADER will be its which is in the recently created National Sustainable Development Fund (*Fundo Nacional de Desenvolvimento Sustentável,* FNDS) and is already coordinating other MITADER projects related with natural resources management and rural development. The FNDS will be responsible for the technical and financial coordination of the process and will work closely with the National Directorate of Forests (DINAF), the National Directorate of Land (DINAT) and the National Agency for Environmental Quality Control (AQUA) within MITADER, and other agencies when necessary.

The **FNDS** will also coordinate the activities of the National Directorates in other line ministries in what concerns REDD+ initiatives: Ministry of Agriculture and Food Security (MASA), through the National Directorate of Agriculture and Planted Forests (DNAS), the National Directorate of Agrarian Extension (DNEA), and the Ministry of Mineral Resources and Energy (MIREME) through the National Energy Fund (FUNAE).

The figure 9 presents the institutional arrangements for REDD+ implementation.

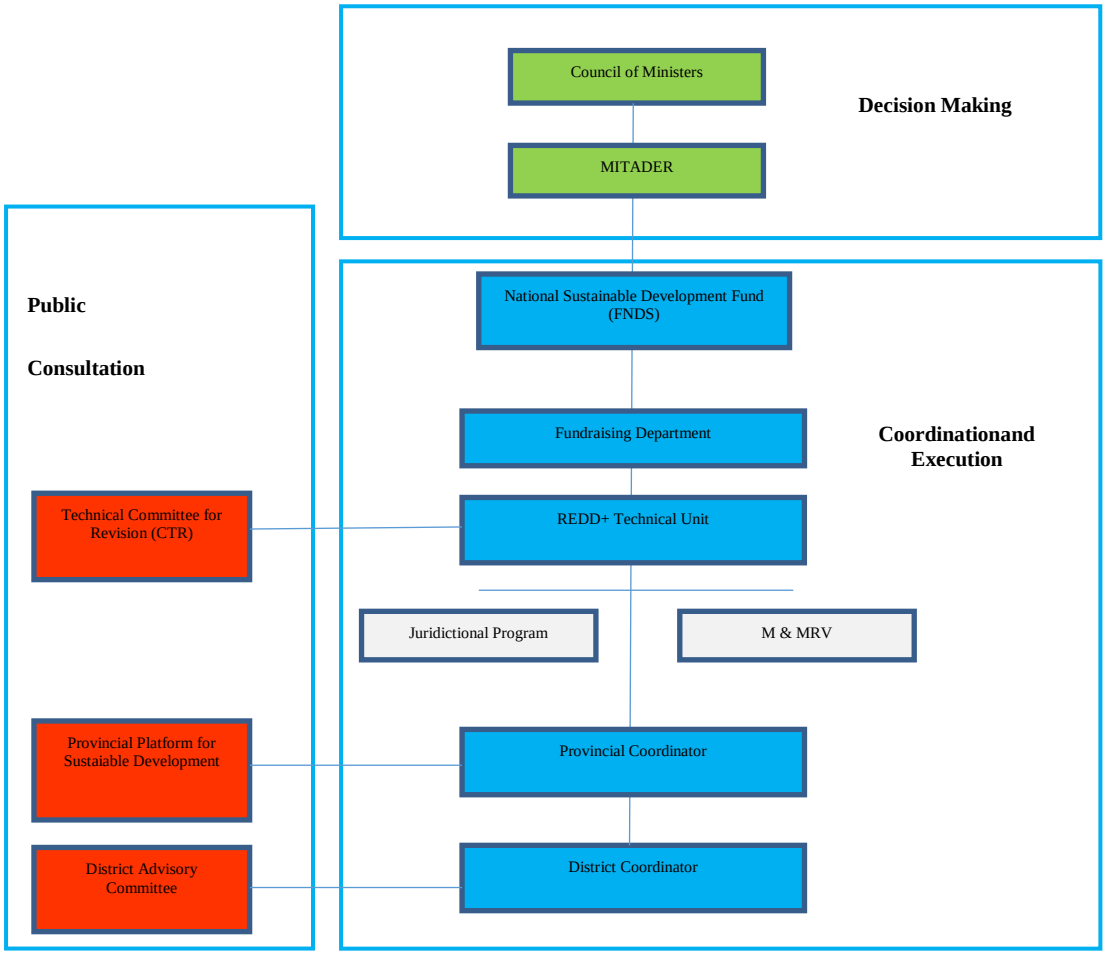


Figure 9. Institutional arrangments for REDD+ implementation

Table 6: Nature, subordination and roles of REDD+ coordination and implementation entities

Area	Nature and Subordination	Roles
REDD+ Technical Unit (UT-REDD +)	The REDD+ Technical Unit is an unit subordinated to the National Sustainable Development Fund (FNDS) under the Resource Mobilization Department.	Coordination within MITADER (national directorates) and inter-ministerial (e.g. MASA, MIREME) Ensure the planning, funding, program design, monitoring and measurement, reporting and verification (MRV & M), implementation of REDD+ activities are done in coordination with the private sector, civil society and local communities. The tasks of this department are performed through the units of Jurisdictional Programs and Monitoring, Measurement, Reporting and Verification and the technical staff.
Landscapes Coordination Units	It is a unit that coordinate and monitor projects implementation progress at the provincial level and interface with the district authorities. Respond to Resource Mobilization Department. At FNDS in Maputo.	Ensure the liaison between the government (national, provincial and district levels) with private sector, civil society actors and local communities; Create and coordinate integrated landscape management programs for the development of rural communities with a focus on reducing deforestation and forest degradation and nature conservation;
Measurement, Monitoring, Reporting and Verification (M & MRV)	It is a unit that is integrated at FNDS.	Create, maintain and make accessible to the public, national forest resources information platform with information on forest carbon stocks and reference levels for all provinces; Create a system for monitoring the impacts of integrated jurisdictional development programs, including indicators on poverty and carbon stocks Create a public accessible platform with detailed information about jurisdictional integrated development programs, among others, and any REDD+ initiatives in the country; Promote greater visibility of opportunities for enabling the implementation of REDD+ initiatives in the country; Create the M & MRV manual and the evaluation guide for REDD+ initiatives and programs. Carry out other activities as provided in the Measurement, Monitoring, Reporting and Verification Section
Public consultation Fora	The public consultation fora are an integral part of the consultation mechanism at national, provincial and district levels. The public fora are, at the national level, the Technical Review Committee (CTR), the Provincial Platform (at the provincial level) and	Provide feedback to the proposals and reports related with integrated jurisdictional development programs and other REDD+ projects;

Area	Nature and Subordination	Roles
	the District Advisory Council (at the district level)	Publish the conclusions of the consultations held at all levels and promote the transparency of decision-making processes
Technical Review Committee (CTR)	Advisory body and national supervision of REDD+ activities. It has to operate as legally defined (Decree nº 70/2013 of 20 December), and with the necessary adjustments resulting from the alteration of the governmental structure	Making pronouncements about proposals related with policy, regulations, and jurisdictional integrated rural development projects and other REDD+ projects Making pronouncements on project reports and on measurement and verification; Ensure the alignment of deforestation reduction actions and forest degradation and conservation of nature with the policies and programs of other development sectors
Multi-stakeholder landscape forum	Consultative body on the sustainable development process at the province level. Formed by civil society organizations, Public and Private Institutions, Academies and Local Communities[19].	They bring together stakeholders around relevant issues in the landscape, including land-use trade-offs, NRM, and agriculture management, and foster cooperation and coordination across actors.
District Advisory Council	It is the district government advisory body, established under the Law of Local State Authorities (LOLE) (Law nr 8/2003).	Ensure the participation of local citizens, associations and other forms of organization, with the aim of defending their interests in shaping decisions concerning them.
Landscape Coordinator	It is the province-level focal point at the Landscape Coordination Unit. Is subordinated to the Provincial Director of Land, Environment and Rural Development. The provincial coordinator may be a qualified technician appointed by the DPTADR Provincial Director based on his / her competencies. Only provinces with REDD+ programs will have a Landscape coordinator.	The functions of the provincial coordinator are the same as those of the UT-REDD, but at provincial level, thus responsible for REDD+ and M & MRV issues.

The FNDS will be tasked with the coordination of all REDD+ activities, including technical supervision and coordination, overall planning, quality oversight, internal and external communication, **safeguards management**, procurement, financial management, MRV and project activities monitoring and reporting on progress on a regular basis.

6.3.2 Provincial Level

Implementation of REDD+ programs/projects/activities in the provinces will be coordinated by the **FNDS provincial units**, in close coordination with MITADER's Provincial Directorate (*Direcção Provincial de Terra, Ambiente e Desenvolvimento Rural*, DPTADER). The FNDS

[19] These provincial platforms already exist in Zambezia and Cabo Delgado

provincial units will coordinate and monitor Project implementation progress at the provincial level and interface with distinct Services at District Level such as:

i. District Services of Economic Activity (*Serviços Distritais de Actividades Económimas*, SDAE), including the unit that deals with land delimitation and registry at this level
ii. District Services for Infrastructure and Planning (*Serviços Distritais de Planeamento e Infra-estrutura*, SDPI)

In the same way as at the central level the provincial units will be composed of a provincial coordinator each, working in close coordination with Provincial Directorates of Land, Environment and Rural Development (DPTADER) and other stakeholders in their respective landscapes. The units are staffed by technicians on forest, agriculture, biomass and energy, **sustainable development (including safeguards roles),** land officer and an accountant. They will propose decisions in line with the Project objectives and institutional arrangements, will report to the FNDS Coordinator and will keep the MITADER Provincial Directors and other relevant Government institutions informed on project implementation.

In line with the broader rural development approach embraced by REDD+ an integrated approach is expected from different government directorates, hence ANAC (National Administration Conservation Areas) will play an important role on safeguards and community development support. The FNDS will work in partnership with Park's administrations aiming to overcome dedicated issues during project cycle. The Provincial Multi-Stakeholder Landscape Forums (MSLFs) will be crucial to REDD+ coordination and integrated landscap**e** management**.**

DINAB, the National Directorate of Environment, which is responsible for providing environment licenses to activities will play a crucial role in making sure that all the interventions meet the requirements set forth in the law (e.g. Decree 54/2015 and other related regulatory documents). This Directorate has been actively involved throughout the process and is supportive of the initiative. A dedicated line of work structured from the central level to the district is in the process of being established to deal specifically with the REDD+ National Strategy and forthcoming projects.

Activity implementation on the ground will primarily be handled by Service Providers with the involvement of local technical staff at the provincial Directorates of MITADER, MIREME and MASA. Service Providers will be hired through a competitive process to implement sectoral activities in each landscape.

7 NATIONAL REDD+ STRATEGY

7.1 The National REDD+ Strategy: Structure and Contents

In line with the main drivers of deforestation and forest degradation that inform the strategy, namely:

- Commercial agriculture (S1), which is associated with the clearing of extensive areas of forest cover to open space for large farming without the necessary compensatory actions;
- Small-scale or family itinerant farming (S2), which is the most significant cause of deforestation and forest degradation associated with the fact that with poor farming technologies and particularly inability to use advanced technologies to maintain land fertility the country traditional farmers resort to the incessant opening of new cultivation areas to meet their interests. They also do not engage in any forms of compensatory actions for the devastation of forest cover;
- Exploitation of forest products (S3) the country is being subject to different forms of exploitation of forest products to meet domestic and above all international demand. In addition to these forms not engaging in adequate management including systematic restoration of the lost forest they are mostly illegal in nature, what makes it difficult to regulate and control;
- Firewood and charcoal (S4), due to economic and technological conditions a significant proportion of Mozambique's population and particularly the country's urban centers rely on firewood and charcoal for energy;
- Urban expansion and other infrastructures (S5), urbanization in Mozambique has been growing rapidly and massively in the last 2-3 decades. The phenomenon is associated with vegetation clearance to open space for housing and other urban infrastructure. In most cases this is done without proper consideration for sound land use planning requirements, which see areas improper for development being used. In addition to deforestation and forest degradation this is also associated with land degradation including other environmental risks such as floods;
- Mining (S6), large scale mining but also artisanal mining are associated with extensive clearance of vegetation to open space for their operation. In this case compensatory actions have also been ignored;
- Livestock (S7). After many years of civil war that ended in 1992 there was extensive elimination of livestock, from both commercial and family sector farmers. In the last two decades there have been concerted efforts to restore the losses and among other aspects this is also done by clearing large extensions of trees to open space for grazing land without the necessary compensatory actions.

Underlying causes include:

- limited access to high productivity technologies by much of smallholders or means to implement them including sparse extension network;
- poor governance and weak enforcement of land, forests and environmental legislation; and
- demand for food and wood products in the domestic and international markets and inadequate employment and income opportunities in the rural areas.

The National REDD+ Strategy in Mozambique are aimed at reversing these negative trends and promoting the sustainable use of forests by all stakeholders.

7.1.1 Development Objectives

The objective of the National REDD+ Strategy is to reduce net greenhouse gases emissions and promoting rural development in the country. The six main pillars of the National REDD+ Strategy (MITADER, 2016[20]) are as shown below:

Strategic Objective 1: Cross-cutting actions: establish an institutional and legal platform for inter-agency coordination to ensure the reduction of deforestation. This comprises the following intervention actions:

(i) Planning, implementation and monitoring systems for REDD + strategy;
(ii) Strengthening the land use planning system with a focus on identification of forests to be preserved and the areas to be restored. This extends to the formulation of the national land use plan;
(iii) Capacity building and training of agents to implement REDD + activities;
(iv) Assess the need to adjust Legislation to strengthen deforestation reduction and forest degradation actions;
(v) Research on techniques, technologies and policies for REDD + implementation and its impact on society;
(vi) Assess implementation of tax and non-tax incentives to promote reduced emissions from deforestation and forest degradation and increase carbon stocks through forest;
(vii) Establish a MRV system and IMS.

Strategic objective 2: Conservation Agriculture: promoting alternative sustainable practices to shifting cultivation, which ensure increased productivity of food and cash crops. Comprising the following intervention actions:

(i) Improved agricultural and soils productivity to reduce areas with shifting cultivation practices, including Agroforestry Systems;
(ii) Transfer of technology and organization of agricultural producers;
(iii) Postharvest operations: marketing, processing and storage of agricultural products;
(iv) Promotion and support to partnerships between large, medium and small producers;
(v) Planting of multipurpose trees (MPT) in agricultural areas, and agroforestry systems;
(vi) Restoration and rehabilitation of degraded areas;
(vii) Sustainable livestock production: systems for animal feed production

Strategic Objective 3: Energy: increase access to alternative sources of biomass in urban areas and increase the efficiency of production and use of biomass energy, comprising the following interventions:

(viii) Sustainable use of biomass energy and alternative energy biomass in urban areas
(ix) Sustainable production of biomass energy (biomass and coal processing)
(x) Formalization of coal business in large cities, particularly the coal sold in the cities of Maputo, Matola, Beira and Nampula

Strategic Objective 4: Conservation Areas: strengthen the system of protected areas and find safe ways of generating income, to be rolled out through the following interventions:

(i) Redefinition and requalification of conservation areas;
(ii) Sustainable businesses in conservation areas;

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[20] Idem.

(iii) Attracting financing and other sources of income for conservation areas that are compatible with biodiversity conservation;

Strategic Objective 5: Sustainable Forest Management: promote the system of forest concessions, community management and strengthening forest governance, to be rolled out through:

(i) Review and strengthening the governance and monitoring system for forests;
(ii) Statistical information system for registration, control and public disclosure of forest operations;
(iii) Forestry inventories and forest management plans for timber production areas;
(iv) Establishment of timber product standards and improving the efficiency and full use of wood; diversification of products and services within the areas of forest concessions;
(v) Wood classification in the Customs Tariff;
(vi) Capacity building of forest operators (in matters of forestry operations, use of the management plan and use of wood).

Strategic objective 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, to be rolled out through.

(i) Network of trials of tree species and multipurpose trees (MPT) in the main agro-ecological zones;
(ii) Germplasm bank of MPT species (seeds and clones).

In short the National REDD+ Strategy is aimed at improving the enabling environment for sustainable forest management and investments in Mozambique, and to promote sustainable forest and land management practices in targeted landscapes.

Central to the interventions is the creation of an enabling environment that will facilitate the overcoming of underlying governance, economic, technological, social cultural and demographic barriers that work against the sustainable use of land and forests resources and natural resources in general. These will be directed to agriculture, forest and energy sectors, where the key drivers of deforestation occur.

7.2 Types of Activities

7.2.1 Activities

The above-mentioned strategic interventions will be translated into the following activities by area of operation:

1. **Inter-institutional coordination and cross-cutting actions**: establishing an institutional platform and legal framework for inter-institutional coordination that ensures the reduction of deforestation

    - Establish and operationalize the process of monitoring the actions of the various organs and have control points by means of meetings of the Technical Steering Committee and the Provincial Platform for Sustainable Development, with the objective of harmonizing policies and practices among sectors in particular

Agriculture, Forestry, Energy, Tourism, and State Administration and Public Administration;

- Use the established public consultation bodies (at the locality, district and province levels) to support the implementation of REDD + programs;
- Strengthen the land use planning system through the use of tools Such as the National Agro-ecological Zoning and Territorial Planning Plans;
- Adapt Legislation and Institutions and Enhance Law Enforcement in Key Sectors to reduce deforestation;
- Promote and support the establishment of smart partnerships between communities and Investors;
- Involve district governments, heads of administrative posts and localities, local leaders, authorities and other local authorities in the implementation of initiatives to reduce deforestation;
- Take into account gender issues, with particular emphasis on rural and urban women in the development and implementation of "good practices" of land and energy use;
- Establish and operationalize an integrated information and monitoring system for forest resources (actors, sectors, inventories, maps, wood products and loggers, environmental and social safeguards);
- Strengthen the monitoring and implementation of the legal and institutional framework in the forests, land, and biomass energy;
- Establish a system of tax and non-tax incentives and incentives to promote the "Good habits"; clarify and simplify administrative procedures with a view to facilitating operators to operate within the norms;
- Capacity building of institutions and human resources on laws, regulations, standards and Procedures and lessons learned from previous projects, e.g. forests agriculture and energy;
- Empower all key actors on the use of alternative technologies to those that cause deforestation and forest degradation;
- Promote and facilitate scientific research on the identification of deforestation reduction technologies, their adoption and consequent impacts on society;
- Carry out education and training campaigns on forest conservation and multi-use tree planting and alternative energy

2. **Agriculture:** promoting sustainable alternative practices to shifting agriculture, which promote productivity of subsistence and cash crops

- Implement the National Agro-Ecological Zoning (ZAEN) and the agrarian policies, as a basis for sustainable and integrated use of natural resources;
- Define the alienable areas for subsistence and commercial agriculture with deliberate measures to avoid or minimize deforestation;
- Improve the post-harvest management system (storage, conservation and processing) and agricultural marketing;
- Promote conservation agriculture and agroforestry systems as conservation measures. Soil conservation and increase of carbon stocks;
- Promote and encourage the planting of multipurpose trees for a variety of purposes including crops such as cashews and other fruit trees, and other products;
- Improve water retention and utilization efficiency in agriculture and promote climate-friendly agriculture systems;

- Increase access to technologies to ensure soil productivity and make producers in the family sector more sedentary (including access to the extension and phytosanitary assistance, soil conservation techniques, and land tenure security);
- Form cooperatives and other entrepreneurial initiatives that bring together the producers;
- Design and promote programs of technical assistance and rural extension, as well as transfer of easy to adopt technologies and access to markets and finance;
- Promote agricultural insurance against losses due to adverse climatic events and encourage the adoption of more efficient technologies by producers;
- Promote access to agricultural inputs and means of production (improved seed, fertilizers, pesticides, irrigation equipment, and mechanization);
- Establish family or community-based fodder banks and train farmers in animal supplementation materials;
- Establish a platform of partnerships and systems of agricultural development that will guarantee food security.

3. **Energy**: increasing access to alternative biomass sources in urban areas and increasing efficiency of the production and use of biomass energies

    - Provide the low-income people with alternatives for access to clean energy and sustainable sources, with a focus on urban people;
    - Promote the establishment of forest concessions for biomass energy production purposes in order to guarantee the sustainable management of the forest;
    - Enable the production of woody biomass for energy purposes through economic incentives and fiscal conditions;
    - Establish efficient biomass energy production systems with focus on ovens for charcoal production and the reuse of waste for the production of briquettes and pellets;
    - Promote the efficient use of biomass energy through improved stoves for domestic and collective kitchens in urban areas;
    - Evaluate the alternatives of domestic production versus subsidized imports of improved stoves;
    - Train users and promote the use of alternative energies to biomass (natural gas;
    - electricity) in urban areas, with a particular focus on women;
    - Strengthen the system for monitoring the production, transport and marketing of vegetable coal;
    - Provide financial and technical support for mass production of improved stoves both for urban and rural areas.

4. **Conservation Areas**: strengthen the conservation area system and find safe ways to generate income

    - Strengthen the management system of conservation areas including an efficient financing system;
    - Improve the infrastructure and information system of CAs in order to attract both the leisure and scientific tourism, scientific research, as well as other forms of compensation for biodiversity and other ecosystem services;
    - Develop mechanisms for generating income in conservation areas and sharing of benefits with local communities;

- Promote and introduce, in local communities, activities compatible with Conservation, and establish a system of education and training geared to the conservation;
- Resize, reclassify and restore current conservation areas and assess the potential to include new conservation areas;
- Create preferential tourism development zones as incentives to attract investments in conservation areas.

5. **Sustainable Forest Management**: promote the system of forest concessions, management and strengthen forest governance

    - Strengthen forest monitoring including monitoring the implementation of forest management plans, logging and transport, and reinforcing law enforcement action in forestry and environment;
    - Establish a forest information and production and marketing (in the domestic and foreign market) of loggers' products;
    - Ensure the improvement and full use and addition of value of timber and non-timber products and the links between forest markets and financial institutions;
    - Review the classification of timber in the Customs Tariff with a view to improving control of wood trade products with the other countries;
    - Training and capacity building of operators and forest workers on forestry and processing of forest products (timber and non-timber);
    - Improve the economic integration of private operators and communities and ensure formalization of public-private-community partnerships in the co-management of forestry;
    - Establish and provide technical and institutional support to community management initiatives that generate effective benefits;
    - Promote actions to reduce uncontrolled fires and environmental conservation;
    - Develop forestry activities for the restoration and regeneration of native forests in forest concessions;
    - The State should undertake the inventory of productive areas and design of plans in order to guarantee the knowledge of the real potential and the quality of the plans, in order to improve logging control and all related activities

6. **Restoration of degraded forests and planting trees**: establishing a favorable environment, increase of planted areas, forestry business, restoration of natural forests and tree planting for various purposes

    - Clarify and simplify land access and security issues for forest plantations, both for large companies as well as for the public sector, community and family life;
    - Create the knowledge bases, investments and functioning of small and medium-sized enterprises in the establishment, restoration and management of forests, including the value and market system of forest products and services;
    - Provide adequate reproductive material for the establishment of plantations adapted to the specific site and markets for forestry products and/or services;
    - Promote mechanisms for the restoration and rehabilitation of degraded or deforested area by natural or assisted regeneration;
    - Promote the planting of trees for various purposes, including tree crops for several purposes;

- Intensify the planting of trees for families and rural communities, and as part of urbanization (parks and streets);
- Address the causes that have resulted in deforestation and forest degradation, as well as mechanisms for the control and sustainable use of resources in the rehabilitated areas.

Ultimately REDD+ National Strategy programs and projects will combines soft (processual) and hard (physical) interventions, subdivided as follows:

Processual

- Inventories and updating the knowledge and information about the existing land and forest resources including the design and implementation of a forestry information system
- Strengthening forest governance including the strengthening of AQUA
- Periodic assessment of forest operators
- All forms of capacity building and dialogue among stakeholders
- Platform of Dialogue among stakeholders for Integrated Management
- General promotion of forest plantations for multiple purposes and conservation agriculture
- Program/project management and coordination

Physical

- Delimitation of community land and community land use planning (micro zonation)
- Promotion of geo-spatial planning
- Issuing of DUATs
- Forest plantations
- Forests concessions for commercial harvesting to and by communities and MSME
- Sustainable production and use of biomass energy (energy efficient furnaces and stoves for charcoal/fuelwood production and use)
- Public forest concessions and related operations
- Technological center of forest industry
- Agroforestry systems including related infrastructures (e.g. roads, bridges, small/medium size dams, commercial infrastructures, etc.)
- AQUA infrastructure and operation

Some activities, such as the establishment and operacionalization of the integrated system MRV&SIS, capacity building on conservation agriculture, legislation (Land and Forest Law) oriented to the target group, establishment and operacionalization of Integrated Landsacape Platforms in Zambezia and Cabo Delgado, have been prioritized in the first phases of the projects.

7.2.2 Main Beneficiaries of REDD+ Programs/Projects

The main direct beneficiaries will be gathered from community land delimitation process. Rural communities, including women and youth, will benefit from economic opportunities, improved productive inputs through access to technical assistance, training in efficient production technologies, access to financing, land titles (individual and community) and community land use planning, and other market opportunities linked to natural resources.

Other direct beneficiaries include

- **Micro, small and medium enterprises (MSMEs)** in timber and non-timber forest products, who will receive support in preparing management plans, technical and

business, training in technologies and improved techniques, and have access to grant and commercial finance for expanding their businesses, and access to markets;

- **Key government institutions at the national levels,** specifically MITADER (DINAF, AQUA), MASA (DINAS, DINEA) and MIREME (FUNAE), who will receive support for strategic planning, improving governance, technical assistance for policy implementation, support for operations and for the implementation of their programs;
- **Government institutions at the provincial level** more particularly MITADER's Provincial Directorates (DPTADER).

The interventions will also reach a significant number of indirect beneficiaries through: (i) improved governance and sustainability in the forest and natural resources sectors; ii) economic opportunities and improved livelihoods; and (iii) reduced deforestation and improved land and forest management, enabling more productive landscapes. The planned interventions aim to develop a model for integrated landscape management across the country. At the global level, the population will benefit from reduced GHG emissions and restored habitat for biodiversity.

Program Affected People: several processes and physical interventions on the ground will create people who will incur in temporary or permanent losses and/or restrictions. These processes will create people who will fall under the category of Program Affected People (PAPs). PAPs can be defined as "people who will be affected by the programs/projects in terms of direct economic and social losses resulting from land taking and/or restrictions of access to land or resources and other personal, household or community assets, together with the compensatory and remedial measures". In line with the GOM and WB regulations efforts will be made to avoid and minimize the creation of such people but it is also acknowledged that in some cases this might be unavoidable. In such cases, all the remedial actions will be taken to ensure that the livelihoods of such people are not made worse than they were before the start of the program and ultimately that they are improved.

General efforts being undertaken by the GOM to bring about changes in the forest sector extensive exercises of updating land and forests inventories, land and forests use plans that will extend to conservation/protected areas will be carried out. The results of such exercises will be used to better assist in determining what can be done, where, when, how and by whom. This will also be used to refine and update the Negative List of interventions valid for the Strategy (Chapters 9.1 "Potential adverse environmental and social impacts including reputational risks and 9.2 Other potential adverse socio-economic impacts "), In many cases this will be site specific and backed by solid evidence. From the onset, under the Strategy the following activities should be avoided:

- *Conversion of critical natural habitats*. Where forest interventions can contribute to restore degraded areas, activities may be supported but these cannot contribute to the degradation or deforestation of any critical natural habitats;
- *Activities which need land acquisition from communities and individuals* or curtail their access to natural resources they were using previously without documented agreement between the parties for benefit sharing or viable alternatives;
- *Introduction of invasive species*. The introduction of alien invasive species of trees can have serious consequences. They have the potential to affect biodiversity, ecosystem function and services, and human health;
- *Tobacco production* and/or the production of any other drugs.

The introduction of Genetically Modified Organisms will need to comply with Mozambican legislation and will need an in-depth analysis of their beneficial or negative impacts before being considered for adoption.

Clear selection criteria for the engagement of communities and their collaboration with investors will be developed with the objectives of minimizing the environmental impacts as well as risks of significant social impacts, such as land grabbing and environmental contamination. The criteria will also assist in determining which operators will be ineligible for funding under the program.

7.3 REDD+ initiatives

As described above a series of actions have been underway initiated by different categories of actors, namely the government (public sector), the private sector, civil society organizations (CSOs), community based organizations (CBOs) and different categories of individual and/or family farmers. Now that the National REDD+ Strategy has been approved and assuming that industrialized countries or private entities from these countries will maintain their interest in financing the protection of forests in developing countries including Mozambique through the purchase of REDD+ credits or payments for environmental services a systematic process of verifying the extent to which the various initiatives meet or do not meet the objectives of this strategy will be undertaken. Certain initiatives, programs and projects may just be relevant to enhance rural development and sustainable management of land and forests but not necessarily meet the core objectives of REDD+.

Under the recently approved National REDD+ Strategy initiatives and activities aimed at changing the dynamics of deforestation and/or forest degradation and/or to increase forest carbon stocks throughout the country and particularly in defined areas will be promoted. These activities will seek to reduce emissions and/or increase the absorption of greenhouse gas related to these dynamics, with the goal of valuating these emission reductions/absorptions within a compensation mechanism based on the result (carbon market or fund).

Particularly during the second and third stages (i.e. medium (2020-2025) and long (2025-2030))[21] of the implementation of the National REDD+ Strategy financing and actions will focus on those activities that will contribute to REDD+ objectives and directly address them to the carbon markets. They will be subject to the entirety of the international demands of REDD+ mechanisms. They will be financed based on carbon results and will allow for REDD+ carbon credits to be issued. Emission reductions will be measured by comparing them to a reference levels established according to carbon and socio-environmental standards emanating from the UNFCCC and/or from other known national and international measurement and monitoring regimes. REDD+ programs will be part of a contract. They will be clearly geographically delimited and mutually exclusive in the space.

The selection of programs/projects/activities will focus on those that have the potential of enhancing cross-sectoral synergies (agriculture/forests, energy, mining, urbanization, etc.) and stakeholder participation.

[21] The first stage (2016-2020) will focus on preparation of a number of tools and piloting interventions.

REDD+ initiatives will be those related to REDD+ programs/projects or business policies aimed at obtaining measurable REDD+ results. For a proper tracing, follow up and measurement a number of criteria will be adhered to in classifying and including the various initiatives, namely:

1. **Registration**: the financing of initiatives, programs and projects will be recorded in the National REDD Registry. All actions will be subject to this basic demand, as it allows for progressive tracing of all financing in the country that contributes to the country's transformation toward the desired rural development and enhanced land and forest management. The registration modalities will be more or less binding, going from a REDD+ project toward a sound rural development initiative;
2. **Reputation**: will determine if those behind a program or project, as well as their partners, have undergone a reputation verification, which would especially prevent the risk of money laundering and/or other illicit activities;
3. **Demonstration**: will determine if those behind a program or project or policy can demonstrate relevant aspects to combat deforestation and forest degradation from the beginning. Here, it is not necessary to demand a quantification, but at least a reasoned justification. The demonstration must be included in the project documentation and should ensure that the action will guarantee a positive carbon impact, economic viability, technical viability and/or a positive impact and prevention of social and environmental risks;
4. **M&E System**: corresponds to the necessity that the action being financed and/or accepted is subject to a standardized, basic and acceptable monitoring and evaluation system. Just as with registration, it is a prerequisite for all REDD+ initiatives that could be materialized in different ways depending on the scope and the nature of the actions. Generally, the basic requirements of the financing partners must be validated in the context indicated, or an acceptable equivalent system when related to private investments.
5. **Carbon Measuring and Reporting**: determines whether or not a measuring and reporting system regarding the carbon impacts of the action is required. There will be the need to distinguish between a standard system and a system based on a proxy. In a standard system, it refers to the normalized constraints on an international level, including on a sectoral level, which essentially applies to programs and projects that lead to the issuance of carbon credits. In a proxy system, the carbon measuring and reporting may be done directly through the carbon data but also on the basis of other indicators, for example an area that has been reforested, a number of households with improved stoves, etc. In any case, a prior justification must be done between what the proxy intends and its carbon impact (see demonstration). Guidelines and modes will be progressively produced by REDD+ managers, to make sure that for the program/project or developers a certain level of uniformity and acceptability is adhered to, in order to save time and reduce costs.
6. **Carbon Verification**: determines whether or not a verification system for the carbon results or proxy of an action is required. Whether the carbon verification is “certified” or “adjusted”, in either case, it must be systematic. Certified verification responds to international standards, including a verification requirement by the entities that are appropriately certified to do so. Adjusted verification respects a process adapted for the national level and the circumstances of the activity (the scope, sectors, risks, etc.). Guidelines and modes for verification will be progressively produced by REDD+ authorities, in order to be adjusted in terms of the REDD+ requirements and to the realities of the actions undertaken (independent auditor, internal control, mandated

National Entity or pool of verification experts, internationally or nationally certified, the role of Civil Society, long-distance or on the ground monitoring, etc.).

7. **Socioeconomic-environmental Measuring and Reporting**: determines whether or not a measuring and reporting system of socioeconomic-environmental benefits of the action is required. There will be the need to distinguish the requirements with respect to REDD+-labelled or classic standards. In the case of a REDD+ label, the guidelines and models developed within REDD+ must be adhered to in a consistent manner, either available and recognized on an international level, or produced on a national level by REDD+ authorities. The level of requirements may be different in regard to the actions undertaken, for example based on their scope or their activity domains. Regarding classic standards, the developers, for example, must respect the classic standards or safeguards of the financial partner, without necessarily considering the particular requirements adapted to the REDD+ objectives.

Landscape Planning and Land Tenure Regularization will consider all intervention areas for REDD+ program/project financing. The beneficiaries must first express their interest to participate in the project. Gender aspects will be taken into consideration in the support provided to the issuing of community, family group, and individual land titles. As per Mozambique's Land Law, customary rules and governance structures within collective holdings may be used if they do not contravene principles of the constitution, which include gender equality in land ownership. However, implementation of this principle has shown to be lacking. In Mozambique's rural areas, customary laws favor male access/control over land, with women having difficulties in defending their rights in the delimitation process, particularly when this is carried out as a step toward attribution of land use to investors (DAI and Nathan Associates 2014). Gender-responsive practices, such as ensuring that both husbands' and wives' names, as well as those living in consensual union or married under customary or religious law, are listed on land documents and registered, will be mainstreamed.

A gender-sensitive approach will be applied in every stage, from the identification of beneficiaries to any subsequent support provided. This would include having a targeted proportion of women involved in SAFs schemes and accessing technical support, as well as priority given to SAFs with species that are mostly grown by women such as legumes;

Supporting Sustainable Production and Use of Charcoal, the Service Provider will be the primary implementing entity for these activities, in close coordination and collaboration with the National Energy Fund, FUNAE, and FNDS. This targeted focus on production enhances the value-addition of the Project in a given landscape, given that many other partners are addressing challenges on the demand side. There will be close collaboration with said partners, to ensure that the overall approach is holistic. The beneficiaries will be community-based groups that express interest in the use of efficient technologies for charcoal production.

8 POTENTIAL IMPACTS, RISKS AND THE MITIGATION MEASURES FOR THE PROPOSED REDD+ STRATEGIC OPTIONS

8.1 Risks Related to International Decisions

A significant part of REDD+ is based on the assumption that industrialized countries or private entities from these countries will be continuously interested in financing the protection of forests in developing countries including Mozambique through the purchase of REDD+ credits or payments for environmental services. The organization of the international system of trading related to GHG emissions and related funding is heavily dependent on international negotiations that are still in progress. The process has been marked successively by progress/ stagnation, certainties/uncertainties in line with a multiple factors that characterize the global arena including the availability of funds by different countries at different stages. The fact that the world has been under financial pressure since the 2007/8 crisis brings a cloud to the ultimate interest of REDD+ system. Notwithstanding the relative uncertainties indications are before 2020 a solid and functional REDD+ international systems.

Note should be taken of the fact that the Paris Agreement at the Twenty-first Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change, in December 2015, made significant progress towards a renewed and better financed carbon offsetting process that gives hope to the effect that carbon offsetting is likely to continue to grow in popularity and application. Mozambique can tap into the opportunities to be offered and progress its national agenda.

The fact that the crucial aspects of the preparation phase, which culminated with the formulation and approval by the Cabinet of the National REDD+s Strategy were carried out successfully and the multilateral and bilateral commitments that Mozambique has managed to secure bode well for the strategy in the short to medium term.

8.2 Risks Related to the REDD+ Phases

The main phases of the preparation process were accomplished successfully. After approval by the Cabinet in November 2016 the strategy has now entered into the implementation stage, adhering to the three stages that have been specified (i.e. short (2016-2020), medium (2020-2025) and long (2025-2030)). The expected approval of a series of piloting interventions (e.g. Mozambique Forest Investment Project (MozFIP)/ Dedicated Grant Mechanism fot local communities (MozDGM) in 2016/17 and other public, private, CSOs and community initiatives) and the ongoing forms of support from other donors as specified in Chapter 6 as well as the engagement and dedication of national stakeholders as seen during the consultation phase and other related developments can be used to state that the process was marked by limited risks. Efforts should continue to be made to ensure that internal and external stakeholders are adequately mobilized and actively involved to sustain the momentum into the successful finalization of the preparation process.

8.3 Risks Related to the REDD+ Management Process

The involvement of multiple institutions and the need to update laws, regulations and practices as specified in the descriptions of planned interventions and institutional and legal framework also mean that managing the process will be a challenge not exempt from risks.

The formulation of new and/or updated instruments as well as the required changes in the laws that govern the management of land, forests, wildlife and other important natural resources may take time to come by and encumber the overall implementation of the strategy.

Although MITADER and other relevant government departments including the private sector, communities and NGOs have a strong tradition of working together in Mozambique in matters of common interest the fact that forests is a challenging area coupled to the fact that at the practical level both law enforcement and effective inter-institutional collaboration have shown weaknesses in Mozambique also means that dedicated afforestion will be necessary to make REDD+ commitments workable.

8.4 Risks Related with the REDD+ Typologies

The table below presents an analysis of each of the REDD+ strategic options and sub options in terms of potential risks and opportunities, together with mitigation and enhancement measures and proposed responsible institutions for implementing these measures.

Table 7: Opportunity and Risk analysis

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
(1) **Inter-institutional coordination and cross-cutting actions**: establishing an institutional platform and legal framework for inter-institutional coordination that ensures the reduction of deforestation	Long tradition by MITADER (former MICOA) to exercise inter-institutional collaboration and coordination and by other lines ministries and other public and private and CSOs in the fulfilment of common agendas	Make maxim use of previous experiences including those developed during the formulation of the REDD+ Strategy	MITADER and line ministries (MASA, MIREME, MEF, MAEFP, etc.)
	Formulation of new and/or updated instruments (e.g. NLUP and Forest Inventory) and changes in the laws for land, forests, wildlife and other important natural resources will take time and may be complex	Seek to hire highly qualified and experienced personnel and procure and engage experienced and tested TA that should also procured and involved for the same	MITADER
(2) **Agriculture:** promoting sustainable alternative practices to shifting agriculture, which promote productivity of subsistence and cash crops	– Existence of a general framework for agri-forest systems (AFS) (e.g. agriculture policy and strategy)	– Besides adherence to the current framework, a special focus on AFS is required through appropriate instruments that allow for mass practice and adoption – Enhance the instruments and allow for more coordinated efforts in the implementation of CA, including mechanism of sharing experiences and research knowledge	MASA
	– A wide range of players implementing AFS programs across Mozambique, with specific focus of Cabo Delgado, Zambézia, Tete, Manica and Sofala provinces	– Necessary to draw lessons (cross-regional and in contrasting soils) on the existing AFS projects with focus on understanding the biophysical and socioeconomic factors underpinning its adoption	MASA
	– The ongoing momentum of AFS projects throughout the country	– Use the existing momentum to engage the private sector into AFS	MASA
	Risks	**Mitigation measures**	
	– Inability of most rural communities to acquire necessary inputs used in Conservation Agriculture	– Policy measures required to facilitate imports and production of necessary inputs not only for AFS but for agriculture as whole, e.g. through financing or lowering taxes on imports of inputs	MASA

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
	– Strong community attachment to traditional agriculture practices may reduce the chances of mass adoption of AFS across the country	– Communities will require technology transfer relating to the practices of AFS , which also needs to be adjusted to suit the local context	MASA
	– Underestimation of numbers of young males and women that could engage in AFS projects	– The inclusion of young males and women in AFS projects is vital to reducing the current levels of deforestation and degradation as these two demographic groups are most active in illegal logging and charcoal production respectively	MASA/MITADER/ MGCAS
	– Weak agriculture extension services	– The expansion of AFS should be accompanied by deployment of committed extension workers who are willing to be true agents of change in rural Mozambique. Invariably we noticed some instances where the extension workers are deployed but have failed to provide the services they are meant to provide due to lack of individual commitment and drive. Extension workers need to be trained and equipped (provided with transport means and funds for operational costs)	MASA, through the National Directorate for Agricultural Extension (DNEA) and Provincial Agricultural Extension Services (SPER)
	– Lack of clarity about Conservation Agriculture	– The lack of clarity will jeopardize full adoption of CA. Thus, alongside institutional measures proposed above, Mozambique should develop its own conceptual framework of AFS tailored to suit local conditions in order to facilitate its implementation	MASA
	Opportunities	**Enhancement measures**	
	– There are existing projects involved in perennial crops introduction (e.g. Cabo Delgado, Manica, Sofala and Zambézia provinces)	– Important lessons can be drawn from the existing projects in order to improve potential scale-up of activities in other areas	MASA
	– Carbon financing and provision of NTFPs for community livelihoods	– Species with high potential of carbon sequestration and provision of livelihood. should be prioritized based on community wishes and agro ecological conditions	MITADER/ MASA
	– Reduce soil loss resulting from erosion	– There are multiple solutions to erosion control. Control measures depend very much on the economic situation of the farmer. Some techniques which could be	MITADER/ MASA

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
		promoted: Conservation Cover; Conservation Cropping; Conservation tillage; Contour farming; Cover and green manure crop; Crop residue use and Terracing	
	– Reduce waterway pollution through agriculture runoff	– Promote the use of good techniques of land use and management, including the reduction of fertilizers and pesticides as well as by introduction of trees or shrubs in the farms	MITADER/ MASA
	– Socio-economic benefits such as employment, especially large-scale production	– Employment for the most active demographic groups should be considered- young males and women	MINTRAB/ MITADER
	Risks	**Mitigation measures**	
	– Mismatch between the introduced perennial crops with local preferences (e.g. local communities showed preference for fruit trees)	– The introduction of these crops should be carefully negotiated with local communities in order to match local values, livelihood needs, as well as ability for these crops to sequester high levels of carbon	MITADER/ MASA
	– Weak technical support and extension services	– The expansion and promotion of perennial crops should be integrated within a comprehensive approach designed to improve agricultural practices in general. e.g. in the Envirotrade project in QNP, some trees were provided during the dry season which drastically reduced their survival rate. Continuous training programme for extension workers is needed for them to have the necessary knowledge and skills to provide relevant advice.	MITADER/ MASA
	– Undermining biodiversity	– Species suitable for the local agro-ecological conditions should be used to reduce chances of diseases affecting natural forest cover	MITADER/ MASA
	Opportunities	**Enhancement measures**	
	– Mozambique has history of commercial agriculture and out grower schemes (e.g. tobacco, cotton and timber)	– Lessons drawn from existing commercial agriculture (e.g. tobacco, cotton and timber) – Ensure that there is balance between community involvement in out grower schemes and ability to produce food for their consumption	MASA

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
	– Decreases the potential for loss of threatened/ endangered species, red listed species (fauna) that live/use forest habitat; potentially increase biodiversity	– Encourage native forest growth to provide suitable habitat for endemic species – Develop and implement an alternative livelihood programme for forest dependent communities – Improve alternative livelihood skills training for farmers (both men and women) and inputs – Building capacity in agroforestry and conservation agriculture and increase extension technicians to assist farmers	MITADER
	– Reduction of soil erosion from slash and burn fields leading to reduction in silt loading from runoff in water courses	Encourage correct tillage and care of soil	MITADER
	– Contribute to CO_2 storage and reduce impact of anthropogenic driven climate change.	Encourage a larger area to be under crop/vegetation cover	MITADER
	– Increase reliability of cash income to rural families	Grow financially beneficial crops	MASA
	– Increase of reliability of adequate subsistence crops for rural families.	– Grow crops that communities use – Enhance food security through improved farmland production to reduce forest pressure	MASA
	– Increase national production of food crops sold in urban areas to encourage less reliance on importing selected food crops	Grow appropriate food crops for use in urban areas	MASA/MITADER/MAEFP
	– Increase potential for international trade in selected crops, contributing to micro and macro economies	– Create or improve production collection mechanisms to allow better access to markets and favorable prices for farmers (eg. commodity exchange)	MIC/MASA
	Risks	**Mitigation measures**	
	– Continued use of traditional techniques in farming	Disseminate the best farming practices and improve the assistance for farmers	MASA
	– May result in changes in social structure due to need to participate in commercial agricultural production, rather than subsistence agricultural production.	Sensitize communities to not abandon the crops of subsistence in favor of cash crops, showing the value chain of subsistence cultures within the own community as well as its major role in food security	MASA
	Opportunities	**Enhancement measures**	
	– Existence of large and small livestock farmers	– Increasing technical capacity to assist producers	MASA

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
		– Promote the planting of local and exotic forage trees/shrubs for cattle supplementation	
	– Existence of government initiatives for restocking livestock	– Expand these initiatives for new areas and new producers especially women (e.g. areas with high potential for fodder supplying)	MASA/MEF
	Risks	**Mitigation measures**	
	– Lack of equitable participation of both genders in livestock distribution by government	– Promote more female participation in restocking livestock in communities	MGCAS
	Opportunities	**Enhancement measures**	
(3) **Energy**: increasing access to alternative biomass sources in urban areas and increasing efficiency of the production and use of biomass energies			
	– Past experiences of similar projects have shown that this could be a useful supply of energy for urban areas but needs proper management	– Create a body of knowledge relevant to inform future forest plantation	ME/ MITADER
	Risks	**Mitigation measures**	
	– Past experiences have not been that successful for larger scale plantations managed by rural communities with inadequate plantation management skills.	– Small-scale projects are recommended as the most appropriate due to the participation of rural communities in managing these plantation	MITADER/ MASA
	– Lack of funding and insufficient knowledge could lead to potential failure proposed projects	– A special financial commitment is required in order to support the promotion of forest plantation for energy purpose – Adequate training is required to ensure correct management of plantation	MEF/ MITADER
	– land occupation for monoculture, leading to limited access to water and food and other associated environmental problems (diseases, etc)	– Crop rotation should be emphasized	MASA
	– Possible biodiversity loss	– Encourage species diversity in forest plantation for this purpose	MASA/MITADER
	Opportunities	**Enhancement measures**	

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
	– Existing national and local initiatives from both government and NGOs promoting sustainable use of biomass and fuel efficient cookstoves	– Comprehensive and more focused program to encourage the use of fuel efficient stoves	ME/ MITADER
	– Potential financial benefit from carbon market through the use of fuel efficient stoves	– Households should be made aware of the benefits of the improved cookstoves both from economic point of view but also from health and social perspective	MITADER /MISAU/ MGCAS
	– Reduction of emissions through mass adoption of improved and efficient cookstoves	– Actual emissions reduction levels through the use of fuel efficient stoves need to be determined	MIC /MITADER
	– Existing legal and institutional framework as described under the Energy Policy and the strategy for sustainable use of biomass energy	– More coordinated action is required among different players both at national and local levels (e.g. Ministry of Energy, MASA, MITADER, Ministry of Industry and Trade and Ministry of Economy and Finance). This would also include the strengthening compliance of the law governing charcoal production	ME
	Risks	**Mitigation measures**	
	– High level of poverty undermines poor families access to improved cookstoves	– Measures should be taken to ensure the cost of a fuel efficient stove is affordable even for the most disadvantaged households. This could be done through financing or lowering taxes on imports of raw materials and other equipment used in the industry	MEF/MIC
	– Existing initiatives for promotion of fuel efficient cook stoves are scattered and to large extent uncoordinated through a designated body	– More efforts will be required from the coordinating body -Ministry of Energy to bring together players and important lessons from different initiatives – Determine the value chain (especially of charcoal production) and standard intervention to be carried across value chain for sustainable use of biomass	ME
	– Limited institutional capacity in terms of testing standards to ensure minimum emissions	– Branding and certification of cook stoves is required to ensure minimum standards of both health and safety including determining the amount of emissions	MIC
	– Unclear laws on individual carbon rights and benefits that could stimulate the use of fuel efficient cook stoves and other devices relevant for sustainable use of biomass	– Mass adoption of fuel efficient cookstoves will require incentives- carbon rights at the very individual level of cookstoves' users –	MITADER

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
	– Limited knowledge about the benefits of fuel efficient cook stoves could hinder the chances of mass adoption – Large scale adoption of fuel efficient cook stoves undermined by local tradition of cooking on an open fire both in urban and rural areas	– Systematic education activities to raise awareness among households in the country about the benefits of fuel efficient cook stoves with emphasis on provinces and areas with higher charcoal production (Cabo Delgado, Zambézia, Tete, Sofala, Manica and Gaza provinces)	MITADER /MEDH / MGCAS
	– Failure to address the role of women in the promotion of fuel efficient cook stoves appear to hinder the overall promotion efforts	– The education and awareness campaign should target women as agents of change	MGCAS /MITADER
	Opportunities	**Enhancement measures**	
	– Considerable potential of renewable energy (hydro, solar, wind, etc, untapped potential in biofuel (e.g. sugar waste, jatropha) and market (with only 38% of the total population with access to electricity)	– Make strategic choices of key areas of renewable energy to intervene that are cost effective and can easily integrate into the Mozambican economy and benefit the most disadvantaged groups and biomass dependents	MITADER /MGCAS/ ME
	Risks	**Mitigation measures**	
	– Limited systematized information about certain areas of renewable energy (e.g. solar and wind)	– Support the choices made with a clear investment plan that can either be funded through public budget or development institutions – Establish a monitoring and evaluation system to measure the development and progress of the green economy as a whole	MEF /MITADER
	– Limited participation of domestic private sector could undermine the necessary technology transfer and sustainability of the sector	– Create measures designed to incentivize the participation of domestic private sector both in joint-ventures with foreign companies or as single entities	MIC/MEF
	– Large scale production of renewable energy such as biofuel may lead to weak community driven partnerships and local benefits	– Enhance protection of community land rights and avoid impact of biofuel production on food	MASA /MITADER
	Opportunities	**Enhancement measures**	

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
(4) **Conservation Areas**: strengthen the conservation area system and find safe ways to generate income	– Provide better management of the forest and potentially minimize adverse impact impacts associated with illegal logging: grading illegal roads, associated loss of biodiversity, increased erosion, oil and gas leakages , soil contamination, other illegal activities (e.g. poaching) – Existence of informal arrangement or agreement for accessing and harvesting of NTFPs (e.g. beekeeping/honey processing, charcoal production, harvesting of fruit, (Committees of Natural Resource Management).	– Increase community awareness on conservation of natural resources – Clarify and formalize rules for accessing and harvesting NTFPs and for charcoal production – Good examples around the world and Africa in particular (e.g. Senegal and Benin) should be examined carefully and emulated as much as possible.	MASA /MITADER
	– Potential increase in biodiversity as forest areas becomes re-established	– Increase community awareness on conservation of natural resources	MASA /MITADER
	– Provide safe habitat for threatened, endangered, red listed species (fauna/flora)	– Increase community awareness on conservation of natural resources	MASA /MITADER
	– Monetary benefits (e.g. income) from tourism for the community	–Benefit sharing mechanism to ensure realistic income/benefits to the communities living in the Parks/Reserves	MINCULT /MITADER/MASA
	– Reduce degradation and deforestation of natural forest – Encourage re-growth	Awareness raising through re-growth training techniques	MITADER /MASA
	– Generate income through carpentry	Train communities to use timber harvested to produce furniture and craft for sale	MITADER/MASA
	– More secure/sustainable pastoralism decreases the need for frequent migration to new grazing lands. Greater community stability and stability for children	– Promote the planting of trees and shrubs forage – Promote the fodder banks to feed the livestock in dry season	MASA
	– Stop loss of revenue (local, provincial and national) of high valued trees to illegal trade	– Improve monitoring – Improve motivation for field staff (forest guards) – Sensitize judiciary on importance of forests, climate change and other environmental issues – Strengthen capacity for field staff and provide adequate resources (staff, equipment, funds) for effective enforcement and monitoring	MITADER /MASA

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
	Risks	**Mitigation measures**	
	– Increased conservation measures may result in loss of traditional use of natural forest resources including collecting branches and deadfalls for homes/fence and carvings, collecting medicines plants, traditional use of forest resources by women	– Tailor conservation measures with the needs and beliefs of communities and regulate access the sacred areas and exploitation of NTFPs in sustainable way	MITADER /MINCULT
	– Conflict between protected area management and community can lead to unrest and luck of support for adoption REDD+ program in the region	– Learn lessons from both ongoing and executed REDD+ programmes/projects – Strengthen institutions and motivate personnel to implement programs/projects successfully	MITADER /MINCULT
	– Charcoal production has associated respiratory health impacts to charcoal producers from inhaling emissions during production, respiratory health of charcoal users, GHG emissions, deforestation and depletion of woodland, increased soil erosion as well as habitat and biodiversity loss. There is also extensive use of child labor, potential for physical injuries, and gender disparities in income and education associated with charcoal production	– Addressing sustainability issues (social and environmental) relating to charcoal production should consider important key steps in the value chain- the site where forest resources for charcoal production are derived (step 1); the actual process of charcoal production (step 2); the transportation process (step 3) and the end user (step 4) – Awareness raising on health risks and how to mitigate them	MITADER/ MIREME
	– Honey from beekeeping may not be economically viable – may be hard to find a market, and quality of product	– Raise awareness on correct beekeeping procedures to produce better quality honey – Ensure access to a good market before implementation	MITADER
	Opportunities	**Enhancement measures**	
(5) **Sustainable Forest Management**: promote the system of forest concessions, management and	– Decreased potential for loss of threatened, endangered species, red listed species (flora/fauna) that live/use forest habitat	– Discourage hunting activities through sanctioning of offenders – Sensitize communities on effects of hunting, bushfires and climate change	MASA/ MITADER
	– Constrain potential for water courses to be impacted from silt-loading resulting from unmanaged clearing of forest understories, and unmanaged cutting of trees in natural forest		MITADER
	– Reduce degradation and deforestation of natural forest		MASA/ MITADER

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
strengthen forest governance	– Contribute to CO_2 storage and reduce impact of anthropogenic driven climate change		MITADER
	Risks	**Mitigation measures**	
	– Increased use of forest concession for fuel, construction material, etc, may result in loss of traditional use of natural forest resources including collecting branches and deadfalls for homes/fences and carvings, collecting medicines, traditional use of forest resources by women	– Promote the establishment of woodlots with multipurpose, for fuelwood and timber for construction, etc	MASA/ MITADER
	– May have an adverse impact on community social structure, gender roles and well-being of individuals through loss of alternative income (i.e. carving), loss of traditional knowledge, loss of access to sacred sites and other cultural sites		MINCULT /MITADER
	– May also result in changes in social economic structures due to need of participating in commercial forestry, rather than in independent forestry, charcoal production/fuel sales, etc		MGCAS /MITADER
	Opportunities	**Enhancement measures**	
	– Ongoing programs promoting the production and processing of honey, baobab fruit processing for production of cosmetics, etc.	– Spread these initiatives throughout the country – Learning experiences of NGOs that promote the value chain of NTFPs – Developing research in order to know the value chain of other NTFPs	MEF/MASA /MITADER
	– Linking NTFPs and forest conservation aims and social welfare	– To maximize this potential analysis of existing projects and initiatives should incentivized in order to broaden the existing knowledge and adopt appropriate policies in terms of how NTFPs trade communicates with land tenure, forest management practices and forest ecosystems	

REDD+ strategy options	Opportunities/Risks	Proposed mitigation/enhancement measures	Responsible institution (s)
	– NTFPs offers greater possibilities for women participation	– Projects and other development initiatives under REDD+ should be critical in understanding and involving women	
	Risks	**Mitigation measures**	
	– Collection of NTFPs (collecting wild crafting activities) has the potential to cause damage on the ecology – Promotion of NTFPs is likely to cause overharvesting and cause decline in the number of species, undermine productivity ability (specially of mushrooms)	– REDD+ should promote technical wild crafting and sustainable wild crafting	–
(6) **Restoration of degraded forests and planting trees**: establishing a favorable environment, increase of planted areas, forestry business, restoration of natural forests and tree planting for various purposes	– Existence of pilot projects for bioenergy supply that can be explored for other types of uses – Opportunity of employment for the communities around the plantations	– Learning lessons from old energetic projects designed to supply the big cities in firewood – Employment opportunities on plantations to be given to local communities first as much as possible. All casual labor must be given to local communities	ME/ MITADER/MASA
	Risks	**Mitigation measures**	
	– Lack of establishment of woodlots for fuel wood	– Disseminate the importance and benefits of establishing woodlots in communities	MITADER
	– Biodiversity threats under tree plantations	– Clearance of plantation plots will be sufficiently phased to reduce the impacts of vegetation removal on terrestrial flora and fauna – Avoid environmentally sensitive sites and unnecessary exposure access to sensitive habitat; Consult communities in site selection – Design planting to include both exotic and indigenous plants in the right proportions and positions	MASA/ MITADER

9 REDD+ ACTIVITIES AND RELATED IMPACTS

REDD+ programs and projects will combine soft and hard interventions that will translate into (i) providing the country and all interested and affected parties with a more accurate knowledge about the land and forest resources existing in the country and the project areas; (ii) better land and forest use plans; (iii) strengthening the forests and agricultural value chains; (iv) strengthening the capacity of all actors to do better and contribute for the sustainable management of forests and other related resources (land, water, etc.) as well as (v) direct and indirect impacts on the natural and social receiving environment likely to result from physical interventions. The environmental and social management systems to be adopted will seek to boost the positive interventions and avoid/minimize those likely to be associated with negative outcomes and to ensure that the best recommended practices are adopted in a consistent manner.

The processual and physical interventions to be managed are:

Processual

- Inventories and updating the knowledge and information about the existing land and forest resources including the design and implementation of a forestry information system
- Strengthening forest governance including the strengthening of AQUA
- Periodic assessment of forest operators
- All forms of capacity building and dialogue among stakeholders
- Platform of Dialogue among stakeholders for Landscape Integrated Management
- General promotion and advertisement of forest plantations for multiple purposes and conservation agriculture
- Technical assistance to private sector beneficiaries
- Program/project management and coordination

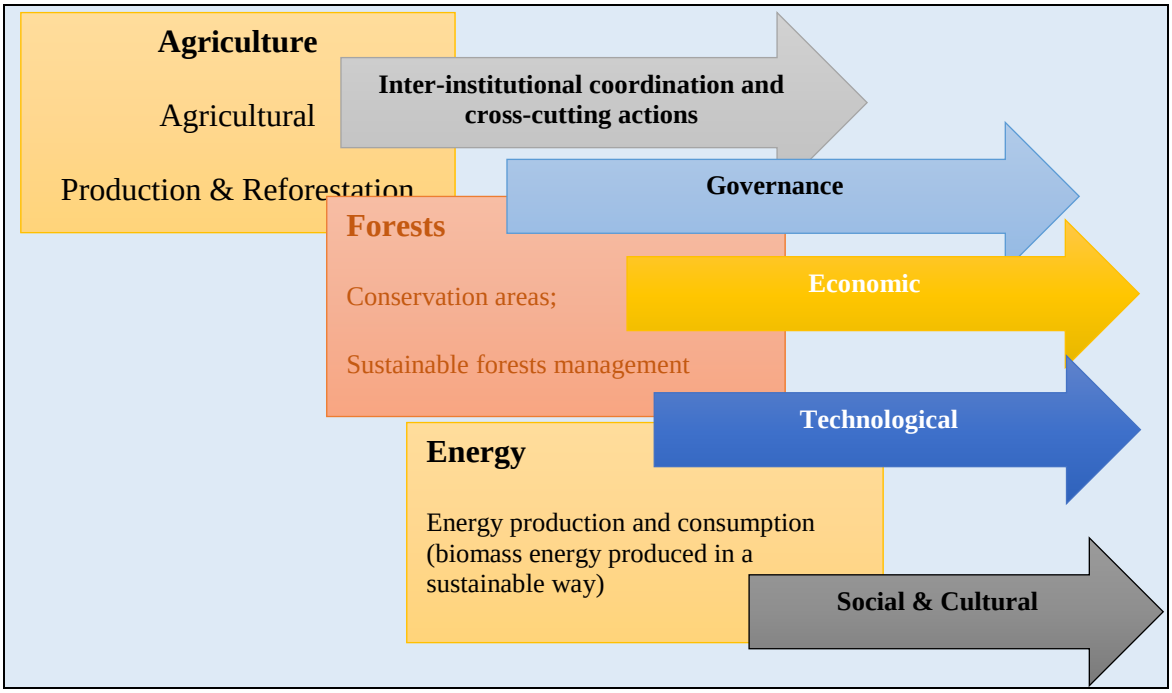
Physical

- Delimitation of community land and community land use planning (micro zonation)
- Promotion of geo-spatial planning
- Issuing of DUATs
- Forest plantations
- Community forest concessions[22]
- Sustainable production and use of biomass energy (energy efficient furnaces and stoves for charcoal/fuelwood production and use)
- Public forest concessions reform benefit
- Technological center of forest industry
- Agroforestry system
- AQUA infrastructure and operation

[22] Forest concession holders from private sector will only benefit from technical assistance under this program. Community forest concession holders may benefit from other activities besides technical assistance.

The Diagram below tries to illustrate how the various aspects will be combined to achieve the expected results.

Graph 1: Combination of interventions to reduce deforestation and forest degradation in Mozambique



9.1 Potential adverse environmental and social impacts including reputational risks

Adequate selection criteria for all project actors, sites, design, construction/installation and operation will need to be applied to avoid the risk that communities lose access to their land and to critical resources and that REDD+ program/project activities are associated with other harmful effects on the receiving natural and social environment.

Given the influence that forests have on the quality of the environmental components such as air, water, soil, climate and different forms of life and biodiversity in general as well as on recreation, landscape scenery, noise and general wellbeing of humans and other species including on the health of the environment in general in vast and complex ways all precautions should be exercised.

The strategy suggest work towards (i) updating inventories of land and forests resources; (ii) delimitating and zoning the areas for different interventions including specifying what is permitted and what is not, where, how, when and by whom, etc. Specific programs projects will also undertake to conduct (iii) land titling to provide security over land to all actors and particularly to the communities; (iv) capacity building and empowerment including development of a stronger sense of ownership, especially at community level and among men and women and the youth. Women and the youth are identified as having a strong role to play in reversing negative trends. This will be followed by (i) agreements between the various actors including between communities/government and MSMEs; (ii) activities design, screening encompassing compliance with the environment and social requirements; (iii) approval, implementation and monitoring of each activity under this program.

The dedicated dissemination of the strategy and related programs/projects and the careful selection of actors followed by training and capacity building for forest sustainable management has been identified as crucial in a context in which mismanagement of forests including those in the conservation areas has been widespread.

Dedicated communication and other forms of delivery will be necessary to facilitate the acquisition of renewed knowledge and attitudes for all actors to adopt transformed practices.

For all environmental and social impacts the applicable World Bank Safeguard Policies, as well as the World Bank Group Environmental, Health and Safety (EHS) Guidelines of April 2007 will need to be applied. Especially the General EHS Guidelines, the Agribusiness and Food Production EHS Guidelines as well as the EHS for Forest Harvesting Operations and possibly Sawmilling and Wood-based Products, where these will be applicable, will need to be applied, especially for the units that will be storing and/or processing large amounts of local products. The applicable Agribusiness and Food Production EHS Guidelines will be applied to the Agro-processing facilities from investors who will be associated with agricultural program financed activities.

The following negative environmental and social impacts can be expected:

Land and forests resources planning and use (plantation, commercial harvesting and other uses)

Forests are on land. The strategy encompasses a strong component of redefinition of land use plans that are likely to culminate with changes in existing land use plans and definition of the operational aspects around land such as what is done in which land and forests resources by whom, when, how (e.g. with which technologies), which species for different uses and when, etc. This will extend to the zoning of safeguard areas to promote biodiversity and ecosystem services. It will also be preceded by inventories of resources to provide the baseline for the planning. The strategy foresees a redefinition of land and resource use plans that will try to accommodate all interests in each area such that all interest groups can continue to have access to what is vital for their livelihoods and businesses. The siting of the interventions for plantations will also be crucial as in line with the WB OP 4.36 conversion or degradation of critical forest areas or related critical natural habitats including adjacent or downstream critical natural habitats will not be financed (WB OP 4.04). Preference should be given to siting such activities on un-forested sites or lands already converted (excluding any lands that have been converted in anticipation of the project). The same goes for commercial harvesting (for concessions or plantations): under this program it is only after confirming through the applicable environmental assessment or other relevant information, that the areas to be affected by the harvesting are not critical forests or related critical natural habitats that the funding can be approved.

In Mozambique close to 60% of the population lives in the coastal areas, i.e. within 100 km from the ocean. These areas have been under strong pressure and most of them are found at an altitude of 200 m and below have been subjected to extensive and practically permanent transformation including the general devastation of rich natural miombo forests. The areas higher than 200 m are assessed to be in a relatively better situation and less degraded. The adoption of new practices can still save these deforested areas and

assist in the preservation of their biodiversity. The delimitation and planning to be conducted under the REDD+ Strategy, including the formulation of the National Land Use Plan will redefine which areas have the potential to be restored by leaving them in fallow for long periods of time and which should be dedicated to other uses such as plantations, plant and animal production, conservation, etc.

The resulting land and resource use maps from the above-mentioned exercises will be the first stage of analysis and need further analysis on the field to identify other environmental and social values or sources of interest (protected species or other habitats of ecological value, such as wetlands or riparian vegetation or even physical cultural resources), however, identified forested areas in these maps are exclusion areas for program investments to avoid, exclude and minimize negative impacts with existing forests (meeting OP 4.36 and OP 4.04 requirements).

The development of a country level certification[23] scheme for forestry proposals, initiatives and investments is underway and will allow the strategy and its initiatives to act responsively in an environmental and social manner. At community level organizations, although they may not need formal certification, similar criteria and principles from those of the certification schemes must be followed to provide sound environmental and social performance and management on the ground, avoiding and minimizing impacts on soil erosion, ecologically sensitive areas (such as protected species and habitats), water resources degradation, solid wastes disposal, use of invasive exotic species, amongst others.

The short vs the long term: in the long run all the restructuring actions around updated inventories, re-delimitation, selection of operators and sites, capacity building, etc. will have positive impacts to achieve REDD+ objectives and also to meet the genuine interests of the country and communities in sustainable forest management but in the short to medium term it can be and will be associated and be perceived by local people and other players as embodying restrictions in access to and use of resources and possibly to be associated with disruption of local livelihoods and markets as well as the economy in general. Perceptions and realities will be intertwined in complex relationships that will need to be untangled systematically.

In the land and resource planning, allocation and use, there is a need to be consistent with the fact that the objective is to support local communities to restore and protect their forest lands in a way that meets their needs. Consideration should be given to the fact that many poor local communities cannot wait for so many years until they benefit from a land/forest rehabilitation project. Community forests need to produce a variety of products and services from as early as possible. Meanwhile, commercial tree plantations and poorly demarcated/managed protected/conservation areas often deny local communities from having access to critical resources. In certain situations, women sometimes must walk for miles to harvest fuel wood as they cannot enter the tree plantations and/or other re-delimited areas which have occupied the lands where they used to get these resources. These social impacts must be adequately identified and properly managed through

[23] Forest Carbon Partnership Facility of REDD+ is financing the national level forest certification scheme which will start its activities on the ground in 2017.

inclusive public participatory processes under the land use plans to be developed by the program at community level, as well as for the assessment of field investments.

Agro-forestry activities: this calls for support to such people, households and communities in their efforts to develop small-scale, biologically diverse agroforestry systems, forest gardens and tree plantations which provide a diversity of goods and services to the community, including fuelwood, medicinal plants, soil fertility, wildlife, and construction materials. These communities also need market access for their products. Climate Smart Agriculture (CSA) and Agricultural Conservation (AC) may also to be expected to be useful in this regard.

The adoption of the mosaic approach and/or of other similar approaches that are already being tested and applied in Mozambique and other parts of the world could be a possible solution for this potential problem. The approach allows for a good integration and limited disturbance of different land and forest uses such as commercial plantations and exploitations, agriculture, timber, charcoal making, firewood, and for a wide range of non-timber forest products, including medicinal plants, food reserves to cater for times of food crises that are very common in the country's rural areas, due to droughts, floods and other natural and socioeconomic adverse events. It also strives for a good alignment with local crucial environmental components such as water and soil.

The land titling process that will accompany the updating of land and resource use plans also needs to be conducted in a way that creates a win-win situation among the various stakeholders.

The foreseen mosaic approach will be an integrated tool to identify, assess and avoid impacts on water resources, natural habitats of high conservation value, soil erosion and other socio-economical needs for communities.

Habitats and biodiversity alteration and loss

All the REDD+ activities foreseen under the strategic actions of agriculture; restoration and regeneration of native forests in forest concessions; restoration of degraded forests and planting trees will have to be conducted in a way that preserves the habitats and biodiversity and avoid alteration and loss.

Even if the focus will be on degraded areas to establish forest plantations such operations and consequent timber harvesting activities are in one way or the other accompanied by the replacement of the existing vegetation cover with native and/or non-native species. This has the potential of resulting in loss of habitat diversity that can extend to the loss of wildlife and plant species including rare and endangered species. A lot of factors can be behind this process of biodiversity loss. Certain plant and animal species may be unable to tolerate the disturbance caused by forest operations, and be forced to leave the area. Other species may not survive habitat modifications caused by different forests operations, which can result in permanent disappearance and loss. In short the conversion of natural habitats to tree plantations may reduce the abundance and diversity of mammals, birds, reptiles, amphibians, insects and other forms of life, most of the times because land shifts from some multi-type/diversified habitats (grassland/open areas, shrubs, dispersed trees) into a monoculture of a certain tree (although under this program

commercial plantations can also be combined with restoration of degraded areas, such as riparian areas).

Aquatic organisms downstream of plantations may be impacted by chemical usage and erosion. Water-bodies may be polluted with organic plantation waste which absorbs oxygen, creating anaerobic conditions not conducive to natural species in the aquatic environment. Together with nutrients from fertilizers this can cause outbreaks of algae and invasive water plants. Increased turbidity from suspended particles affects aquatic fauna. Additional damage to biodiversity can result from increased sedimentation in wetlands.

More specifically the use of herbicides to eliminate natural vegetative cover which could reduce plantation growth can cause impacts to soil health, associated wildlife and runoff into nearby streams and waterbodies. Once established, tree plantations may block the light and as leaf litter and plantation pruning accumulate, cause impacts to surviving plants from increased acidification and dehydration.

A set of measures combining avoidance of certain practices and other management practices needs to be taken to ensure habitat loss is prevented and biodiversity is enhanced. The use of chemicals and the recommended management precautions and practices is a complex issue that is usually dealt with by a Pest Management Plan. It is also recommend, in order to mitigate water resources and its biodiversity from pollution coming from sediment and excess of organic matter from plantations, to establish an adequate buffer zone to each river/stream potentially impacted by the investment, in this way river/stream margin's integrity are kept and its riparian vegetation will work as soil erosion protection, a "wall" for the excess of organic matter flowing into the water system, shelter, feeding source, reproduction habitat and ecological corridor for biodiversity (amphibians, reptiles, birds and mammals) and may be able to process or modify some chemicals before they reach the water system. If wide enough buffer zones (depending on the size of the river/stream) are kept these impacts can be significantly mitigated.

Other impacts on natural resources

Mozambique has limited plantation management abilities and this can be expected to be associated with the probability of operators to bring alien invasive trees, once they start producing seed, and spreading into the landscape. There is also the risk of shading out natural vegetation. As plantations grow taller, the shade cast along their edges may extend further and for longer. When this happens, it may cause sun-loving species to die out locally, and increase opportunities for invasive plant species to become established. The reduced exposure to direct sunlight may cause affected areas to become cooler, and when it rains, they take longer to dry out.

The following impacts can be expected to be associated with poor plantation practices:

- Poor species selection and poor quality plants;
- Poor management of plantings with a high failure rate;
- Inadequate training of plantation workers;
- Inadequate fire protection measures;
- Inadequate management and supervision.

The introduction of alien invasive species of trees can have serious consequences. They have the potential to affect biodiversity, ecosystem function and services, and human health. Climate change, land use, and transport vectors interact in complex ways to determine the spread of native and non-native invasive species, pathogens, and their effects on ecosystem dynamics. The ecological and societal impacts of invasive species and pathogens differ across areas of climate and land use, and in the presence of global climate change may exacerbate both their propagation and impacts. At the current stage of the country's development its ability to apprehend the interactions of invasive species, disease vectors, and pathogens with other drivers of ecosystem change to human health and economic well-being is limited, which also means that the best way of dealing with the phenomenon is taking precautionary measures from the onset and avoid/limit such practice as best as possible.

Inside and outside conservation areas, the land and resource use and planning that have been described will, among other aspects, be adopted to determine which areas are used for which plants, by whom, with which technologies, during which periods of time, which species are allowed for which uses and when, etc. These site-specific plans will need to be followed and enforced in a consistent manner, inside and outside conservation areas.

Fuelwood and charcoal production and use

80% of the energy consumed in the country is obtained from forest, and 98% of forest products produced annually are to produce firewood and charcoal. Woodlands appear to recover relatively well following harvesting for charcoal production. Selective harvesting, where the high quality, low cost fuel production species and specimens are culled first from a piece of land, serves to maintain the viability of the woodland resource while providing charcoal. This recovery period can be prolonged through any number of human induced activities, such as heavy grazing, multiple burns and extended cultivation periods. Post-harvest management techniques, such as coppice management, sprout protection and fertilization, can also improve the ability of woodlands to recover following harvesting. The environmental history of a given area determines why certain areas continue to be strong suppliers of wood fuel while other are not.

As part of the strategy and subsequent programs/projects fuelwood and charcoal producers and farmers will (i) be organized into groups, licensing, training, awareness creation, improve access to markets and financing; (ii) promote technical and streamlining technologies of biomass energy production to reduce deforestation rates. Less wasteful furnaces will be developed and adopted to increase charcoal production efficiency. This will be coupled with (i) checking the availability of species allowed by law for the production of charcoal; (ii) involving the CGRN to provide information on areas available for production already defined by the community; (iii) verify inventories (SDAE) on existing/available species (quantity per area) for charcoal production; (iv) identification of new areas for coal production to be made by CGRN and SDAE; and (v) awareness creation among charcoal producers on the need to follow the law, importance and use of classes of forest species allowed for this activity. Education, training and law enforcement will work hand in hand to improve efficiency in fuelwood and charcoal production and use to reduce deforestation and forest degradation and promote

fuelwood/charcoal production that can significantly contribute to poverty reduction and environmental sustainability.

Impacts on water resources

Usually plantation trees grow rapidly, absorbing nutrients and water from the soil. Through transpiration the planted trees have the potential to contribute to locally increased air moisture levels. This may result in more precipitation, but not necessarily at the plantation site. As tree plantations age, hydrological conditions can be altered in several ways:

- Reduced soil moisture in the immediate vicinity, which could have harmful implications on local farming and livestock production activities;
- Progressively incremental uptake of ground water via the tap-root;
- Increased local temperatures due to decomposing grassland plants.

These factors can contribute to increased evapotranspiration and the loss of soil moisture. As trees get older, other factors such as rainfall interception set in. Plantation trees with greater leaf surface areas can hold rainwater caught by their foliage long enough for it to evaporate before it can reach the soil. The same applies to the litter layer which is usually sterile and takes many years to decompose. When water does reach the litter layer, it can be held in sponge-like fashion and not reach the soil, in this manner reducing aquifer recharge. Under such conditions the surface soil layer can develop a condition known as hydrophobicity, which is caused by a combination of factors including the emergence of certain soil fungi that can deposit water resistant residues on soil particles.

Established plantation trees can tap directly into groundwater so that even during dry seasons or droughts they can grow continuously by consuming water that would otherwise be retained in the soil or flow into streams and rivers. This is especially significant during the dry season, as it prevents water from reaching downstream ecosystems and human communities. High growth rate tree species may be more prone to exhibit this kind of features. Areas marked by water scarcity or those that rely on ground water to supply water to local urban and rural communities should be managed carefully. REDD+ should not aggravate existing problems, especially while the long-term solution is not in place.

The relationships between forest operations and particularly plantations and water resources require consistent and continuous management. The regional water authorities (ARAs) need be strongly involved in assessing the potential impacts including the cumulative impacts relevant for each specific site and be given a strong voice in delineating management options.

Soil

Tree plantations have the potential to impact considerably on soil fertility, and carbon storage capacity:

- Decomposing leaf litter may reduce soil pH;
- An acidic environment increases nutrient solubility which increases the potential for leaching;

- This also destroys soil organisms that cannot tolerate abnormal acidity;
- After the plantation canopy closes, grassland dies and groundcover is lost;
- Detritus dries/oxidizes or decays/decomposes releasing CO2 and methane;
- Altered soil pH creates conditions where alien invasive plants may thrive – often spreading out of plantations.

These aspects contribute to loss of soil carbon through biomass decomposition or soil erosion resulting from soil chemical changes as well as sheet erosion and scouring. The worst impacts on soils are caused by mechanical disturbance when plantations are clear-cut. The impacts of clear-cutting and log extraction may be worsened by bad plantation design and road construction methods.

Additional soil erosion factors that are related with plantations include:

Using herbicides to destroy vegetation that "competes" with plantation trees

- Burned or chemically established fire belts (especially on steep slopes);
- Displacement of community cropping and livestock grazing onto marginal areas;
- Shading induced vegetation loss in grassland or forest areas next to plantations;
- Increased silt load in water courses from storm run-off after clear cuts;

9.2 Other potential adverse socio-economic impacts

Alienation of local communities and people

The public consultation process brought to light a lot of issues related with the potential of alienating local communities and people in an endeavor of this kind. This is likely to happen particularly when these are treated as mere recipients and observers of the processes to be developed. People and particularly women, youth, local leaders, traditional healers and other community representatives need to be put in the driving seat in all aspects such as land demarcation, titling, selection of partners and of activities to be embraced, access to job and business opportunities covering the entire cycle and value chain, monitoring and evaluation and feedback. It is significant that the certification process includes strong elements of meaningful participation of locally affected communities, consistent with the principles and criteria of responsible forest management, which shall include the Free, Prior and Informed Consultation processes. This is an important aspect in the sustainable management of natural resources. This is a principle to adhere to in a consistent manner throughout all program stages to reduce these potential socio-economic impacts.

Mobility and Accessibility

Planting and reforestation as well as construction of certain rural infrastructures (e.g. roads, power lines, dams, etc.), have the potential of being associated with disturbances by bringing about changes in normal mobility and access to vital areas and resources by local people. Adequate siting, sizing and general management of these interventions including community involvement in such processes is important to devise the best ways of avoiding/minimizing interferences and/or finding ways of compensating for the problems that might arise.

The adoption of the mosaic approach and/or of other similar approaches to harmonize different land and forest uses such as commercial plantations and exploitations, agriculture, timber, charcoal making, firewood, and for a wide range of non-timber forest products, including medicinal plants, food reserves, etc. is strongly recommended to deal with this potential problem.

Resettlement

Restricted access to land or natural resources could take place in the intervention areas. This could be directly associated with different categories of interventions, namely (i) land requalification and demarcation; (ii) installation of forest plantations; and (iii) stricter access to protected areas. The potentially affected assets are land, forests, trees, access to NTFPs, including infrastructures in the form of informal shops, temporary sale points, food vending areas, farmed areas (crops), belonging to local communities/people/entities, etc., which will be within the sites to be proposed for different interventions.

Ultimately the OP/BP 4.12 – on "Involuntary Resettlement" should be applied consistently by avoiding/minimizing resettlement by exploring all viable alternative activities designs. Where the phenomenon will be unavoidable activities should be conceived, and executed as sustainable development programs, providing sufficient investment resources and means to enable the persons displaced by the project to share in project benefits. Affected persons to be meaningfully consulted and given opportunities to participate in the planning and implementation of programs and to restore livelihoods to equal or better than pre-resettlement.

Increase in HIV/AIDSs and STDs Cases and Communicable Diseases

The spread of HIV/AIDS and other communicable diseases is likely to increase, especially during the development of different forests business, infrastructure development and construction, when workers from outside a given region are brought into to it to live for long periods without their respective spouses. During operation interaction with truck drivers and other external workers with local women could be an open door for HIV/AIDS and/or ISTs propagation, especially among poor households, women and a younger generation often used as sex-workers to be self-sustained or sustain their families. Private operators and their contractors should develop and implement HIV/AIDS-IST prevention plans, which should include the training as an awareness raising campaign of their workers and the surrounding communities, provision of sufficient and free condoms of good quality to their work force, provide treatment for workers who are infected, etc. It is also recommended to hire/involve a local specialized NGOs to implement the HIV/AIDS Awareness campaign within both work force and surrounding communities.

Business opportunities and/or work/job conflicts between local people and external work force (national, regional and international)

If not adequately managed there could be real conflicts and/or misunderstandings surrounding the criteria for awarding business opportunities and/or hiring of an external work force. Without clear criteria and communication local people might look at the giving business opportunities and/or hiring of external work force as unjust and

detrimental to their immediate interest. This has the potential to cause conflicts and disruptions, including violence. External people organizations will be hired only after evidence that locally there are no capabilities. As much as possible local labor should be given priority in employment. A transparent recruitment system needs to be set up.

In principle, the business/work/job opportunities must benefit the directly affected people with adequate involvement of local authorities to better manage the influx of external workforce. The process should be managed in a way as to keep an adequate gender balance by ensuring that women are given the same opportunities as men and that were needed women are provided with the necessary training and other forms of assistance (e.g. child care) to make themselves availabe to work. The local training programs must also be selective in targeting its audience amongst the local affected people as priority.

9.3 Potential positive impacts

Agri and forests businesses and improvement of local business environment will lead to the adding of value to local forests and agricultural products.

The interventions to be undertaken can also be expected to lay the foundations for the extension of telecommunication and internet networks (mobile), electricity, irrigation, storage facilities, and other amenities, which will contribute to making local economies more modern and competitive, as well as improve people's livelihoods, habits (i.e. way of thinking and conducting their daily lives) and way of socializing (increase inter-village/inter-community exchanges, etc.).

Expected interventions will, among other aspects, stimulate private investment in the forests and agricultural sector but also in other sectors, such as tourism, particularly in and around conservation areas. Serious constraints may be lifted by the establishment of basic infrastructure while providing considerable support to the private sector institutions and national as well as foreign initiatives across value chains.

In environmental terms, REDD+ will result in better management of natural resources surrounding planned interventions and above all it has the potential of improving land administration including land tenure systems. Establishment and protection of critical natural habitats, particularly, riparian forests, legally protected areas, forests of high biodiversity value (coastal forests and afro-montane forests), will be an important result from project implementation.

Potential negative impacts on water resources and soil have been described above, here their potential positive impacts are mentioned. Forests prevent soil to become warmer (sun exposure) and exposed to wind, two important factors that result in water losses from the soil to the atmosphere and increasing dryness and desertification of soil. Atmosphere over/above forests (high rate of humidity) can also trap moisture from wind and turn it into rainfall, bringing more water availability on the ground and underground systems. Forests and plantations can also contribute to reverting processes of soil loss and desertification through reduction of erosion from soils that became exposed (to sun, wind and rain) after tree clearances.

Another positive impact is the restoration of natural habitats through restoration of degraded areas (promoted also in commercial plantations). Assessment methodology for

restoration opportunities is being developed in order to enable positive outcomes. Riparian areas and areas where forest connectivity can be enhanced will be prioritized building upon the existing ecological corridors and promoting biodiversity through landscape management.

Forests also have a considerable influence on the quality of the environmental components such as air, water, soil, climate and different forms of life and biodiversity in general. The health of the environment in general has strong relations with forests in vast and complex ways.

In social terms, the positive impacts of project activities could be brought by external (but not necessarily foreign) investors introducing new production systems, technologies and practices. It is expected that these investments will contribute to improved technology and farming systems, reduction of post-harvest losses, improving revenue and marketing conditions, a better utilization of production processing; broadening the range of products, strengthening the skills of the various actors in the forests and agricultural subsectors (producers, transporters, traders, processing units, etc.).

At the community level, in addition to increasing land and resource tenure rights the availability, accessibility and affordability of transport, electricity and telecommunication services, the expected impacts will be: improved food security, reducing the risk of hunger, improving nutrition and increased protein intake, and the creation of new and development of forests and agricultural employment (reduction of unemployment and the exodus of young people), the creation of local employment opportunities, improved living conditions.

It is to be expected that: (i) private actors will develop subsectors considered profitable-including high value-added products for export, (ii) models of win-win partnership including effective variations of the "mosaic" approach between rural communities and private investors can be expected to emerge.

Existing policing and protection structures will be strengthened to ensure forests and natural resources protection, the safety of goods and people.

In summary and in line with the six strategic pilars of the National REDD+ Strategy, the following positive impacts can be expected, and further expanded:

- Updated inventories of land and forests resources, which can then be used for multiple purposes by different stakeholders, including consistent monitoring and evaluation;
- Possible expansion of natural forest as part of the land and resource demarcation and delimitation that will be conducted;
- Improve and deepen collaboration between the government, private sector, civil society organizations and communities to reverse the current negative trends in the forest sector and other related sectors (e.g. agriculture);
- Update and review of forests legislation to address the issues that have been arising in more recent times and recognized as impediments to the realization of the sector potential;
- Promotion of forest plantations to meet the various needs including the sustainable supply of biomass for energy;

- Offer yet another opportunity for the involvement of civil society organizations in supporting communities in the delimitation of community lands in order to strengthen them. This will expand the areas of collaboration and lessons learnt between local communities and CSOs;
- Increasing the sense of ownership by communities of natural resources, which will be reflected in the partnerships between them and the private sector, including the government;
- Encourage and promote the establishment of associations as well as forest resource management committees in as many places as possible for the exploitation of firewood and charcoal with reforestation responsibility;
- Better monitoring of forest operators by the government, with community involvement, to ensure that forest legislation is adhered to in practical terms. This will result in benefits for all and not only for the deviant elements of the society;
- Increased awareness among community members and groups about the existing forest resources and their importance, which will translate into their active involvement to protect them;
- Introduction of alternative activities to generate income for charcoal and firewood producers. Promotion of activities such as bee-keeping, aquaculture and other activities less harming to natural resources;
- Introduction of improved/energy efficient techniques for charcoal production and use (good practices);
- Better water management through small scale irrigation systems with positive implications on the increase of crops and time availability by men and women throughout the year to engage in plant and animal production;
- Positive impacts of processing, storage and packaging facilities;
- Strengthening of Provincial and District governments' capacities to promote landscape management and value chains development, which can also be expected to generate positive "sustainability spin-off" effects at the local level;
- Significant positive impacts on natural habitats, as it will promote integrated sustainable natural resource management; restoration of degraded areas and promoting ecological corridors through improving forest connectivity.

Project positive externalities include: carbon sequestration from new forests, plantations and from the restored areas as well as from the improved land use practices (e.g., agroforestry, reduced tillage, vegetative cover), and reduced carbon emissions from forest cover loss. Restoration of critical natural areas is expected to increase water flow stability and reduce erosion to downstream water users. Restoration can also help create biological corridors, which serve as habitats for globally important biodiversity, and over time can increase tourism potential.

9.4 Other common impacts

Particularly for infrastructure development and operation and other construction activities and those related with the agricultural and forests value chain (e.g. rural roads and bridges, irrigation schemes (small and medium size dams), storage facilities, produce processing units, etc.), the common impacts occurring under such operations should be considered and dealt with. Because of the strong association between this program and other with the typical responsibility of dealing with those interventions (e.g. ANLRMP, PROIRRI and MOZBIO) it is recommended that the ESMFs, PMPs and RPFs for those programs/projects be adopted for both characterization and management. Reference is

made to: soil; air emissions; noise; solid and liquid wastes; water quality and quantity; flora and fauna; protection of areas of special importance (conservation/protected areas and wetlands); health and safety; pesticide use and management and hazardous materials management in general; land acquisition; socioeconomic in general; physical cultural resources.

Annex 5 presents a general characterization of these impacts as well as related management measures.

9.5 Measures to mitigate negative impacts

A preliminary list of measures to be adopted to mitigate potential and significant negative impacts of the program is presented in the table below.

Table 8: Measures to mitigate negative impacts in typical forest projects

Potential negative impacts	Mitigation measures
Forests development including land and forests use planning	
Land and forests resources planning and use: redefinition of land use plans and of the operational aspects around land defining what is done in which land and forests resources by whom, when, with which technologies Restrictions in access to and use of resources and possibly disruption of local livelihoods and markets as well the economy in general including food shortages Increased forest and land degradation through planted forest operations Proliferation of non-certified forest operations since the country does not have an independent forest certification system	▪ Plans to be based on solid and participatory inventories of resources involving local communities and authorities ▪ Careful planning, implementation and monitoring in order to harmonize all interests ▪ Harmonize short, medium and long term interests of all groups and support people, households and communities to develop small-scale, biologically diverse agroforestry systems, forest gardens and tree plantations which provide a diversity of goods and services to the community, including fuelwood, medicinal plants, soil fertility, wildlife, and construction materials and seek Free, Prior and Informed Consultation from communities before any intervention ▪ Adoption of the "mosaic" approach and/or of other similar approaches that are already being tested and applied in Mozambique and other parts of the world could be a possible solution for this potential problem. The approach allows for a good integration and limited disturbance of different land and forest uses such as commercial plantations and exploitations, agriculture, timber, charcoal making, firewood, and for a wide range of non-timber forest products, including medicinal plants, food reserves to cater for times of food crises that are very common in the country's rural areas, due to droughts, floods and other natural and social events ▪ Areas below 200 m in general have been subject to extensive and practically permanent transformation including the general devastation of rich natural miombo forests. Land and forests use plans will determine which areas can be restored and which will be for other uses (plantation, plant and animal production, etc.). A combination of education and training and law enforcement will ensure that what is defined is adhered to in a consistent manner ▪ A pre-assessment system to determine that operations adhere to a time bound phased action plan acceptable to the Bank for achieving certification. A parallel work area will develop independent certification as soon as the program gets underway ▪ Under the planning process for some Land use plans (such as national, regional, multi-district or district ones), Strategic Environmental Assessment shall be considered, not as true mitigation measure but rather as part of the planning process design, a tool to provide environmental and social contributions to planning processes.

Potential negative impacts	Mitigation measures
Habitats and biodiversity alteration and loss: forests plantations and timber harvesting activities are usually accompanied by the replacement of the existing vegetation cover with native and/or non-native and often invasive species	Intentional or accidental introduction of alien, or non-native, species of flora and fauna into areas where they are not normally found can be a significant threat to biodiversity, since some alien species can become invasive, spreading rapidly and out-competing native species. Forest operators should not intentionally introduce any new alien species not currently established in the region of the project. Under the current stage of the country's development of its productive forces its ability to understand and deal with the multitude of interactions of invasive species, disease vectors, and pathogens with other drivers of ecosystem change to human health and economic well-being is limited. The best way of dealing with the phenomenon is taking precautionary measures from the onset and avoid/limit such practice as best as possible. ▪ All planting interventions must adhere to well designed and informed land and resource use plans ▪ Design planting to include both exotic and indigenous plants in the right proportions and location and based on assessment designate areas for different interventions and which operators can be allowed to do what, with which technologies, when, etc.; ▪ Avoid environmentally sensitive sites and unnecessary exposure or access to sensitive habitat; conduct and extensive consultative and participatory process in the selection and use of such sites with all relevant stakeholders and particularly local communities; ▪ Consider biodiversity plots within tree plantations and along waterways and streams within the plantations; Clearance of plantation plots will be sufficiently phased to reduce the impacts of vegetation removal on terrestrial flora and fauna. ▪ Provide adequate training and capacity building to disseminate knowledge and skills about the best practices ▪ Set up adequate monitoring and supervision of approved and recommended practices for each specific area
Water resources and water quantity and quality: plantation trees grow rapidly, absorbing nutrients and water from the soil Forest operations (e.g. timber harvesting operations and road construction) may negatively impact water quantity and quality of streams, water bodies, and ground water resulting in seasonal hydrologic changes and potential negative impacts on downstream river biota, communities, and fisheries. Impacts to water quality may result from erosion and accumulation of	Promote buffer zones along all the local river and streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves will serve as natural filters for surface runoff from the plantation areas. The reserves will also play an important role in protecting the banks of the waterways from channel erosion. The reserves will also create habitats for biodiversity, fauna ecological corridors and aesthetic scenes along the watercourse. These buffer zones wideness will depend on the water course dimension (bigger buffer zones for bigger river/streams) Relationships between forest operations and particularly plantations and water resources to be consistently and continuously managed. The regional water authorities (ARAs) need to be strongly

Potential negative impacts	Mitigation measures
sediment and organic debris in water bodies (e.g. at stream crossings of forest roads and skid trails); chemical contamination (e.g. from use of pesticides, fuels, lubricants, and coolants)	involved in assessing the potential impacts including the cumulative impacts for each site and be given a strong voice in delineating management options.
Soil: Soil erosion in forests may result from natural causes (e.g. wind and rain), timber harvesting operations, and from construction and use of road infrastructure	▪ Buffer zones for river/streams must be compulsory (a minimum distance to water course margin shall be defined) ▪ Existing riparian vegetation must be preserved from any kind of activity that implies its reduction or modification, except if the objective is its restoration ▪ Restrict the application of inorganic fertilizer to the period just after transplanting. ▪ The fertilizers will be applied around each tree in shallow rings to ensure that the fertilizer is available to the young transplanted trees. ▪ Fertilizers and their use will not be openly promoted ▪ Biochar may be introduced in selected plots ▪ Sensitive sites with high erosion risk will be identified. Those areas shall not be cultivated and will include hill-tops and very steep slopes having gradient of 25% or more. Vegetation of such areas shall be maintained to help control erosion as well as ensuring soil stability. ▪ Enrichment planting will be done in patches of degraded areas along these slopes
Alienation of local communities and people: there is the potential of alienating local communities and people by treating them as mere recipients and observers of the processes to be developed	People and particularly women, youth, local leaders, traditional healers and other community representatives need to be put in the driving seat in all aspects, i.e. land demarcation, titling, selection of partners and of activities, access to job and business opportunities in the entire value chain, monitoring and evaluation and feedback. Strengthening the CGRNs and other CBOs locally, inclusiveness of vulnerable groups in the community decision-making forum, empowerment of Multi-stakeholders platforms. Work/job opportunities must benefit the direct affected people with adequate involvement of local authorities to better manage the influx of external workforce. Local training programs must also be selective in targeting its audience amongst the local affected people as priority
Resettlement (natural resources access restriction): land requalification and demarcation; installation of forest plantations; commercial harvesting forest operations; and construction of project infrastructures with the potential of affecting local people's assets such as land, forests, trees, houses,	Minimize resettlement as much as possible by exploring all viable alternative subproject designs. Where unavoidable activities should be conceived, and executed as sustainable development programs, providing sufficient investment resources and means to enable the persons displaced or affected by the project to share in project benefits. Displaced and affected persons to be meaningfully consulted and given opportunities to participate in the planning and implementation of resettlement programs and to restore livelihoods to equal or better than pre-resettlement.

Potential negative impacts	Mitigation measures
shops, temporary sale points, food vending areas, farmed areas (crops), etc.	

The planning and implementation of mitigation measures will be under the guidance and responsibility of specific Program/Project environmental and social safeguards personnel deployed at central and provincial levels.

9.6 Cumulative Impacts, Climate Change and Gender Issues

REDD+ interventions will not happen in isolation. They will take place near other interventions initiated by all sorts of operators/investors, i.e. household, micro, small, medium and large in areas such as forests, agriculture, tourism, infrastructure, gas (particularly in Cabo Delgado and Inhambane) etc. and they will have the potential of contributing to increased significance for the receiving natural and social environment. These could result in increased pressure on land, soil, water, forests, wildlife, air, etc., which could exacerbate social conflicts and the degradation of the ecosystems.

CO2 emissions and control are of particular importance in this regard. Under the recent INDC Mozambique has committed itself to building resilience to climate change, particularly in rural areas, and contributing to mitigation, particularly by reducing deforestation and promoting sustainable land management practices in agriculture. Under the scope of the AFR100 launched in 2015 in support to the Bonn Challenge for restoration of degraded land, the GOM has committed to restoring 1 million ha of degraded land by 2030. This will need to be seen from a cumulative point of view instead of focusing on a project by project basis. Adequate measuring and monitoring as part of an overall management of the environment will need to be adopted with a particular link to the project's MRVs.

This is more one reason to advocate for adequate land and natural resource use planning and working together will all the entities and programs/projects that deal with this crucial aspect. A good land use plan and siting of interventions goes a long way towards achieving impact avoidance and minimization. This is specifically true in the case of Mozambique, which is known for being well endowed in terms of natural resources and relatively low population densities.

Adequate coordination between the REDD+ Programs/Projects and other locally based projects including strengthening educational actions and active law enforcement against negative practices will constitute an added cumulative benefit.

Combined, all the measures related with adequate land and resource use planning and coordination, will contribute to reducing the project area vulnerability and increase its resilience in relation to climate change and general degradation of the environment.

In regard to the program's contribution to increasing the role of women's potential in society it should be stressed that in the short, medium and even long term the strategy encompasses elements which will help to enhance the role of women and vulnerable groups including the youth in access, use and management of natural resources through actions such as land use planning with attention to women and vulnerable groups, training and capacity building and dissemination/adoption of alternative technologies including those related with more effective use of biomass, entrepreneurship, and business opportunities, etc. Iliteracy is higher among women than men, particularly in rural areas. Access to functional literacy opportunities by women should be part of the program in order to equip them to better participate.

Templates for screening for environmental and social impacts and preparing environmental impact assessments studies and preparing the environmental management plans will usually be part of the ESMF and RPF for specific Programs/Projects.

10 ALTERNATIVES TO THE REDD+ PROCESS

The first stage of Mozambique's REDD Strategy already reads as an alternative way of promoting the same processes. This was done mainly to counteract the weaknesses to address the technical issues involved in REDD+ processes particularly in what concerns MRV systems.

However, it is already acknowledged that in order to consolidate the gains expected from the REDD+ process in terms of improved natural resource management and particularly that of forests this initiative offers comparative advantages. Without adequate baselines and measurement systems and tools it would be difficult if not impossible to ensure that the gains are sustained and improved where feasible.

The current status quo (do nothing) scenario has the following characterization:

- A weak law enforcement situation prevailing, which has been proving to be one of the open doors for deforestation and forest degradation;
- Forest governance is at a very low level. Indications are that if nothing is done the sector will always operate illegally and will be used in particular for money-laundering;
- The current practices have little respect for customary and formal rights of many rural communities;
- Weak control over wood exports along the country's borders;
- The country's Conservation Areas are difficult to safeguard;
- Weak control over small-scale wood production;
- If the current trend is maintained, it is estimated that the emissions from the deforestation and forest degradation could reach 39 MtCO2/year by 2030;
- Fuel wood (providing 80% of household energy needs) is produced mainly from natural forests. Production from reforestation will not even meet the increase in demand from population growth;
- Ever growing demand for mining and petroleum products will mean that forests will be explored and permits will be issued;
- The mining and oil/gas sectors are being prioritized and mitigation measures put in place, but the latter will have no effect, as their effectiveness will not be monitored. Mining activities will lead to ever faster degradation of the forest cover but mining companies will not be compelled to remedy the situation;
- Agricultural concessions will be negotiated with multinational companies, dispossessing the local population of their land and pushing them more and more into the forest;
- There is the potential that the process of forest degradation will accelerate and evapotranspiration will decrease, causing rainfall to decrease more and more rapidly and a spiral of continuous and definitive degradation of the forest cover will be ignited.

Reversing these negative trends and promoting the sustainable use of forests by all stakeholders is the main objective of the REDD+ strategy.

The REDD+ national strategy and action plan seek to reduce CO2 emissions from deforestation and forest degradation and secure sustainable management of forests, forests conservation and enhance carbon stocks and reduce GHGs, as defined by the various UNFCCC COP and in line with the commitments made by Mozambique, particularly those made in the last COP 21, in Paris. The strategy and action options are designed to address identified significant drivers of deforestation and degradation, namely, subsistence farming (itinerant farming), urban and

infrastructure expansion, wood and forest products exploitation, firewood and charcoal production, commercial agriculture, livestock and mining activities.

The main objective is reducing deforestation and forest degradation, while also contributing to improving rural livelihoods. Central to the interventions aimed at reversing the ongoing trend is the creation of an enabling environment that will facilitate the overcoming of underlying governance, economic, technological and demographic barriers that militate against the sustainable use of land and forests resources and natural resources in general. The other intervention areas are focused on the agriculture, forest and energy sectors, where the key drivers of deforestation occur.

By linking the interventions to the problems, the strategy is likely to yield an outcome that will result in sustainable land and forest management and improved and sustainable rural development in general with a direct outcome for reducing deforestation and degradation and other multiple benefits. The country and the world do not seem to have an alternative to counteracting the issues that have been behind the relentless progression of deforestation and forest degradation.

Annex 6 presents a draft of Strategy Monitoring Indicators to be completed and used in monitoring achievements mentioned above.

11 CONCLUSION

REDD+ is designed to promote sustainable management of the forestry sector through the promotion of concerted rural development in the country in the short term to be followed by embracing REDD+ objectives and practices in full. This is appropriate under the Mozambican reality marked by the need to overcome a series of inconsistencies in the institutional and legal framework and to adopt new practices in important areas that have a strong bearing in deforestation and forest degradation such as agriculture, energy, mining, housing, etc.

Weak coordination among different (sub-) sectors, need to be addressed. The program's coordination strategy should focus considerable attention on designing an adequate mechanism for communication between sectors, agencies and ministries to facilitate national policy coherence and for shared interests to drive continued collaboration. In addition to the various planned interventions around land use and natural resource planning, forest inventory and other interventions foreseen in the strategic action plan for REDD+ it is also recommended to:

- To raise the visibility and intervention impact of sustainable forestry management at provincial and district levels, clarity on roles, responsibilities and accountability needs to be defined and scaled up. With a better structure at these levels relevant training can be planned for and carried out.
- Map stakeholders and their role in REDD+ development and implementation. This will allow for a definition of the relationships to establish with stakeholders and define their responsibilities and roles
- Actively engage with the existing Provincial Governmental Forums, where these have been or are being established to prepare the implementation of different aspects of REDD+ strategy as programs and projects are defined and approved;
- Define environmental and social values and their integration in all parts of the sectors involved with REDD+. This may imply varied processes of learning, dissemination and acceptance according to sector. To achieve this, REDD+ will take advantage of the ongoing exercise of environmental mainstreaming in major development sectors in the country, initiated from the last decade of the 20th century when MICOA (Ministry for the Coordination of Environment) was established;
- Promote public consultation, communication and opinion and information sharing at different levels, through for example radio, brochures, national forums, among others;
- Define a system of environmental and social information collection, processing and dissemination. Improved capacity to carry out technical work is crucial for decision making, establishing norms, adjusting the monitoring and management plan and resolving conflicts between environmental and economic interests.
- Promote an environmental and social dialogue among different sectors (government, private, civil society, and NGOs among others);

FNDS and other government departments responsible for the development and implementation of REDD+ should coordinate with the departments responsible for implementing other forests, agriculture and energy programs and projects to ensure joint and collaborative work in the development of sustainable agricultural and forest management practices.

A systematic inventory of such programs/projects should be prepared and used accordingly. Coordination will ensure adequate consideration of forestry conservation as sustainable agricultural practices and forestry concessions are further developed in Mozambique. A coordinated plan should be developed to provide relevant programs/projects a framework with

clear direction on how to support government officers, NGOs and villagers for the ultimate goal of ensuring sustainable forestry, sustainable agriculture and promotion of conservation in the country with the least environmental and socio-economic impacts.

Provincial and local land managers can be co-trained by the various programs to be identified, to provide clear targeting on forestry conservation and management, whilst also identifying relevant marketable crops and orientation towards irrigation issues that might have an adverse impact on sustainable forestry management.

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ANNEXES

ANNEX 1: Public Participation Process

Summary Public Consultation REDD-

ANNEX 2: List of Conservation Areas in Mozambique

N.º	Type	Size and other remarks
	Transfrontier Parks	
1	Great Limpopo Transfrontier Park	Consists of the Limpopo National Park (Mozambique), Kruger National Park (South Africa) and Gonarezhou National Park (Zimbabwe)
2	Lubombo Transfrontier Conservation Area	consists of *Maputo Elephant Reserve* and *Futi Corridor* (Mozambique), *Tembe Elephant Park* (South Africa) and the *Lubombo Conservancy* (Swaziland)
3	Chimanimani Transfrontier Park	Mozambique and Zimbabwe
	Transfrontier Conservation Areas	
4	Lubombo Transfrontier Conservation Area	4.170 km². Consists of *Maputo Elephant Reserve* and *Futi Corridor* (Mozambique), *Tembe Elephant Park* (South Africa) and the *Lubombo Conservancy* (Swaziland)
5	Limpopo Transfrontier Conservation Area	84.868 km². Mozambique (Limpopo, Banhine and Zinave National Parks); Zimbabwe (Gonarezhou, Manjinji Pan Sanctuary, Malipati Safari Area, Sengwe Community Area); South Africa (Kruger National Park, Makulele Region)
6	Chimanimani Transfrontier Conservation Area	2.056 km². Mozambique (Chimanimani National Reserve); Zimbabwe (Chimanimani National Park)
	National Parks	
7	Banhine National Park *Parque Nacional de Banhine*	7,000 km², Gaza Province
8	**Bazaruto National Park *Parque Nacional do Bazaruto***	1,600 km²), Inhambane Province
9	Gorongosa National Park *Parque Nacional da Gorongosa*	5,370 km², Sofala Province
10	Limpopo National Park *Parque Nacional do Limpopo*	3,500 km², Gaza Province
11	Magoe National Park *Parque Nacional do Magoe*	10,000 km², Gaza Province
12	**Quirimbas National Park *Parque Nacional das Quirimbas***	7,500 km², Cabo Delgado Province
13	Zinave National Park *Parque Nacional do Zinave*	6,000 km², Inhambane Province
	Reserves	
14	Gilé National Reserve *Reserva Nacional do Gilé*	2,100 km², Zambezia Province
15	**Maputo Special Reserve *Reserva Especial de Maputo***	700 km², Maputo Province
16	Marromeu Buffalo Reserve *Reserva de Búfalos de Marromeu*	1,500 km², Sofala Province
17	Niassa National Reserve *Reserva Nacional do Niassa*	42,200 km², Niassa Province
18	Pomene National Reserve *Reserva National de Pomene*	200 km², Inhambane Province
19	Chimanimani National Reserve *Reserva Nacional do Chimanimani*	6400 km², Manica Province
20	Futi Corridor	Maputo Province
21	Maputo Protection Area	Marine Protection Area, in Maputo Province

N.º	Type	Size and other remarks
	Wildlife Utilization Areas	
22	Coutada 4	4,300 km², Manica Province
23	Coutada 5	6,868 km², Sofala Prrovince
24	Coutada 6 -	4,563 km², Sofala Province
25	Coutada 7	5,408 km², Manica Province
26	Coutada 8	310 km², Sofala Province
27	Coutada 9	4,333 km², Manica Province
28	Coutada 10	2,008 km², Sofala Province
29	Coutada 11	1,928 km², Sofala Province
30	Coutada 12 and Coutada 13	5,683 km², Manica Province
31	Coutada 14 -	1,353 km², Sofala Province
32	Coutada 15	2,300 km², Sofala Province
33	Coutada 16	Now part of the Limpopo National Park

ANNEX 3: Miombo protected forest products

Scientific name	Local name	Family	Uses					Life form
Albizia brevifolia		Fabaceae	2					D
Albizia versicolor	Tanga-tanga	Fabaceae	2					D
Annona senegalensis	Muronro	Annonaceae		F	M			U
Antidesma venosum	Muchongue	Euphorbiaceae	4					I
Bauhinia galpini (7)		Fabaceae		F		O		U/L
Bauhinia thonningii (18)	Mussequesse	Fabaceae	3	F	M		E	D
Burkea africana (5)	Mucimbi	Fabaceae	2			O		D
Cassia abbreviata		Fabaceae			M			D
Combretum imberbe	Mulangane	Combretaceae			M		E	D
Combretum molle	Mugongoni	Combretaceae			M	O		I
Combretum sp.		Combretaceae						I
Combretum zeyheri		Combretaceae			M	O		I
Crossopterix febrifuga (6)	Mucombegoa	Rubiaceae			M	O	E	I
Diplorhynchus condylocarpon (18)	Muntoa	Apocynaceae			M	O		U/I
Entandrophragma caudatum	Mbuti	Meliaceae	p					D
Erythrophleum africanum	Muavi	Fabaceae	3	F		O	E	D
Ficus capensis	Mucuio	Moraceae		F	M	O		D
Friesodielsia obovata	Muchinga	Annonaceae		F				U/L
Grewia flavescens	Galupanda	Tiliaceae						U
Hymenocardia acida		Euphorbiaceae			M	O		I
Kigelia africana		Bignoniaceae	3		M			D
Lannea schimperi		Anacardiaceae	4					I
Lonchocarpus capassa	M'pacassa	Fabaceae			M	O		D
Markhamia obtusifolia	Mufeia	Bignoniaceae						I
Millettia stuhlmannii (41)	Panga-panga	Fabaceae	1					D
Monodora stenopetala		Annonaceae						I
Ozoroa reticulata		Anacardiaceae						D
Parinari curatellifolia	Nongamunyo	Crysobalanaceae	3	F	M			D
Pericopsis angolensis	Muanga	Fabaceae	3		M			D
Pseudolachnostylis maprouneifolia (13)	M'sonzoa	Euphorbiaceae	3		M	O		D
Pteleopsis myrtifolia	Mungorozi	Combretaceae	2					D
Pterocarpus angolensis	Umbila	Fabaceae	1		M	O		D
Pterocarpus rotundifolius (7)	Muganu	Fabaceae						D
Sclerocarya birrea	Mefula	Anacardiaceae	2	F	M	O		D
Sterculia africana		Sterculiaceae						D
Strychnos madagascariensis (5)	Nyacateme	Loganiaceae		F				I
Syzygium cordatum		Myrtaceae	3	F				D
Tabernaemontana elegans		Apocynaceae			M	O		I
Terminalia sambesiaca (9)	Curungu	Combretaceae						D
Terminalia sericea	Mucoudoni	Combretaceae	3		M	O		D
Vangueria infausta	Mambziro	Rubiaceae		F	M			U
Vitex payos		Verbenaceae		F				U
Xeroderris stuhlmannii	Mulonde	Fabaceae	3		M	O		D
Ziziphus mucronata		Rhamnaceae		F	M	O		D

ANNEX 4: The Ten World Bank Operational Safeguards Policies

Safeguard Policies	Main Objective	Applicability	Application for REDD+/FIP/DGM
Environmental Assessment (OP/BP 4.01)	Used in the World Bank to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations. This policy is considered to be the umbrella policy for the Bank's environmental 'safeguard policies.	The purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people are properly consulted.	Applicable, since REDD+ initiatives will lead to some environmental and social adverse impacts. All projects/subprojects will have to undergo an environmental impact assessment from design through to implementation, monitoring and evaluation in accordance with the GOM and WB Safeguard Policies.
Natural Habitats (OP/BP 4.04)	Aimed at ensuring that World Bank-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products, which natural habitats provide to human society. The policy prohibits Bank support for projects which would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes natural habitats which are either: (i) legally protected; (ii) officially proposed for protection; or (iii) unprotected but of known high conservation value. In other (non-critical) natural habitats, Bank supported projects can cause significant loss or degradation only when (i) there are no feasible alternatives to achieve the project's substantial overall net benefits; and (ii) acceptable mitigation measures, such as compensatory protected areas, are included within the project.	It strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present).	Applicable, since there will be intersections with important natural habitats such as those to be found in CA and other protected areas, these natural habitats and others outside them shall be adequately considered and assessed and shall not be negatively unmanaged impacts
Forests (OP/BP 4.36)	Aimed at reducing deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development. The policy is currently being revised to make it more effective and in recognition of the fact that forests play an increasingly important role in poverty alleviation, economic development, and for providing local as well as global environmental services.	Reduction of deforestation and use of forests to promote economic development	Applicable. This is typically a forestry initiative, which ultimately is aimed at materializing the objectives set forth in the OP/BP 4.36 by creating the conducive conditions in and around forests production to do

Safeguard Policies	Main Objective	Applicability	Application for REDD+/FIP/DGM
			both at the higher level and on the ground in the project area concrete efforts will need to be made to demonstrate that deforestation and forest degradation and forests emissions can be reduced through the adoption of concerted efforts to promote rural development and the sustainable use of natural resources, particularly in rural areas.
Pest Management (OP 4.09)	Aimed at assisting rural development and health sector projects to avoid using harmful pesticides and encourage the use of Integrated Pest Management (IPM) techniques in the whole of the sectors concerned.	Where pesticides have to be used in crop protection or in the fight against vector-borne disease, the Bank-funded projects should include a Pest Management Plan (PMP), prepared by the borrower, either as a stand-alone document or as part of an Environmental Assessment.	Applicable, since certain elements may encourage the use of pesticides in an area without a strong tradition of using these products. All the necessary precautions will need to be taken in order to avoid creation situation where the use of pesticides can negatively affect local people.
Physical Cultural Resources (OP/BP 4.11)	The objective of this policy is to avoid, or mitigate, adverse impacts on cultural resources from development projects that the World Bank finances. The assumption is that cultural resources are important as sources of valuable historical and scientific information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The loss of such resources is irreversible, but fortunately, it is often avoidable.	The borrower identifies physical cultural resources likely to be affected by the project and assesses the project's potential impacts on these resources as an integral part of the EA process, in accordance with the Bank's EA requirements	Applicable. As REDD deals with forest and other rural activities it might be expected to occasionally interfere with any known and recognized historical or cultural resources (sacred stones or trees, graves, etc.). Therefore, in order to ensure that all precautions are taken to protect any

Safeguard Policies	Main Objective	Applicability	Application for REDD+/FIP/DGM
			physical cultural resources and particularly forests that fall under this category in the event of these being found in the project area measures for addressing potential negative impacts on cultural heritage, such as "chance find" procedures and other when justified will be applied.
Indigenous Peoples (OP/BP 4.10)	The policy underscores the need for Borrowers and Bank staff to identify indigenous peoples, consult with them, ensure that they participate in, and benefit from Bank-funded operations in a culturally appropriate way - and that adverse impacts on them are avoided, or where not feasible, minimized or mitigated.	Integration of indigenous peoples in project development and benefits	Not applicable as there are no people falling under the category of indigenous people in Mozambique in general and the project area in particular
Involuntary Resettlement (OP/BP 4.12)	The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. It is also aimed at promoting the participation of displaced people in resettlement planning and implementation. Its key economic objective is to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects	The policy is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas.	Applicable. Some of the interventions may result in loss of assets by local people and these will need to be restored/compensated in line with the GOM and WB regulations and guidelines. A Resettlement Policy Framework (RPF) will be prepared to address these potential negative impacts on communities. Because a number of strategy components such as updating of the land and resource use plans have the potential to trigger

Safeguard Policies	Main Objective	Applicability	Application for REDD+/FIP/DGM
			restrictions of access and use of resources by local people and communities elements of a Process Framework will need to be included in the RPF in order to deal with such restrictions
Safety of Dams (OP/BP 4.37)	Aimed at ensuring that experienced and competent professionals design and supervise construction of bank-funded dams, and that the borrower adopts and implements dam safety measures through the project cycle. The policy also applies to existing dams where they influence the performance of a project. In this case, a dam safety assessment should be carried out and necessary additional dam safety measures implemented.	Ensure that all precautionary measures necessary to strengthen the institutional, legislative, and regulatory frameworks for dam safety programs are in place where there are bank-funded dams.	Applicable in a precautionary approach. REDD+ is expected to have areas of intersection with other initiatives that involve limited small and medium size dams (new or existing ones) for irrigation although it is not expected to be involved in massive actions in this particular area. Efforts will always be made to pass the responsibility to related projects, which are expected to be better equipped to deal with the issues of dams and will have specific provisions to do so.
Projects on International Waterways (OP/BP 7.50)	Aimed at assisting riparian stated to make appropriate agreements or arrangements for the entire waterway, or parts thereof, where bank-funded projects involve international rivers. It requires that adequate detailed procedures for inter-state notification be followed by riparian states	Where the project area stretches over water ways that cover more than one state	It will depend on the location of specific programs/projects. Where the use water from international rivers will happen the policy will be triggered.
Projects in Disputed Areas (OP/BP 7.60)	Aimed at ensuring that the Bank only finances projects in disputed areas when either there is no objection from the other claimant to the disputed area, or when the special circumstances of the case support Bank	Where there are disputed areas the Bank wants to make sure that it is not making any judgment on the	Not applicable. There are no known disputed areas in Mozambique

Safeguard Policies	Main Objective	Applicability	Application for REDD+/FIP/DGM
	financing, notwithstanding the objection. The policy details those special circumstances.	legal or other status of the territories concerned or to prejudice the final determination of the parties' claims.	

ANNEX 5: Management of environmental and social impacts related with infrastructure development

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
Soil and groundwater: During construction and rehabilitation: accidental discharge of on-site wastewater, hydrocarbons and chemicals can adversely affect groundwater and soil in the area; Top soil management During operation: Pollution of water and soil from pesticides and fertilizers and erosion from agricultural areas. Soil erosion problems associated with construction	During construction: Mitigation measures include proper storage of hydrocarbons and dangerous chemicals on site and the installation of natural, concrete or synthetic liners beneath oil and chemical storage tanks and the placement of these structures within a bunded impermeable concrete structure of 110% the volume of the largest tank. Other important measures include proper surface drainage during both the construction and operation phases, minimization of on-site water and chemical usage (oil, lubricants and fuel), as well as limiting the exposure of the soil to accidental releases of pollutants. Chemicals used on-site should preferably be non-toxic and readily biodegradable. Fueling areas should have a concrete slab so that petrol and oil cannot escape into the environment. Drainage systems in maintenance areas should be equipped with an oil/water separator; During construction put the top-soil apart and place it back on top after construction has finished. During operation: ▪ Implementation of the provisions of the Pest Management Plan ▪ Only use approved pesticides ▪ Adequate disposal of obsolete pesticides ▪ Compliance with prescribed doses of pesticides ▪ Control of the periods of pesticide application ▪ Promoting the use of organic manure ▪ Training of stakeholders on the use of agro-chemical inputs ▪ Observance of recommendations for the use of fertilizers and pesticides bio control ▪ Rational use of fertilizers and pesticides ▪ Awareness and training of farmers ▪ Apply contour line farming in order to avoid erosion. Focus on existing quarries and construction areas: Rehabilitation of affected areas, e.g. quarries and other construction areas. Put in place vegetative filters to filter sediments out of run-off. Rehabilitation works should start as soon as possible after the construction work is finished.
Air emissions: release of dust from land clearing, excavation and movement of earth materials, cut and fill operations, contact of construction machinery with bare soil, and exposure of bare soil and soil piles to wind.	Control techniques for minimizing PM emissions involve watering of surfaces, chemical stabilization, or reduction of surface wind speed with windbreaks or source enclosures. Covering the road surface with a new material of lower silt content, such as covering a dirt road with gravel or slag has also proved to be efficient. Regular maintenance practices, such as grading of gravel roads, also help to retain larger aggregate sizes on the traveled portion of the road and thus help reduce emissions.

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
	Low cost measures also include: ▪ Proper site enclosure through appropriate hoarding and screening; ▪ On-site mixing and unloading operations; ▪ Proper handling of cement material; ▪ Maintaining minimal traffic speed on-site and on access roads to the site; ▪ Covering all vehicles hauling materials likely to give off excessive dust emissions; ▪ Ensuring adequate maintenance and repair of construction machinery and vehicles; ▪ Avoiding burning of material resulting from site clearance; ▪ Covering any excavated dusty materials or stockpile of dusty materials entirely by impervious sheeting; ▪ Proper water spraying when necessary; ▪ The provision of water troughs at entry and exit points to prevent the carryover of dust emissions, beyond the construction site Measures to reduce truck traffic emissions include proper truck maintenance and the adoption of a traffic management plan while avoiding congested routes. Regarding on-site construction equipment, proper maintenance procedures and the quality of diesel fuel used are important to reduce emissions. Equipment should also be turned off when not in use, to reduce power needs and emissions of pollutants.
Agro-processing facilities from project associated investors	Agro-processing facilities can cause air pollution. The air emission standards in the applicable World Bank Group Agribusiness and Food Production Environmental, Health and Safety Guidelines, as well as the General Environmental, Health and Safety Guidelines need to be applied.
Noise: noise levels emitted during the construction/rehabilitation and operation may exceed acceptable noise level standards Agro-processing facilities from project associated investors	Mitigation measures to be adopted mainly during construction and operation to minimize noise levels include but are not limited to: ▪ Enclosing the site with barriers/fencing ▪ Effectively utilizing material stockpiles and other structures, where feasible, to reduce noise from on-site construction activities ▪ Choosing inherently quiet equipment ▪ Operating only well-maintained mechanical equipment on-site ▪ Keeping equipment speed as low as possible ▪ Shutting down or throttling down to a minimum equipment that may be intermittent in use, between work periods ▪ Utilizing and properly maintaining silencers or mufflers that reduce vibration on construction equipment during construction works ▪ Restricting access to the site for truck traffic outside of normal construction hours ▪ Proper site logistics and planning ▪ Limiting site working hours if possible ▪ Scheduling noisy activities during the morning hours ▪ Informing the locals when noisy activities are planned

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
	▪ Enforcing noise monitoring Agro-processing facilities can cause noise pollution. The noise emission standards in the applicable World Bank Group Agribusiness and Food Production Environmental, Health and Safety Guidelines, as well as the General Environmental, Health and Safety Guidelines need to be applied.
Solid and liquid wastes: during construction/rehabilitation and operation, there will be generation of construction and operation debris as a result of various construction and operation activities Hydrocarbons (waste oils) Agro-processing facilities from project associated investors	The generated solid materials can be used for reclamation purposes whenever applicable. However, care should be taken to ensure the absence of contaminated fill material and the adequacy of the physical and chemical properties of such material to limit potential adverse impacts on water and soil and ensure project safety. Construction and demolition wastes can also be minimized through careful planning during the design stage, by reducing or eliminating over-ordering of construction materials to decrease waste generation and reduce project costs. The contractor should carry out sorting of construction and demolition wastes into various categories and adopt re-use/recycle on site whenever deemed feasible. Chemical wastes generated during the construction phase include containers that were used for storage of chemical wastes on site, the chemical residue as well as contaminated material. Rehabilitation of fuel storage facilities may involve the removal of contaminated soils around fuel dispensers, piping, and tanks, as well as bulky, inert and contaminated solid waste items such as damaged tanks. Storage of hazardous waste should take place in a separate area that has an impermeable floor, adequate ventilation and a roof to prevent rainfall from entering. In addition all chemical wastes should be clearly labeled in Portuguese and, stored in corrosion resistant containers and arranged so that incompatible materials are adequately separated. General refuse generated on-site during the construction phase should be stored in enclosed labeled bins or compaction units separate from construction and chemical wastes. General refuse is generated largely by food service activities on site, therefore, where feasible, reusable rather than disposable dishware should be promoted. Aluminum cans, glass, plastics, wood and metals may be recovered from the waste stream by individual collectors if they are segregated and made easily accessible, so separate, labeled bins for their storage should be provided. Hydrocarbons should be stored on an impermeable concrete floor with concrete bunding. It should be negotiated with the new oil supplier to take back the waste oils for recycling by a MITADER authorized recycler. When rehabilitating areas where, at present, oil storage are located and sites are hydrocarbon contaminated, it will be necessary to clean up the site completely before starting any rehabilitation activities. A rapid environmental audit will need to be conducted to identify the action plan for site clean-up.

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
	Agro-processing facilities can cause solid waste pollution. The solid waste management practices in the applicable World Bank Group Agribusiness and Food Production Environmental, Health and Safety Guidelines, as well as the General Environmental, Health and Safety Guidelines need to be applied.
Water quality and quantity: the primary sources of potential impacts to water quality will be from pollutants from site runoff, accidental spills, which may enter surface waters (rivers, lakes and streams) directly or through the storm drainage system	Surface run-off from the construction site should be directed into storm drains through adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. If oil is present, oil/water separators should be installed, which should be regularly cleaned. Channels, earth bunds or sand bag barriers should be provided onsite to properly direct storm water to silt removal facilities before discharge into the surrounding waters. Silt removal facilities should be maintained with deposited silt and grit being regularly removed after each rainstorm to ensure that these facilities are functioning properly at all times. Moreover, the rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities and not directly to the aquatic environment. Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric during rainstorm events to prevent the washing away of construction materials, while earthworks should be well compacted as soon as the final surfaces are formed to prevent erosion especially during the wet season. Water used in vehicle and plant servicing areas, vehicle wash bays and lubrication bays should be collected and connected to foul sewers via an oil/grease trap. Oil leakage or spillage should be contained and cleaned up immediately. Spent oil and lubricants should be collected and stored for recycling or proper disposal and should be stored on impermeable and bunded surfaces. All fuel tanks and chemical storage areas should be provided with locks. Fuel tanks should be placed in concrete bunded areas of 110% of the volume of the largest fuel tank.
Agro-processing facilities from project associated investors	The contractor should also prepare guidelines and procedures for immediate cleanup actions following any spillages of oil, fuel or chemicals.
Dams, weirs and other water regulation infrastructures to be rehabilitated/constructed can interfere negatively with the water and sediment flow required for the health of the ecosystem downstream the developments.	Sewage from toilets, kitchens and similar facilities should be contained in sanitary cesspools before being transported by trucks to a nearby wastewater treatment plant. As for the wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, it should undergo large object removal by bar traps at drain inlets.
Water retention and all the management measures to be adopted can also interfere negatively with other social activities downstream the developments	Agro-processing facilities can cause water pollution. The water effluent standards in the applicable World Bank Group Agribusiness and Food Production Environmental, Health and Safety Guidelines, as well as the General Environmental, Health and Safety Guidelines need to be applied. All measures should be taken to allow the normal flow of the river flows to be involved in the project so as not to affect the vitality of ecosystems that depend on these flows downstream including sediment transport and circulation. The most appropriate formulation of environmental minimum flow calculation to the system

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
	should be adopted taking into account the reduced magnitude of most of the water management schemes to be rehabilitated/built. The design and operation of water management infrastructures (small dams/weirs) need to be done in such a way as to not interfere negatively with the host of water uses by local people downstream and amongst other factors complying with OP 4.37 (Safety of Dams requirements). The downstream uses include drinking, washing, including ablutions, livestock, navigation, etc.
Flora and fauna: due to the nature of this program the OP 4.04 (Natural Habitats) was triggered and closer attention shall be paid to impacts in fauna, flora and habitats. Stream pollution by sediments from rehabilitation and construction activities by suspended and settable solid particles that may coat, bury, suffocate or abrade living organisms. Many aquatic invertebrates and fish may undergo changes in population density and community composition if high concentrations of suspended solids occur. Aquatic vegetation may be adversely affected by a reduction in photosynthesis due to high turbidity. Accidental hydrocarbon spill will have a detrimental impact on aquatic life.	To minimize stream pollution by sediments, it is recommended to reduce or prevent soil erosion from the construction site by: ▪ Scheduling construction/rehabilitation to avoid heavy rainfall periods (i.e., during the dry season) to the extent practical ▪ Contouring and minimizing length and steepness of slopes ▪ Protecting to stabilize exposed areas ▪ Install sediment traps, e.g. reed screens ▪ Re-vegetating areas promptly ▪ Designing channels and ditches for post-construction flows Additional measures include: ▪ Carefully select right-of ways/corridors of impact to avoid important natural areas such as wild lands and sensitive habitats ▪ Utilize appropriate clearing techniques (hand clearing vs. mechanized clearing) ▪ Maintain native ground cover beneath lines ▪ Replant disturbed sites soon after construction/rehabilitation ▪ Manage right-of-ways/corridors of impact to maximize wildlife benefits General implementation and enforcement of good agricultural practices and crop management, e.g. contour line farming, in order to reduce erosion. Prevent accidental hydrocarbon spills by storing hydrocarbons into concrete bunded areas and equip areas where hydrocarbons are used with oil/grease/water separators.

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
Deforestation, soil degradation through erosion, habitat destruction may occur during clearing	Compensate lost trees in the same area (at least twice or three times the loss numbers). Install erosion prevention and control measures as mentioned above. Avoid sensitive habitat by fencing the area, so that the habitat cannot be entered by trucks and workers. Near sensitive areas such as reserves and areas of special vegetation special measures need to be taken. These should be but not limited to (i) cutting existing natural vegetation should be avoided to the maximum and be limited to the minimum necessary; (ii) any activity of vegetation removal must be authorized in advance by the competent environmental agency, especially to ensure destroying vegetation of any special value where it can be present; (iii) large trees and fruit trees and those that serve as shade or have landscape value should be preserved whenever possible, provided that they do not offer security risks, due to their state of degradation or that of the soil; (iv) shrubs must be preserved to minimize soil erosion; (v) in the areas for deposits of various materials during construction and even during operation, shrubs should be maintained; (vi) where possible, seed collection should be performed in order to preserve the species object of any form of disturbance intervention. This has the potential to secure necessary inputs for environmental compensation by way of replanting, which already has poor in the project area; (vii) deforestation through the use of standard tractors or blades should be strictly prohibited. The use of fire should not be admitted in any phase of the work; and (viii) the use of herbicides, defoliants or any types of chemicals should be prohibited regardless of their degree of toxicity, for logging purposes or any purpose in the reserve areas, and access roads.
Health and safety: occurrence of accidents (direct and indirect) to workers on-site, pedestrians, and machine operators or passengers during construction/rehabilitation and operation	Occupational health and safety measures should include: ▪ Restriction of access to the construction site by proper fencing with site boundaries adjoining roads, streets or other areas accessible to the public should undergoing high enough fencing along the entire length except for a site entrance or exit ▪ Establishment of buffering areas around the site ▪ Provision of guards on entrances and exits to the site ▪ Installation of warning signs at the entrance of the site to prohibit public access ▪ Provision of training about the fundamentals of occupational health and safety procedures ▪ Provision of appropriate personal protective equipment (PPE) (impermeable latex gloves, working overalls, safety boots, safety helmets, hearing protecting devices for workers exposed to high noise levels, and lifesaving vests for construction sites near water bodies) ▪ Ensuring that workers can swim (at work sites near water) and that lifesaving rings are available at the worksite, near water ▪ Ensuring that the protective material is being used wherever it is required ▪ Ensuring that especially sensitive or dangerous areas (like areas exposed to high noise levels, areas for especially hazardous work etc.) are clearly designated ▪ Ensuring that all maintenance work necessary for keeping machines and other equipment in a good state will be regularly carried out. ▪ Ensuring that the workers (and especially those doing hazardous work or otherwise exposed to risks) are qualified, well trained and instructed in handling their equipment, including health protection equipment

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
	▪ In case blasting is required the Contractor should work according to an approve Blasting Plan, which need to be approved by the Supervising Engineer and the Client ▪ Provision of adequate loading and off-loading space ▪ Development of an emergency response plan ▪ Provision of on-site medical facility/first aid ▪ Provision of appropriate lighting during night-time works ▪ Implementation of speed limits for trucks entering and exiting the site Regarding hazardous substances, the following measures should be implemented: ▪ Ensuring that hazardous substances are being kept in suitable, safe, adequately marked and locked storing places ▪ Ensuring that containers of such substances are clearly marked, and that material safety data sheets are available ▪ Ensuring that all workers dealing with such substances are adequately informed about the risks, trained in handling those materials, and trained in first aid measures to be taken in the case of an accident. ▪ Designating an area where contaminated materials and hazardous waste can be stored for proper disposal according to environmental guidelines in force in the country and as specified in the applicable World Bank Group Environmental, Health and Safety Guidelines of April 2007. Regarding waterborne and water-related diseases substances, the following measures should be implemented by the contractor: ▪ The adoption of good housekeeping practices for ensuring hygiene on site ▪ The elimination of pools of stagnant water, which could serve as breeding places for mosquitoes The provision of bed nets for workers living on site. Ideally, these nets should be treated with an insecticide
Development of agriculture might increase the prevalence of water-borne diseases (intestinal and urinary bilharzia and malaria)	The appropriate elimination of waste of all types, including wastewater ▪ Monitor the prevalence of intestinal and urinary bilharzia and malaria. If the prevalence increases implement the following: ▪ Distribute long-lasting insecticidal impregnated mosquito bed nets (LLINs) to affected communities, to control malaria ▪ Mass treatment of high risk groups with praziquantel need to be carried out to control intestinal and urinary bilharzia

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
Infrastructures to manage water (e.g. dams/weirs) may translate into reduction of the flow in rivers and streams, conflicts for water usage, etc.	▪ Minimize contact with infected water by requiring people to wear boots and gloves ▪ Support to access to drinking water and autonomous sanitation facilities ▪ Reduce fecal and urinary pollution of surface waters by prohibiting defecation and urine in water and putting in place sanitation systems (latrines, etc.) ▪ Educate affected communities with regard to these water-borne diseases ▪ Follow WHO guidelines ▪ design and operation of water management infrastructures (small dams/weirs) need to be done in such a way as to not interfere negatively with the host of water uses by local people downstream. The uses include drinking, washing, including ablutions, livestock, navigation, etc. ▪ make use of existing water management structures and where these do not exist and/or are weak assist local authorities and farmers to establish and strengthen these (e.g. water user associations) to develop and enforce water sharing systems and procedures that reduce conflicts and promote harmony
Socioeconomic impact including resettlement, reduction of arable and pastoral land, prevention of HIV/AIDS and influx of external workers: potential loss of land or land use, interruptions to means of livelihood, disturbances to cultural resources, and influx of foreign workers. Public security issues regarding influx of external workers, mobilization and demobilization of staff, lack of job opportunities for local people	▪ Select project sites and rights-of-way (ROW) in a consultative and participatory manner so to avoid important social, agricultural, and cultural resources and avoid areas of human activity ▪ Utilize alternative designs to reduce land and ROW width requirements and minimize land use impacts ▪ Ensure a high rate of local employment to minimize influx of foreign contract workers: preferred preference to local people in order to avoid social conflicts ▪ Manage resettlement in compliance with the World Bank Safeguard Policy on Involuntary Resettlement OP/BP 4.12 ▪ Prevention of STDs, HIV/Aids: Create awareness and educate workers and nearby communities. Provide free, sufficient, good quality condoms for personnel. Provide treatment for infected personnel ▪ Supply and enforce wearing protective equipment (helmets, boots, dress, gloves, masks, goggles, etc.) by workers ▪ Strictly follow government instructions on the hiring of foreign workers and clarify criteria for hiring them ▪ Favor local labor where the required skills are available, including offering training opportunities to increase local people's chances of getting work/jobs. ▪ Environmental management of construction waste (installation of litter bins, regular collection and disposal in authorized sites) ▪ Awareness on respect for local customs ▪ Dissemination of the use of farmyard manure ▪ Rational use of mineral fertilizers (avoiding excess nitrogen fertilizer) ▪ Leave land fallow to restore soil fertility ▪ Cover bare soil with a vegetation cover to reduce soil erosion

Management of environmental and social impacts from other physical interventions (construction and operation of local infrastructure and facilities)	
	▪ Educate and training of farmers
Physical Cultural Resources There is the possibility of physical cultural resources and particularly forests of particular importance being found in in the project area	Adopt “chance find” procedures and other to ensure that objects and sites of value that might be found in the project area are adequately preserved. If during construction/installation an important arte-fact, forest of particular value is found, construction should be stopped and the responsible Mozambican authorities be warned and involved in an investigation of the site. Construction/installation can only resume after the green light has been given by the responsible Mozambican authorities

ANNEX 6: REDD+ Monitoring Indicators

Proposed environmental and social safeguards indicators

Monitoring, reporting and information sharing

In compliance with the principles of REDD + implementation, and within the framework of the UNFCCC, a Safeguards Information System (SIS) will be developed and implemented to provide information on how safeguards are handled and respected. This is a necessary requirement to obtain payment by results.
The SIS is expected to be simple, accessible, inclusive, transparent, auditable, comprehensive and according to national legislation. The process of collecting information involves various partners from base community organizations, government and civil society organizations.
The implementation of safeguards and the creation of the REDD + Safeguards Information System (SIS) should be gradual and following a participatory approach. It is still a incipient process in Mozambique that demands a coordinated structure to enable the full participation of stakeholders (community, private sector, government and civil society).

The list of SIS indicators that has been elaborated, is a proposal prepared after consulting with various institutions involved in the process, reviewing the technical notes for preparing the Project Appraisal Document (PAD) of Mozmabique FIP Project (MozFIP) and the Mozambique Dedicate Grant Mechanism Project (MozDGM) project, as well as bibliographical revision with special attention to the guide of good practices to identify areas of high conservation value. This list must be harmonized through planned seminars with stakeholders.
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 in the region.

Principles:
• Compliance with legislation and good governance,
• Promoting transparency and public / social responsibility,
• Respect for local culture and traditions,
• Ensure the significant participation of affected people and stakeholders (especially the most vulnerable)
• Ensure "auscultation" functions as conflict resolution mechanisms
• Protect and conserve forests, contribute to the improvement of the multiple functions of the forests.

Institutional arrangements and capacities
It is expected that the organizational structure, responsibilities and competencies related with the SIS, follows the same scheme and is supported by the PMRV System at National, Provincial and Local Level under the coordination of the National Safeguards Specialist and with the participation of the selected provincial experts and local key informants. At Local Level, both systems PMRV and SIS will stand by the participation of local communities through selected agents.

Item	sub-item	Description	Scale (National, Landscape, Community)	Responsible
Environmental / Ecological	Forests	Reforested Area (Increase of coverage percentage)	National, Landscape	DINAS, DINAF
		Reforested areas (New planting areas established)	National, Landscape	DINAS, DINAF
		Rehabilitated forest area	Landscape	DINAF e DINAS
		Information on existing management plans (updated)	Landscape	DINAF; ANAC;
		Burned areas	National, Landscape	DINAF; ANAC
		Environmental Management Plan	Landscape	DINAF; ANAC
		Fires	Nacional, Landscape	DINAF; ANAC
	Biodiversity	Registration of fragile ecosystems	Landscape	
		List of endangered species (fauna and flora)	Nacional, Landscape	DINAF, ANAC
		Protected species (fauna and flora) survey	Nacional, Landscape	DINAF, ANAC
		Percentage of native area preserved in the concession (20% conservation law)	Landscapes	DINAF, PS (Service provider)
		Census faunistico (2 in 2 years in the conservation area)	Landscapes	ANAC
	Soils	Soil quality information	Landscapes	IIAM
		Areas of sustainable agriculture (agroforestry and conservation systems)	Landscapes	DINAS, SP
		Registration of use of agrochemicals	Landscapes	DINAS, SP
	Water resources	Pollution registry of water lines (agrochemicals)	Landscapes	DINAS, SP
		Pollution registry of water lines (sediments)	Landscapes	DINAS, SP
Socio cultural/Economicos	Cultural heritage	Registry of existing cultural rituals	Landscapes, Comunidades	CGRN´s , SP, SIDAE
		Registry of sacred sites	Landscapes, Comunidades	CGRN´s , SP, SIDAE
		Number of complaints attended	Landscapes, Comunidades	CGRN´s , SP, SIDAE
	Land tenure	Number of DUAT's holders	Landscapes, Comunidades	DINAT, SPGC
		Number of informal certificates issued	Landscapes, Comunidades	DINAT, SPGC

Item	sub-item	Description	Scale (National, Landscape, Community)	Responsible
		Number of individuals with "occupation of good faith and customary practices"	Comunidades	DINAT, SPGC, SIDAE, CGRN, SP
		Number of disputes submitted and resolved (including complaint channels used)	Landscapes, Comunidades	CGRN´s , SP, SIDAE
	Land Use Changes	Grassland areas acquired for forest plantations	Landscapes	DINAT, SPGC
		Areas of Agriculture Purchased for Forest Plantations	Landscapes	DINAT, SPGC
		Number of community members involved in forest plantations / Partnerships and / or employment	Comunidades	Service Provider (SP)
	Training	Number of community members involved in REDD + / FIP / DGM capacity building (by sex)	Comunidades	SP/FNDS
		Number of supported associations and forums	Landscapes, Comunidades	SP/FNDS
		Number of operators involved in training	Landscapes	SP/FNDS
		Number of charcoal workers involved in training	Landscapes, Communities	SP/FNDS
		Number of trained institutions and technicians	National, Landscape	SP/FNDS
		Number of villages and beneficiaries (disaggregate)	Landscapes, Communities	SP/FNDS
	Other beneficiaries	Number of community members with access / information on sustainable technologies for biomass energy use (dissemination programs)	Landscapes, Communities	SP/FNDS
		Community projects: Number of Community projects / initiatives supported	Landscapes, Communities	SP/FNDS
		Number of workers employed in forestry plantations	Landscapes, Communities	DINAF, DINAS, SP/FNDS