Readiness Preparation Proposal (R-PP)

for Country: Mozambique

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For use by countries for submitting a
Readiness Preparation Proposal (R-PP)

Forest Carbon Partnership Facility (FCPF)

United Nations REDD Programme (UN-REDD)

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R-PP Development Team

Institutions	Name	Position and/or Role
Ministry for Coordination of Environmental Affairs (MICOA) high level decision (several meetings were held with them individually or in Technical/Consultative meetings of the Ministry)	Alcinda Abreu	Minister, Vice-Chair of National Council for Sustainable Development (CONDES)
	Ana Chichava	Vice-Minister, Chair of CONDES Technical Council
	Mauricio Xerinda	Permanent Secretary, Chair of the Technical Council of MICOA
MICOA technical	Anselmina Liphola	Director DNGA – also participated in data collection in the South, facilitated dialogue with the Technical and Consultative Councils of MICOA as well as with CONDES
	Paula Panguene	Deputy Director DNGA Chair, background information on REDD+ and process

		Coordination of REDD process
	Telma Manjate	Director of International Cooperation and Host of UNFCCC, facilitates liaison with FCPF and other institutions supporting the REDD+ process
	Francisco Sambo	Focal point and technical liaison Logistical support to the process, including contacts with provincial institutions
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MINAG	Dinis Lissave	National Director (DNTF)
	Mandrate Oreste Nakala	Deputy National Director (DNTF) – ensure high level communication within the Ministry and engagement of all agriculture subsectors
	Alima Issufo-Taquidir	Head of the Department of Forestry, co-leader of the REDD+ process with MICOA
	Darlindo Pechisso	Technical staff- Forestry Department
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	Osvaldo Manso	Coordinator, National Forest Program
	Danilo Cunhete	Technical Staff at the Department of Natural Resources Inventory; Data collection on drivers of deforestation and analysis of current information management systems in provinces affected by deforestation and degradation of forests – Maputo, Gaza and Zambezia Identified the loopholes in the land allocation and forest information management at the provincial level and accuracy challenges in national-level information
	Pachis Mugas	
	Castelo Banze	
	Luis Sande	
	Carla Cuambe	Now with FAO-Maputo, former head of Department of Natural Resources Inventory; significant input on data needs, availability and MRV, data collection in Tete and Sofala
	Joaquim Macuacua	Current Head of the Department of Natural

		Resources Inventory, manager of the technical cooperation project with JICA to support capacity building and undertaking inventories and establish MRV
FAS	Virgilio Viana	Director, steers the South-South REDD+ collaboration and liaison with Minister of Environment and the Working group
	Thais Megid Pinto	Technical staff of Bolsa Floresta Program, took part in the design of road map and its implementation up to July 2011
	Luiza Lima	Technical staff of Bolsa Floresta Program
IIED	Duncan Macqueen	Team Leader, Forests – Coordination of South-South REDD+
	Dr. Isilda Nhantumbo	Senior Researcher on Forests and Climate Change, coordinate the process of consultations and technical inputs to the R-PP
UEM – Forestry, Agriculture, Economics and Rural Engineering	Dr. Almeida Sitoe	Lead the UEM input as well as focusing on Reference Level
	Benard Guedes	Monitoring, Reporting and Verification
	Technical support – subnational studies	
	Dr. Romana Rombe (Forestry)	Preliminary analysis of drivers of deforestation and degradation, actors and current interventions, lessons, tradeoffs between land uses and REDD+ delivery models – Maputo, Gaza, Manica, Sofala, Tete, Nampula and Niassa
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	Samantha Remane	Lawyer, organization of consultations
	Berta Rafael	Facilitation of consultations at community level
	Lino Manuel	Environmental Journalist
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	Rauno Laitalainen	Former CTA for NFP at DNTF- Finish Program
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DANIDA	Malene Wiinblad	Advisor on Climate Change at MICOA
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Summary of the R-PP

Dates of R-PP preparation (beginning to submission):	February 2010 – January 2012
Expected duration of R-PP implementation (month/year to month/year):	March 2012 to December 2014
Total budget estimate:	US$ 23.825 million Government of Norway funded 1.3 million from 2009-to March 2012
Anticipated sources of funding:	from FCPF: US$ 3.6 million from National government contribution: US$ 54 Thousand and time not accounted in the R-PP from Government of Japan: US$7million, JICA: US$ 3.5million
Expected government signer of R-PP grant request (name, title, affiliation):	Marília António Telma Manjate National Director, UNFCC and GEF focal point International Cooperation Directorate, Ministry for Coordination of Environmental Affairs
Expected key results from the R-PP implementation process:	Outcome 1) Institutional arrangements at national and sub-national level for delivery of REDD+ established and functional. Outcome 2) Carbon rights and benefit sharing mechanisms acknowledged and legal instruments approved. Outcome 3) Delivery models that can address drivers of deforestation identified and costs associated to their execution assessed. Outcome 4) Reference level viable scenarios and MRV systems for emissions, safeguards and co-benefits designed; capacity developed; costs and frequency of assessment defined. Outcome 5) National REDD+ strategy approved

Executive Summary

Mozambique is endowed with forest, woodland resources and other vegetation covering 70% of its territory. The annual loss of these resources amounts to 0.58% or 219,000 ha according to the inventory report of 2007. This represents more than double the deforestation reported in 1994 (0.21%).

The sources of forest loss and degradation include subsistence and commercial agriculture due to unsustainable land use practices including use of fire in land clearing and hunting, increasing demand for biomass energy in the urban areas, illegal harvesting of timber and non implementation of management plans, mining associated with land clearing for settlement (in particular artisan miners) and infrastructure development including roads, railways and expansion of urban areas. Underlying causes include limited access to high productivity technologies by the majority smallholders or means to implement them including sparse extension network, poor governance and weak enforcement of land, forests and environmental legislation, demand for food and wood products in the domestic and international markets and lack of employment opportunities in the rural areas.

R-PIN was developed and submitted to FCPF by MICOA and DNTF, MINAG in 2009.Through the documentation process of R-PIN, existing capacities and responsible government institutions, status and jurisdiction of forest areas, cause and key issues of deforestation, forest monitoring capacity, forest policies and governance, and main strategies were identified .Following and the approval of R-PIN to FCPF, the government of Norway has been supporting South-South cooperation between Mozambique and Brazil with the aim of creating readiness conditions to implement REDD+ in the country. The first national consultation in 2009 led to the establishment of the REDD+ working group co-led by the Ministry for Coordination of Environmental Affairs (MICOA) and the Ministry of Agriculture (MINAG) with Foundation Sustainable Amazonia (FAS) sharing its experience.

This R-PP is a product of consultations undertaken at national, provincial level where forests are under pressure for a variety of reasons: conversion of native forests and woodlands for large scale plantations in Niassa; high competition between economic activities such as forest harvesting, commercial agriculture including biofuels, mining, logging and forest plantations in Nampula; mining and livestock in Tete; poor forest governance resulting in intensive and illegal logging in Zambézia; supply of biomass energy to Maputo city affecting forest areas beyond Maputo province, in particular Gaza. Representatives of all districts were invited to the provincial level consultations. In Nampula all districts were represented. Equally, regional level consultations brought together representatives from all provinces (North – Cabo Delgado, Niassa and Nampula; Centre – Zambézia, Manica Tete and Sofala; and South – Inhambane, Gaza and Maputo). The process was undertaken between February 2010 and July 2011 and more than1,500 registered participants in both consultation and the four training workshops representing government (national, provincial, district and local authorities), NGOs, academia, private sector (timber concessionaires and simple license operators, plantations and agriculture), community leaders, women's organizations, forest guards, religious organizations, traditional healers, farmers, agriculture associations, charcoal producers, teachers, students, development partners and others. Women accounted for only a quarter of participants; representation was particularly poor at community level. This may have to do with the fact that REDD+ might have been perceived as threat to commercial forest activities in which mostly men are involved. Proactive and deliberate engagement of women will be sought during the implementation of the RPP.

Consultations included dissemination of information on REDD+, discussion on reference level scenarios and MRV system, legal and institutional opportunities and gaps, identification of drivers of deforestation and degradation in the covered provinces, actions to address them, and identification of potential pilot

areas. Stakeholders included government, non-government organizations, academia, private sector and communities.

A multidisciplinary team including staff from the Eduardo Mondlane University, MINAG, MICOA and provincial staff affiliated to these ministries conducted studies on land use and drivers of deforestation and forest degradation as well as experiences in addressing these drivers in Niassa, Nampula, Tete, Sofala, Gaza, Maputo and Zambézia (focusing on land information management and spatial representation of the drivers). Information gathering included interviews and discussions with land users such as timber operators, small and medium scale farmers, charcoal producers and traders as well as community, district and provincial leaders.

The R-PP highlights the need to establish a Technical REDD+ Unit (UT-REDD+) at central level to ensure sector coordination in policy development as well as facilitating implementation of REDD+ at sub-national level. A similar structure is recommended for the latter, but further analysis of capacity and level (regional or provincial) of establishing such structure will be discussed during implementation of this readiness plan. The Technical Council of the National Council for Sustainable Development (CONDES) which comprises national directors, representatives of academia, private sector, NGOs and prominent individuals, is the National Council for REDD+. This will provide strategic direction and ensure political buy-in of key cross-sector interventions to reduce emissions from current land use practices.

The policy and legal instruments contain important provisions such as devolution of resources to local communities and participatory decisions in allocation of the resources to investments (private and public) and benefit sharing mechanisms. However, rights to non tangible environmental services such as carbon are not explicitly defined. Consultations indicated that, in order to protect communities and provide incentives for changing land use practices, carbon rights should be held by the communities as the Constitution of Mozambique, Land Policy and Law acknowledges customary land rights irrespective of whether these rights are formally registered or not.

REDD+ delivery models, options and interventions are outlined in this document, though analysis of their viability needs to be conducted including determination of opportunity costs, transaction and implementation costs.

While forest inventories have been conducted regularly in the country in intervals of about 10 years, this has focused on determining annual allowable cut for commercial timber and assessment of biomass has been limited. Therefore, establishing reference scenarios and MRV systems will require some works at sub-national level to validate national information and conversion of volume to biomass and thereafter to carbon stocks. In addition, mapping land uses as well as establishing spatial, social and economic impacts on emissions will facilitate tracking changes and performance over time.

Social and Environment Strategic Assessment (SESA) and subsequent design of Environmental and Social Management Framework (ESMF) will be conducted to minimize and mitigate negative impacts that might result from implementation of REDD+. Carbon rights can potentially affect community access to land resources for their livelihoods, hence exacerbating poverty. Similarly enhancing carbon stocks through large scale plantations replacing natural forests reduces biodiversity particularly due to fuzzy boundary between forest and non-forest definitions, promote large scale land acquisition causing conflicts or affecting communities. These issues have not been discussed so far during consultations.

The duration of this R-PP is two years from March 2012 to December 2014 and the readiness preparation will require at least US$ 3.4 million from FCPF with the following breakdown. The part of other funding sources is necessary, such as UN-REDD and others will be sought:

- Component 1 – institutional arrangements for REDD+ implementation – the FCPF request (US$1,955,500), Government of Mozambique (US$54,000), Total US$2,009,500to establish capacity at national and sub-national level.
- Component 2 – Preparation of the REDD+ Strategy – the FCPF request (US$1,505,000), TBI (US$1,781,000), Total US$ 3.266million to include studies on options and viability, development of SESA and ESMF.
- Component 3 – Reference levels – the FCPF request (US$100,000), JICA (US$1,500,000), Total US$ 1.6million to include field work to develop national Reference Levels/Reference Emission Levels (RL), including the works to study on national parameters for determining carbon stocks and scenarios, produce Bench Mark Maps in pilot provinces
- Component 4 – Measurement, Reporting and Verification system – the FCPF request US$700,000, Government of Japan (US$7,000,000), JICA (2,000,000), Total USD$ 9.7 million to establish a National Forest Resource Information Platform which accommodate Bench Mark Maps and RL (produced in Component 3),develop monitoring technologies and on the ground monitoring system tomonitor emissions (using parameters defined in C3)), development of methodologies as well as socio-economic and environmental benefits; capacity needs assessment at national and sub-national levels, institutional arrangements for implementation including community level.
- Component 5 – Clarified schedule and budget.
- Component 6 – Monitoring and evaluation – the FCPF request US$ 100 thousand design of national and sub-national level monitoring and evaluation systems of the readiness programme implementation.

This document (as informal submission) does not include as thus far detailed budget per component. The Working Group seeks feedback on the technical soundness while further consulting on budget for the different components.

Furthermore, funding for piloting is critical in order to establish tested models and systems for REDD+ delivery from 2014 onwards. Pilot areas have been identified for REDD+ implementation to address key land use challenges in Manica (pressure on forest reserves due to commercial agriculture), Sofala (rehabilitation and conservation of Gorongoza mountain ecosystem), Zambézia (assessing degradation in a context of weak forest governance and information management systems), Niassa (impact of large scale plantations on co-benefits of REDD+, carbon rights), Nampula (commercial agriculture and energy demand) and Gaza (biomass energy supply)and other provinces.2 Districts in each of all 10 provinces and whole areas ofGaza and Tete will also have comprehensive data collection for reference levels and MRV. The implementation of some of these pilot projects will follow a landscape-level corridor Stakeholders (including policy makers and national level) stressed that consultations and studies are important. However, building on existing knowledge and moving towards implementation is equally fundamental to identify intricacies of achieving the goals of REDD+ and address associated challenges.

Acronyms the country uses in the R-PP

ABIODES	Association for Biological Diversity and Sustainable Development
AgriFuturo	Agribusiness project (9 commodities) funded by USAID
AMOMA	Mozambican Association of Timber Operators
BAU	Business as usual
CBNRM	Community Based Natural Resources Management
CDS-RN	Centre for Sustainable Development – Natural Resources
CARE	NGO
CENECARTA	National Centre of Cartography and Remote Sensing
CIP	Centre for Public Integrity
CLUSA	Cooperative League of United States of America
COGEP	Participatory Natural Resources Management Council
CTA	Confederation of Economic Associations
CTV	Centro Terra Viva, Environmental Research and Advocacy NGO
DANIDA	Danish International Development Agency
DAPI	Provincial Directorate of Agriculture of Inhambane
DFID	Department for International Development
DIPREME	Provincial Directorate for Mineral Resources and Energy
DNAIA	National Directorate for Environmental Impact Assessment
DNCI	National Directorate for International Cooperation
DNE	National Directorate of Roads
DNEA	National Directorate of Agrarian Economy
DNER	National Directorate of Rural Extension
DNENR	National Directorate of New and Renewable Energy
DNGA	National Directorate of Environmental Management
DNM	National Directorate of Mines
DNRI	Department of Natural Resources Inventory
DNPDR	National Directorate for Promotion of Rural Development
DNSA	National Directorate of Agrarian Services
DNTF	National Directorate of Lands and Forests
DPA	Provincial Directorate of Agriculture
DPAG	Provincial Directorate of Agriculture of Gaza
DPANp	Provincial Directorate of Agriculture of Nampula
DPAS	Provincial Directorate of Agriculture of Sofala
DPAT	Provincial Directorate of Agriculture of Tete
DPAZ	Provincial Directorate of Agriculture of Zambézia
DPCA	Provincial Directorate for Environmental Coordination
DPCACB	Provincial Directorate for Environmental Coordination of Cabo Delgado
DPCAG	Provincial Directorate for Environmental Coordination of Gaza
DPCAM	Provincial Directorate for Environmental Coordination of Manica
DPCAN	Provincial Directorate for Environmental Coordination of Niassa
DPCANp	Provincial Directorate for Environmental Coordination of Nampula
DPCAS	Provincial Directorate for Environmental Coordination of Sofala
DPCAT	Provincial Directorate for Environmental Coordination of Tete
DPCAZ	Provincial Directorate for Environmental Coordination of Zambézia
EDM	Mozambique Electricity Company
Envirotrade	NGO implementing Plan Vivo initiative in Mozambique
ESMF	Environmental and Social Management Framework
EU	European Union

FAEF	Faculty of Agronomy and Forestry Engineering
FAO	Food and Agriculture Organization
FEMA	Private Sector Forum for Environmental Management
FDC	Forum for Community Development
FONGZA	Zambézia NGO Forum
GAPI	Microfinance company
IIAM	Mozambique Institute for Agrarian Research
IESE	Institute for Social and Economic Studies
ICS	Social Communication Institute
IIED	International Institute for Environment and Development
INDE	National Institute for Development of Education
INE	National Bureau of Statistics
INGC	National institute for Disaster Management
IPEME	Institute of Small and Medium Enterprises
ISPU	Polytechnic Institute
IUCN	International Union for Conservation of Nature
JAXA	Japan Aerospace Exploration Agency
JICA	Japan International Cooperation Agency
LAM	Mozambique Airlines
LOLE	Law of Local State Organs
LUPA	Local NGO
MAE	Ministry of State Administration
MCA	Millennium Challenge Account
MEnergia	Ministry of Energy
MF	Ministry of Finance
MIC	Ministry of Industry and Commerce
MICOA	Ministry for Coordination of Environmental Affairs
MINEC	Ministry of Education and Culture
MIREM	Ministry of Mineral Resources
MISAU	Ministry of Health
MITUR	Ministry of Tourism
MOPH	Ministry of Public Works and Housing
MP	Ministry of Fisheries
MPD	Ministry of Planning and Development
MRV	Measurement, Reporting and Verification System
MST	Ministry of Science and Technology
MTC	Ministry of Transport and Communications
NAPA	National Action Plan for Adaptation
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Government Organization
ORAM	Local NGO - Organização de Ajuda Mútua
OXFAM	NGO
PEDSA	Strategic Plan for Sustainable Development of Agriculture
PES	Payment for Ecosystems Services
REDD	Reducing Emissions from Avoided Deforestation and Forest Degradation
REDEZA	Network of Development Associations of Zambézia
RL/REL	Reference Level/ Reference Emission Level
RM	Mozambique Radio
ROADS	Network of Organizations and Associations for Sustainable Development
SASOL	South African Gas Company
SDAE	District Services for Economic Activities

SDPI	District Services for Planning and Infrastructure
SESA	Strategic Environmental and Social Assessment. SESA is defined as “a range of analytical and participatory approaches that aim to integrate environmental and social considerations into policies, plans and programs (PPPs) and evaluate the inter linkages with economic, political, and institutional considerations” SESA can be described as a family of approaches which use a variety of tools, rather than a single, fixed, prescriptive approach.
SNJ	National Syndicate of Journalists
STV	Soico Television
TIM	Independent Television of Mozambique
ToR	Terms of Reference
TVM	Mozambique Television
UCM	Catholic University
UEM	Eduardo Mondlane University
UNAC	National Union of Peasants
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UN-REDD	UN-REDD Programme
UP	Pedagogic University
UTRESP	Technical Unit for Public Sector Reform
WFP	United Nations World Food Programme
WG	Working Group
WWF	Worldwide Fund for Nature

Component 1: Organize and Consult

1a. National Readiness Management Arrangements

Standard 1a the R-PP text needs to meet for this component:
National readiness management arrangements

The cross-cutting nature of the design and workings of the national readiness management arrangements on REDD, in terms of including relevant stakeholders and key government agencies in addition to the forestry department, commitment of other sectors in planning and implementation of REDD+ readiness. Capacity building activities are included in the work plan for each component where significant external technical expertise has been used in the R-PP development process.

Genesis of Mozambique's REDD process

Mozambique is one of the 37 countries eligible to benefit from the Forest Carbon Partnership Facility (FCPF)to access funding to develop and implement strategies aiming to reduce emissions from deforestation and forest degradation (REDD).

In December 2008 the Government of Mozambique, namely Ministry of the Coordination of Environmental Affairs (MICOA) and Directorate National of Land and Forestry (DNTF), Ministry of Agriculture (MINAG) jointly initiated the process of preparing a reduced emissions from deforestation and forest degradation (REDD) project idea note (R-PIN) with a funding from the Norwegian Embassy in Maputo and technical support from INDUFOR, and submitted the Note to the FCPF in March 2009 which was subsequently approved in May 2009. Following approval of the R-PIN, expectations grew on the side of the Mozambican Government and of the FCPF that progress towards a National REDD Strategy would start in earnest through the drafting of the REDD Preparation Proposal (R-PP).

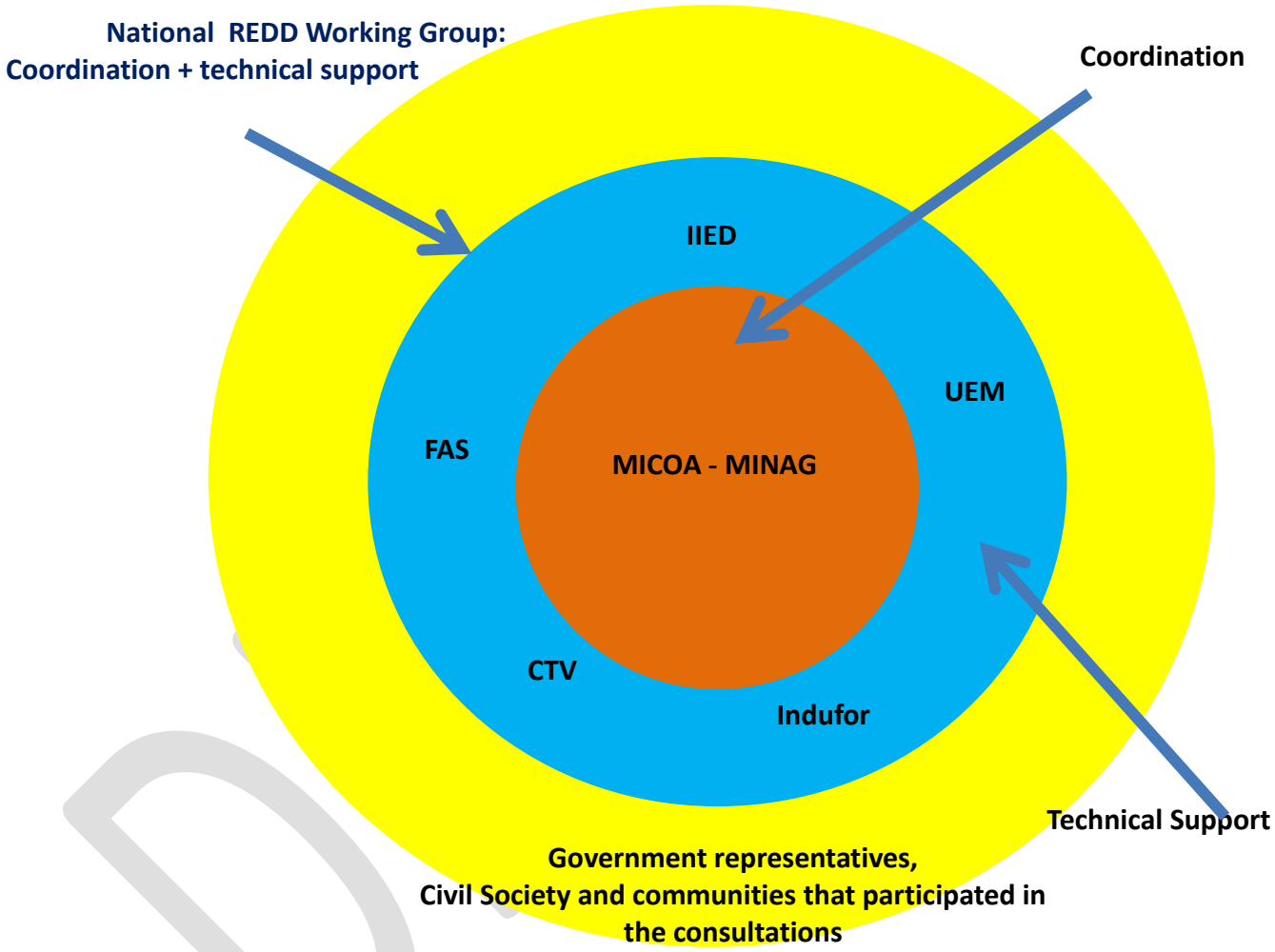
The MICOA and Fundação Amazónia Sustentavel (FAS), Brazil signed a Memorandum of Understanding (MoU) with the intention to adapt the Bolsa Floresta Program and REDD project in Juma, Brazil to the context of Mozambique. The Government of Norway through the Embassy in Maputo provided funding to pursue this South-South collaboration.

Creation of the REDD Working Group in Mozambique in the context of the South-South Collaboration

A first national workshop was held on 28-29 August 2009 at Pequenos Libombos, Maputo to discuss the R-PIN and process and share the latest developments in REDD, both international and national. The main outcome of this meeting was to take the preparation process forward through a National REDD Working Group comprising of MICOA, represented by the National Directorate of Environmental Management (Direcção Nacional de Gestão Ambiental - DNGA); MINAG, represented by the National Directorate of Lands and Forests (DNTF); the Eduardo Mondlane University (Faculty of Agronomy and Forestry); the national NGO Centro Terra Viva (CTV);Fundação Amazónia Sustentável (FAS); the International Institute for Environment and Development (IIED) and INDUFOR.

The objective was to bring together stakeholders from government, academia, NGOs, and private sector to allow a participatory dialogue. Government agencies and Non-Government Organizations are an integral part of the working group to facilitate cross-sectoral coordination on REDD+. The members of this group are presented in Appendix 1 and the responsibilities of the institutions are in Appendix 1a.

Figure 1National REDD Working Group



The REDD+ working group as described above made further efforts to expand and integrated the following institutions: Ministry of Tourism (MITUR), Ministry of State Administration (MAE), Ministry of Energy (MEnergia), Ministry of Women and Social Affairs (MMAS), Ministry of Planning and Development (MPD), Ministry of Finance (MF), Ministry of Mining (MIREM), Ministry of Industry and Commerce (MIC), Civil Society Organizations including the Foundation for Community Development (FDC), Organização de Ajuda Mútua (ORAM), União Nacional dos Camponeses (UNAC), Associação Mocambiçana dos Madeireiros (AMOMA), International Union for Conservation of Nature (IUCN), Worldwide Fund for Nature (WWF), Envirotrade (Plan Vivo initiative), CTA/FEMA (private sector association for environment and economic activities)and international agencies such as DANIDA and JICA. However, most of the institutions have not been regular participants in the working group, but provided inputs into the REDD+ process during consultations. Some institutions seem to have perceived. REDD+ as purely a forest and

environmental concern and therefore did not consider their participation a high priority. Moving forward as discussed in 1c, targeted awareness on REDD+ will be pursued with key stakeholders. For example, targeting regular business meetings of the Council of Ministers, CONDES at national and provincial level, Provincial/District Consultative Councils, private sector meetings of the different sectors (forests, megaprojects, agriculture, mining) and the business environmental forum (FEMA) seeking to include REDD+ as an agenda. Inter-ministerial coordination at large remains a challenge in Mozambique. A more systematic engagement of these institutions will be needed in the future and requires further awareness raising of the purpose of the R-PP process.

National Responsibilities with respect of REDD+

Forests in Mozambique fall under the general jurisdiction of National Directorate of Land and Forestry, Ministry of Agriculture as the responsible Government Authority, while Ministry of Tourism is responsible for Protected Areas.

Main responsibilities of each responsible Ministries on forest management are as follows

- National Directorate of Land and Forests, Ministry of Agriculture
  - The National Directorate's forest management jurisdiction areas are
    - Production Forests (concession areas, simple licenses,)
    - All other forest areas except for conservation areas
  - Conducting assessments and determine the quality of national forest carbon stocks;
  - Developing and arranging for forest carbon trades and forest services to increase revenues for effective forest operations and development;
  - Implement REDD+ through National Forest Programme (NFP);

    (For example: including target such as (1) 2 million ha of community forests, (2) 3million ha of protection forests, (3) 4 million ha of production forests under sustainable forestry management, how many fiscal officers, ground based monitoring system, etc.)
  - Determining national negotiation positions and strategies on forest issues in international convention negotiations including UNFCCC;
  - Cadastral administration of state land, and individual's utilization rights registration, including communal land titles and concessions,
  - Carrying out cadastral surveying and mapping;
  - Developing national strategies, action plans, policies including laws and regulations related to forest management;
  - Coordinating and supervising works of provincial forest services (SPFFB) including forest products and wildlife fiscalization;

- National Directorate of Conservation Areas Management, Ministry of Tourism
  - The Ministry's jurisdiction areas are wildlife affairs in
    - 6 National Parks
    - 8 National Reserve
    - 14 Hunting Areas
    - Community Protected Areas
    - Other Reserve and Protected Areas
  - Developing national strategies, action plans, policies including laws and regulations related to conservation areas management;

- Ministry of Environmental Coordination
  - Coordination of domestic environmental affairs
  - Developing national strategies, action plans and policies and regulations related to climate change in coordination with concerned institutions e.g. NAPA;
  - Implementing decisions of the UNFCCC;

- Preparing national reports and greenhouse gas inventories for Mozambique under UNFCCC, e.g. NAMA;
- Acting as the DNA of Mozambique for CDM, KP;
- Serving as a focal point for the UNFCCC and other international negotiations;
- Coordinating concerned institutions in the establishment and management of climate change trust funds and carbon credit policies;
- Strengthening corporation among national institutions, development partners, civil society and the private sector in implementing measures to respond to climate change as well as implementation of the decisions of UNFCCC;

Table 1 shows the jurisdictions of each institution under forest category and area.

Table1: Forest Management Jurisdiction in Mozambique (Direct responsibility) in 2005 (in 1,000ha)

Jurisdiction	DNTF, MINAG	MITUR		Total
Forest Category	Production Forest	Protection of Soil and Water Forest	Conservation of Biodiversity Forest	
Natural Forest	26,898	8,902	4,255	40,055
Plantation	24			
Total	26,922	8,902	4,255	40,079

Note: Within the jurisdiction of MITUR, land and forest issues are handled by DNTF

In addition to above main institutions, involvement of the following institutions will be critical for the implementation of the R-PP:

- Mozambique Institute for Agrarian Research (IIAM) and other institutions of the Coordinating Group for International Agriculture Research (CGIAR) present in the country to strengthen research as one of the key components of the medium term implementation of REDD+, particularly identification and dissemination of alternative technologies for increasing land productivity.
- The Ministry of State Administration (MAE) houses the National Directorate for Promotion of Rural Development (DNPDR) and the National Institute for Disaster Management (INGC). The latter has been playing a key role on climate change adaptation as well as investing in livelihood development initiatives in 28 drought stricken districts in the country. DNPDR plays also an important role in decentralized planning (district level) and allocation of financial resources to support economic development at that level. Participation of these institutions will allow alignment of the different interventions and rationalize use of *resources.*

There is a need to further strengthening coordination among Ministries. Within DNTF, in addition to the Department of Forestry, the Department of Natural Resources Inventory responsible for collection, compilation and management of information on national resources; representation of the following departments would be desirable to ensure that issues related to land use planning, allocation and information management systems are adequately addressed: the National Centre of Cartography and Remote Sensing (CENECARTA), responsible for land cover and land use maps; and the Department of Lands, responsible for allocation of land to all uses and users, including the private sector and the issuing

of certificates of land use rights to local communities.DNTF and CENACARTS are belonging to Ministry Agriculture. Agricultural technology development and improvement is one of the important agendas of climate change adaptation and sustainable development. On the other hand, conversion of forest lands to agricultural land is one of the major causes of deforestation and forest degradation. Here requires sensitive policy coordination within the government institutions in order to achieve successful implementation of REDD+. Within MICOA, in addition to the DNGA, representation of the following departments would be desirable to ensure that cross-departmental issues are better addressed: the National Directorate of Environmental Impact Assessment (DNAIA), the National Directorate of Land Use Planning (DINAPOT) and the National Directorate of Environmental Education (DNEA).

Leadership, decision making and ownership in the context of REDD and R-PP formulation

The National Directorate of Environmental Management (DNGA), MICOA and the National Directorate of Lands and Forests (DNTF), MINAG coordinated the formulation process and ensured national ownership and responsibility of the national institutions. The central role of this coalition is the liaison between technical information on options and policy decisions at ministerial level and across sectors.

The working group met regularly since its establishment. Ten meetings of the working groups have been held until November 2011 including use of video or teleconference to ensure participation of FAS, INDUFOR and IIED. Meetings were frequent during the consultation process in 2010 as the Working Group needed to discuss technical, methodological and logistical issues. Moving forward, regular bimonthly meetings are envisaged especially during the R-PP preparation phase.

To ensure leadership support in assessing the viability of suggestions in the R-PP, members of the Working Group channeled relevant issues or recommendations requiring high level decision or endorsement to the Minister of Environment (or the Vice-Minister or the Permanent Secretary). The Technical and Consultative Councils of MICOA have also provided valuable inputs.

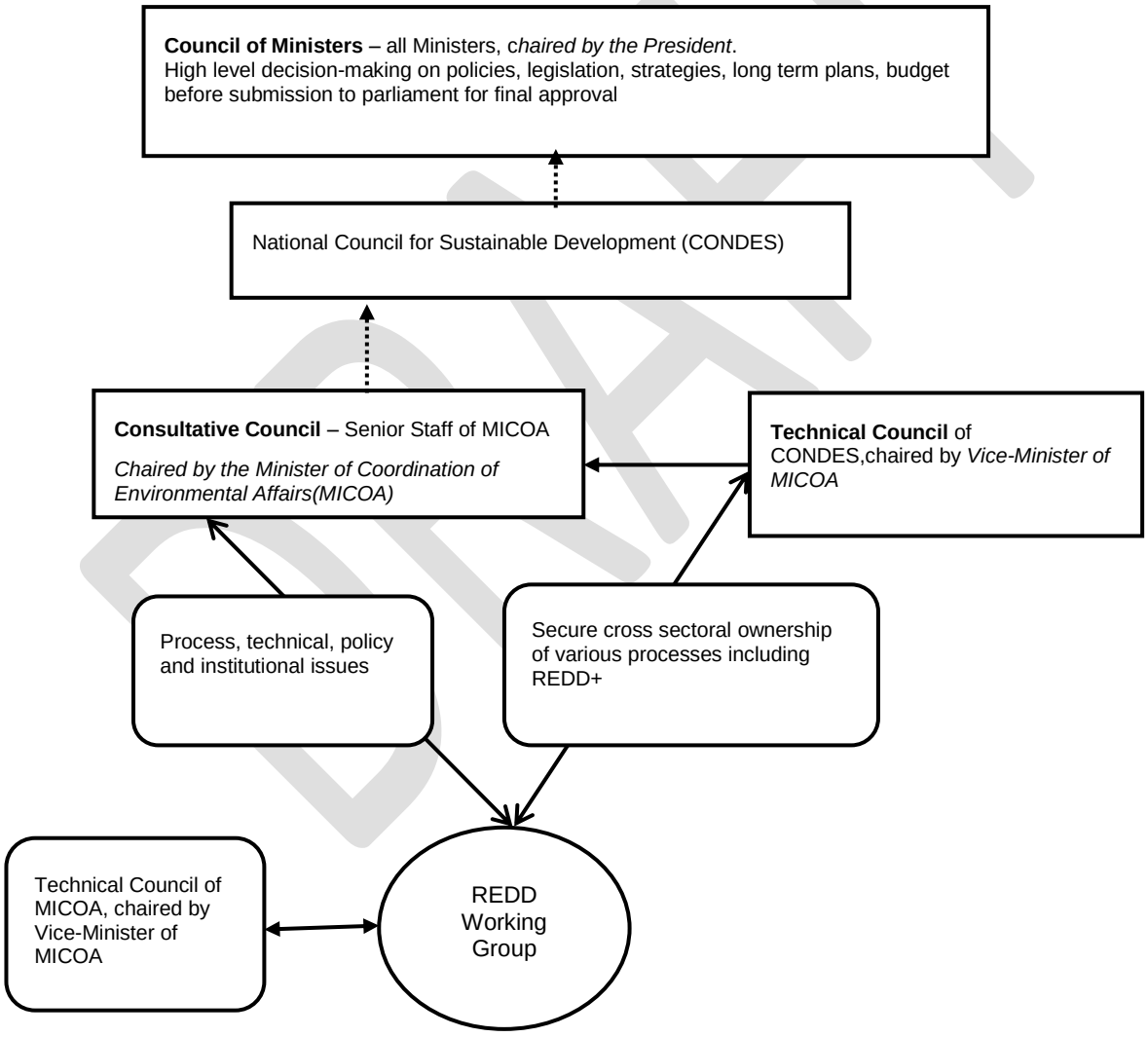
The Working Group conducted consultations plans and reported the outcomes and decisions at various stages of the formulation process to the Consultative Council of MICOA, chaired by the Minister; the Technical Council of MICOA, chaired by the Vice Minister; and the Technical Council of the multi-sectoral National Council for Sustainable Development (CONDES), consisting of National Directors of various Ministries. A joint meeting of Consultative Councils of MICOA and MINAG was planned but did not take place. In order to strengthen this collaboration and provide the necessary political and strategic guidance, there is need to formalize coordination at the level of Ministers. To sign a memorandum of understanding outlining clearly the responsibilities of each of the institutions should be considered to ensure that institutions are accountable. The specific tasks might include:

- MICOA: responsible for calling meeting of the working group in consultation with MINAG to agree on the agenda; coordinate the day to day work of the REDD+ Technical Unit; manage the FCPF funding for REDD+ through the environmental fund (FUNAB)making use of internationally agreed process for auditing REDD+ funds; coordinate the policy development for REDD+, coordinate dissemination of REDD+ information particularly within government institutions at central and provincial levels; lead the cross sectoral coordination to engage in REDD+ particularly focusing on addressing the indirect drivers of deforestation as well as direct drivers related to mining and infrastructure; establish reporting systems in coordination with MINAG.
- MINAG: plays a proactive role in REDD+ implementation including suggesting meeting to discuss emerging technical aspects related to implementation of strategic actions related to agriculture

sector land uses, development of reference levels and MRV systems, conduct training and establish the information management system.

The Minister of Environment is responsible for communicating with the Cabinet regarding progress of the R-PP. There are two governmental bodies to inform on the R-PP: CONDES, comprising various ministers and chaired by the Prime Minister (for composition see section on cross-sector coordination), and the Council of Ministers (all Ministers and Vice-Ministers) chaired by the President (Head of State). This is the apex body of policy and decision making by the government that would eventually approve the REDD+ strategy deriving from the R-PP process and would submit it to parliament. A briefing of the RPP and its process was presented late November 2011 to the Council of Ministers.

Figure 2. Articulation between the Working Group and policy making structures during the process of development of the RPP



The R-PP formulation process benefitted from strong ownership at high level in MICOADNTF of the Ministry of Agriculture together with DNGA haveled the REDD+ process. The Ministry of Agriculture is

responsible for not only the country's forest resources, but also allocates 84 percent of land to various uses and houses main drivers of conversion of forests, including commercial and subsistence agriculture, biofuels, livestock rearing, forest for energy, timber and others. In addition to the importance of the jurisdictional responsibilities on forest and forested area management as described above, MINAG is responsible for managing research, and extension services and law enforcement. For the readiness phase, further involvement and coordination of National Directorates of Agriculture Services (DNSA), Rural Extension (DNER), Agrarian Economics (DNEA), the Mozambique Institute of Agrarian Research (IIAM), Food Security (SETSAN) and Provincial Agricultural Directorates is important. To assure aligning of the REDD+ Strategy which is going to be completed after the approval of RPP with the recently approved Plan for Sustainable Development of Agriculture (PEDSA 2011-2019) and with the National Forest Plan (NFP under development) should be ensured. Coordination among stakeholders through the active cooperation between MICOA and MINAG is a key to success in the important decision making on REDD+ implementation frameworks such as institutional arrangement, national carbon accounting approaches and benefit sharing mechanisms during the readiness phase.

Technical inputs to the REDD process

Apart from the inputs provided by technical staff of DNTF in formulation of RPP, the International Institute for Environment and Development (IIED), as part of its effort on Growing Forest Partnerships (GFP) within Mozambique facilitated the technical input and administered Norwegian funding. The Eduardo Mondlane University (Faculty of Agronomy and Forestry) also provided technical support relative to quantitative analysis of deforestation and degradation to develop reference level for reducing emissions, as well as establishing a system for measuring, reporting and verifying performance. CTV (national NGO) contributed to the design of a participatory consultation process, analysis of legal implications of REDD and outreach. INDUFOR supported the alignment of REDD+ with the National Forest Programme (NFP) as part of the technical advice to MINAG. JICA provided trainings on up-to-date policies and methodologies of REDD+ for DNTF staff. Expertise has also been sought within government institutions at provincial and district levels as required during the process of designing the readiness plan.

A core group of experts conducted the initial research and consultation process throughout the country. The process also aimed at identifying provincial and district capacities to form relevant working groups or decision bodies at that level. However, this will be further analyzed during implementation of the REDD+ readiness plan.

Actions undertaken by the working group

- developed road map for the development of the R-PP including alignment of the structure of the national action plan with R-PP format (V.4 and later adjusted to V.5);
- drafted a consultation plan and produced background papers;
- organized consultation workshops at provincial, regional, national and at local levels, particularly in the REDD+ pilot areas identified through the consultation process;
- met with government agencies and other actors to explain the process and need to engage;
- communicated via internet, printed policy brief for distribution to stakeholders, use of printed media as well as TV and Radio to inform about the process and outcomes.
- produced a documentary on drivers of deforestation in Nampula and Maputo - 'when a tree falls' - aiming to share (snapshot) the challenges that REDD+ needs to address.

Existing institutional coordination mechanismfor environmental affairs in Mozambique

Since the mid 1990's Mozambique is implementing its decentralization policy and the government has strived to create multi-sector and multi-stakeholder institutions to guide decision-making. In 2007, the government approved the Law on Local Government Organs that spells out the composition and the mandate of institutions at different levels of government and governance. Furthermore, the Land Law of 1997 and the Forestry and Wildlife Law of 1997 established the creation of community management committees to ensure local participation in decision-making about the use of resources and to serve as an interlocutor within communities to seek improvement on land use practices, livelihoods and benefit sharing mechanisms.The new Forestry and Wildlife Law of 2012 to be enacted aims at strengthen forest resource management on the ground.

The National Council for Sustainable Development (CONDES) wascreated by Decree 40/2000, 17th October. It is a consultative organ on environmental and social safeguards of investments across sectors; addresses policy harmonization as well as input implementation of policies, strategies, plans and national programs related to adaptation and mitigation of climate change. CONDES has a clear mandate to provide strategic and policy support to REDD+ in the context of the country's sustainable development. Cross sector coordination for implementation of REDD+ will be led by the National Council for REDD+, which is the existing Technical Council of CONDES.

CONDES has the following composition:

- Ministry for the Coordination of Environmental Affairs (MICOA), Ministry of Agriculture (MINAG), Ministry of Energy (MEnergia), Ministry of Planning and Development (MPD), Ministry of Tourism (MITUR), Ministry of Mineral Resources MIREM), Ministry of Finance (MF), Ministry of Transport and Communication (MTC), Ministry of Public Works and Housing (MOPH), Ministry of Industry and Commerce (MIC), Ministry of Fisheries (MP).
- Ministry of State Administration (MAE), Ministry of Health (MISAU) and the National Statistics Bureau (INE) whose integration was recently suggested.
- Civil society organizations: Private Sector Forum for Environment (FEMA), National Union of Peasants (UNAC), Association for Biodiversity and Sustainable Development (ABIODES), Medical Association, Association of Journalists (SNJ), Women's Forum and Associations of Municipalities.
- Key individuals that have played prominent roles, such as the Former Vice Chancellor of UEM,Mr. Brazão Mazula; Former Minister of Education, Mr. Aniceto dos Muchangos; and the first Minister of MICOA, Mr. Bernardo Ferraz.

CONDES is also represented at the Provincial level with two to three sessions annually dedicated to analyzing environmental issues. The provincial CONDES is extended to district administrators and heads of administrative posts. This was decided by the National level CONDE'sin 2007 and subsequent reports also indicate provinces that have been conducting these sessions. Maputo, Gaza and Cabo Delgado met the target while Sofala, Manica, Zambezia, Niassa and Nampula did not always realize all planned session.

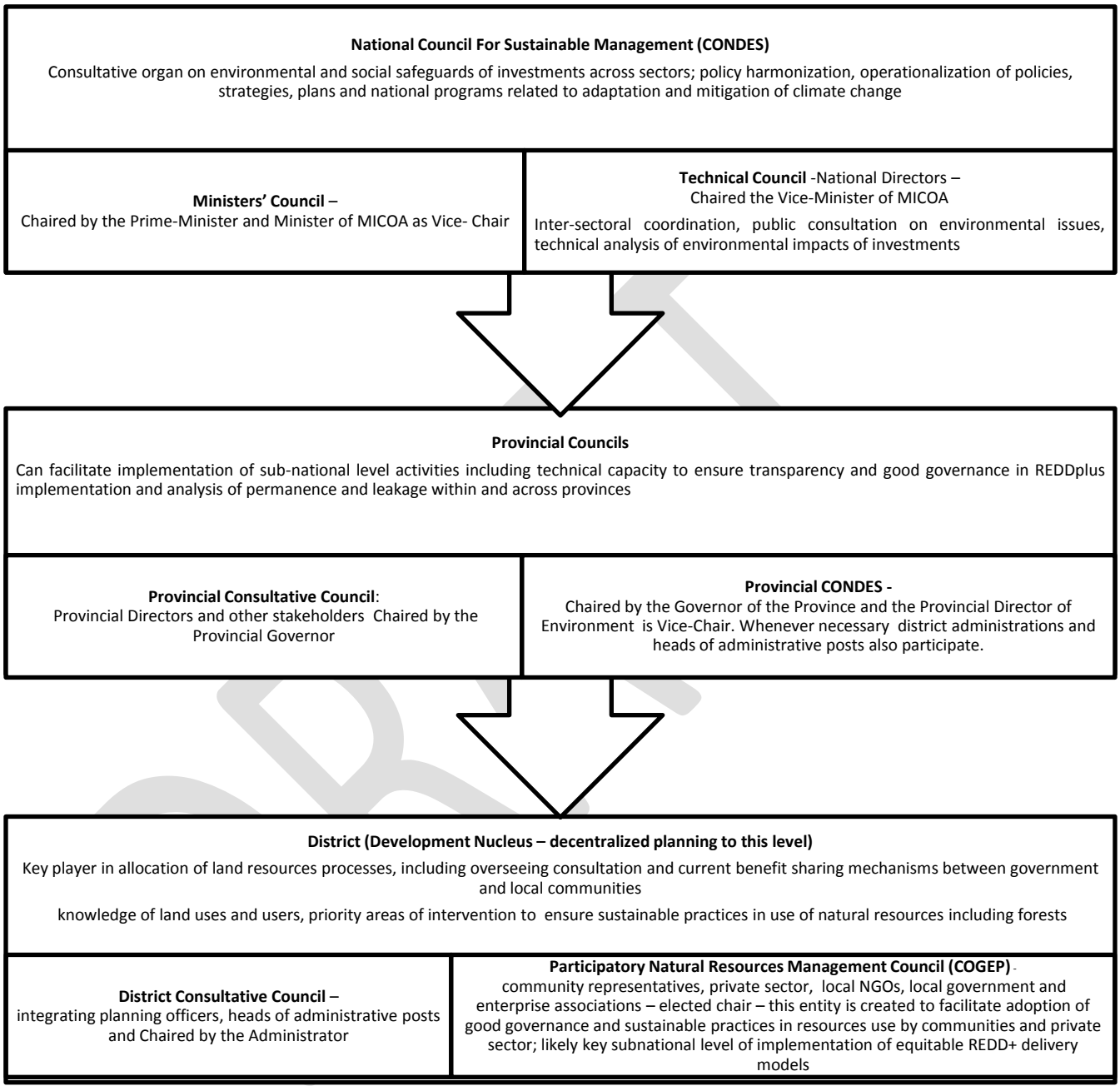
One of the key undertakings of CONDES is the revision of legal instruments related to natural resources and environment and their referral to the Council of Ministers for approval. During the period 2005 to 2009 CONDES submitted 20 such instruments, including some relevant for REDD+: policy and legislation on territorial planning, environmental strategy for sustainable development, control of substances that destroy the ozone layer, access and benefit sharing of genetic resources, action plans for prevention and

control of erosion, uncontrolled fire, NAPA. This organ also approved the TOR for strategic environmental assessment of the coastal zone.

CONDES also faces some challenges in its quest for cross-sector coordination to ensure mainstreaming of environment. Some of the challenges include participation of sector representatives in its sessions, submission of sector and provincial reports, compliance by all provinces in conducting sessions dedicated to the environment. Despite these challenges, CONDES is the best suited institution to oversee the development of REDD+ readiness process and can seek some innovations for example at the provincial level. It may be easier to include REDD+ and other environmental concerns as one of the continuous agenda item in the regular sessions and organize extraordinary meetings to decide on strategic issues.

Inter-sectoral coordination at district and community levels is assured through the District Consultative Council defined by the 2007 Law of Local State Organs (LOLE) and the Council for Participatory Management of Natural Resources (COGEP) established under the 1997 Forestry and Wildlife Law as a multi-stakeholder body at community level responsible for decisions and monitoring of resources, land use practices and management provides an overview of the decision making structures on the national, provincial and district level.

Figure 3Existing institutional coordination mechanism for environmental policy in Mozambique



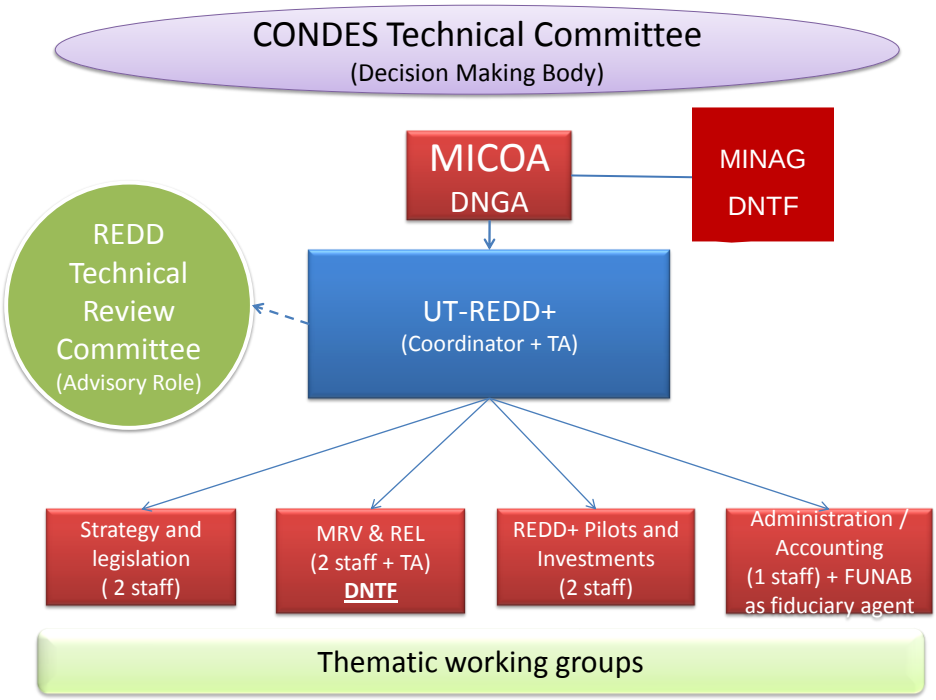
Institutional Framework during the Readiness Phase

For the implementation of the activities planned under the R-PP the following insitutional arrangements are agreed. Figure 4 described an institutional framework for the readiness phase.

Dedicated institutions and personel is key to the implementation of the readinessactivities planned under the R-PP (2012-2014) and implementation of REDD+ (post 2014). CONDES is the existing high level inter-ministerial consultative body discussing sustainable management issues including climate change. Therefore, it is positioned to take important strategic decisions on low emissions development process,

including review of land use, reporting changes and carbon emission targets. CONDES technical council that brings together director level decision makers of various sectors will serve as the National REDD+ Council and would be the body that approves plans, technical and financial reports presented by the UT-REDD+. CONDES as the overarching body will also ensure that good governance in management of resources as well as environmental and social safeguards are implemented.

Figure 4Institutional Framework during readiness phase



The thematic group shall comprise of government departments, NGOs, academia, private sector and other entities that will meet periodically to aid the staff in accessing and assessing information relevant to each of the four management sub-units/departments.

REDD+ Technical Unit (UT-REDD+) for readiness phase

A REDD+ Technical Unit (UT-REDD+) will be created under DNGA, MICOA in cooperation with DNTF, MINAG, that will coordinate and guide the day to day implementation during the readiness phase. The UT-REDD+ will be under the authority of MICOA, represented by the Vice-Minister as Chair of the Technical Council of CONDES. MICOA, MINAG and MITUR combine the multi-sector coordination and convening power on one hand, with the ample mandate in the agrarian sector and conservation areas which are critical to achieving the reduction of emissions and co-benefits of REDD+. The UT-REDD+ would also establish the necessary functional links with sub-national structures.

The UT-REDD+ will comprise of about eight assigned officers and be supported by contracted technical assistance (six experts), led by a coordinator (TOR in Appendix 1a) and officers being assigned to three broader themes (strategy and legislation, REL and MRV, pilots and investments). MRV and REL Sub-Unit will be handled by DNTF with the support of JICA, and two designated officers will be nominated as part of the UT-REDD+ and report to the Coordinator. Fund administration and procurement Sub-Unit (of FCPF funds) will be handled by FUNAB (Fundo do Ambiente, Environment Fund)that already handles MICOA funds in cooperation with Department of Administration, DNTF Strategy and Registration Sub-Unit is set in MICOA and work together with officers of Law and Control Department of DNTF, MINAG shall be a member. REDD+ Pilot and Investment Sub-Unit also is set in MICOA and Forestry Department and Community Forestry Section of DNTF shall be responsible members of the Unit.

The REDD Technical Review Committee would be the successor of the previously described working group that has been active in formulating the R-PP document. In the future is intended to maintain, and enlarge this structure, to technically support and guide the UT-REDD+.

The UT-REDD+ will be responsible for the day-to-day operations of REDD+ in the country with, among others, the following tasks:

- Coordinate the implementation of REDD+ readiness preparation proposal.
- Develop and implement innovative transparency and accountability processes and procedures.
- Create a National REDD+ Information Platform which comprised of 3 Units:
  - Unit1: Strategy and Legislation (laws, regulations, policies, strategies, safeguard, international agreement (unfccc and other conventions, SESA of world bank)to be database)
  - Unit2: Administration and Accounting (carbon credit, benefit and risk sharing, administration, all REDD+ project database)
  - Unit3: MRV and RL (base map, GIS, geographic availability, Leakage database)

  In each unit, all required guidelines, criteria, indicators, technical specifications necessary to follow in conducting REDD+ in Mozambique should be clarified and published at websites.
- Coordinate land use planning and assessment of carbon stocks as well as designing the monitoring, verification and measurement systems and formulation of reference levels(RLs)/reference emission levels (RELs).
- Develop a process for implementing identified pilot projects to address the drivers of deforestation and degradation.
- Develop a consultative process to design the legal instruments to guide implementation of REDD+ activities by different stakeholders in the country.
- Conduct a participatory process for analyzing potential environmental and social impacts of REDD+ as well as developing safeguards to protect local communities, the environment while ensuring that development priorities are taken into account.
- Ensure sector integration of interventions and policies that will contribute to reducing emissions from land use and land use change.
- Promote good governance in use of natural resources to supply environmental services. Seek technical review of plans, methodologies, policies and interventions at provincial and national levels.
- Develop technical infrastructure and human capacity for establishing REDD+ indicators and robust information management and reporting systems.
- Document and promote sharing of lessons and dialogue between researchers and policy/decision-making organs at national, sub-national and international level.
- Promote dissemination of research relevant for REDD+ and social and environmental impact.
- Articulate with delivery units at sub-national level. Capacity and viability analysis shall be conducted during the preparation of the final version of the RPP to establish whether to allocate additional man-

hours to each of the provinces or, rather establish Regional REDD Units (South- possibly in Gaza, Centre-Zambézia and Nampula).

The Technical Review Committee provide an advisory role to the UT-REDD+. It will comprise of the member of the current working group. However, given the importance of sector representation, particularly to ensure mainstreaming of REDD+ actions and policies in the relevant sectors, the participation of the following directorates will be crucial:

- MICOA (DNGA, DNAIA, DNCI, CDS-NR) - Environmental Management, Environmental Impact Assessment, International Cooperation and the Centre for Sustainable Development – Natural resources based in Manica.
- MINAG (DNTF, DNEA, DNER, IIAM) – Lands and Forests, Agrarian Economy and Rural Extension, Mozambique Institute for Agrarian Research
- MITUR (DNAC) – National Directorate of Conservation Areas
- MAE (DNPDR, INGC) – Rural Development and Disaster Management
- MEnergia (DNENR) – New and Renewable Energies
- MIREM (DNMinas) – National Directorate of Mineral Resources
- MOPH (DNE) – Infrastructure, including road network,
- MIC (IPEME) – Small and Medium Scale Enterprise
- FEMA/CTA – private sector

The chair of the Technical Review Committee would participate in the National REDD Council to take note and advise on technical issues if the UT-REDD+ Coordinator solicit. The Committee would also allow invitations of other stakeholders as deemed relevant. Hence, it can accommodate representatives of pilot projects (on a rotational basis for example) and observers from other interested stakeholders

As the R-PP progresses and the readiness process proceeds, the composition of the committee may be further discussed to ensure both representation and functionality of this body. The National REDD+ Council will meet twice a year while the Technical Review Committee would meet quarterly. The frequency of meetings will be reviewed during the readiness preparation process.

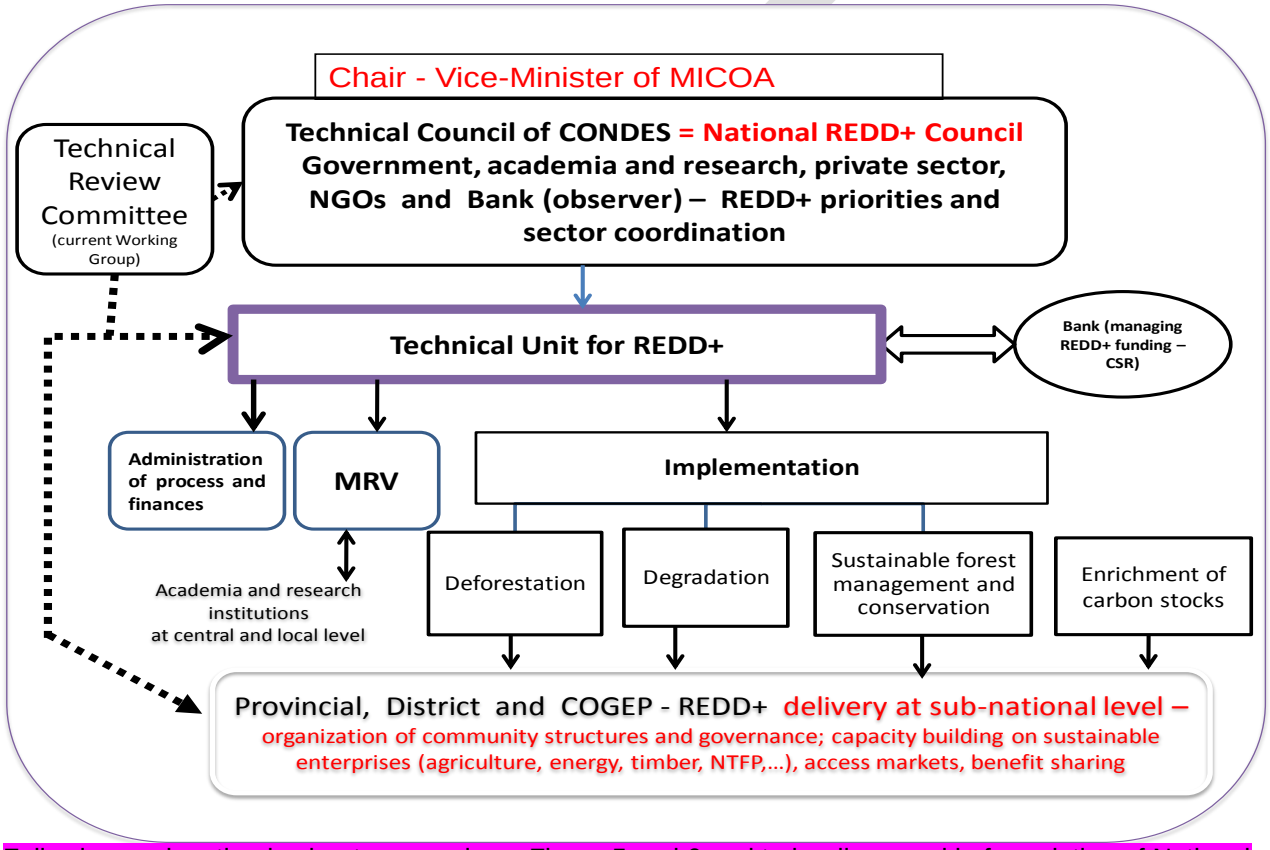
The government has endorsed the current structure (REDD+ Working Group) through representation of State organs as well as using existing structures for reporting and feedback. Consultations with the legal department of MICOA are under way to formalize this group to become the Technical Review Committee. Such formalization shall enter into force once the UT-REDD+ has been established and all governing procedures have been put in place. The Technical Review Committee would contribute to:

- Assessment of technical soundness of REDD+ interventions and analysis of the impact of investments towards emission reduction goals.
- Review the alignment of REDD+ initiated through government or proposals presented by private sector, national and international NGOs and other entities with the national REDD+ strategy.
- Review processes of community engagement for allocation of including information made available, time provided for internal consultations within communities.
- Assessment of social and environmental safeguards. Support the analysis of proposals on interventions at community level that actor such as NGOs may want to facilitate. Analysis may assess the social impacts, economic viability as well as effectiveness in controlling leakage.

- Regularly meet with the UT-REDD+ to discuss work plans and establish areas where technical input from this committee will be required

The draft National REDD+ Strategy indicates that the institutional framework for implementation of REDD+ (Figure 5). This may be further analyzed and improved during the readiness phase. The institutional arrangement will be based on the existing mandates of Government institutions, building capacities of the officers in charge. Technical cooperation and training can further strengthen national ownership. How to ensure this principle is subject of the consultation during the readiness phase.

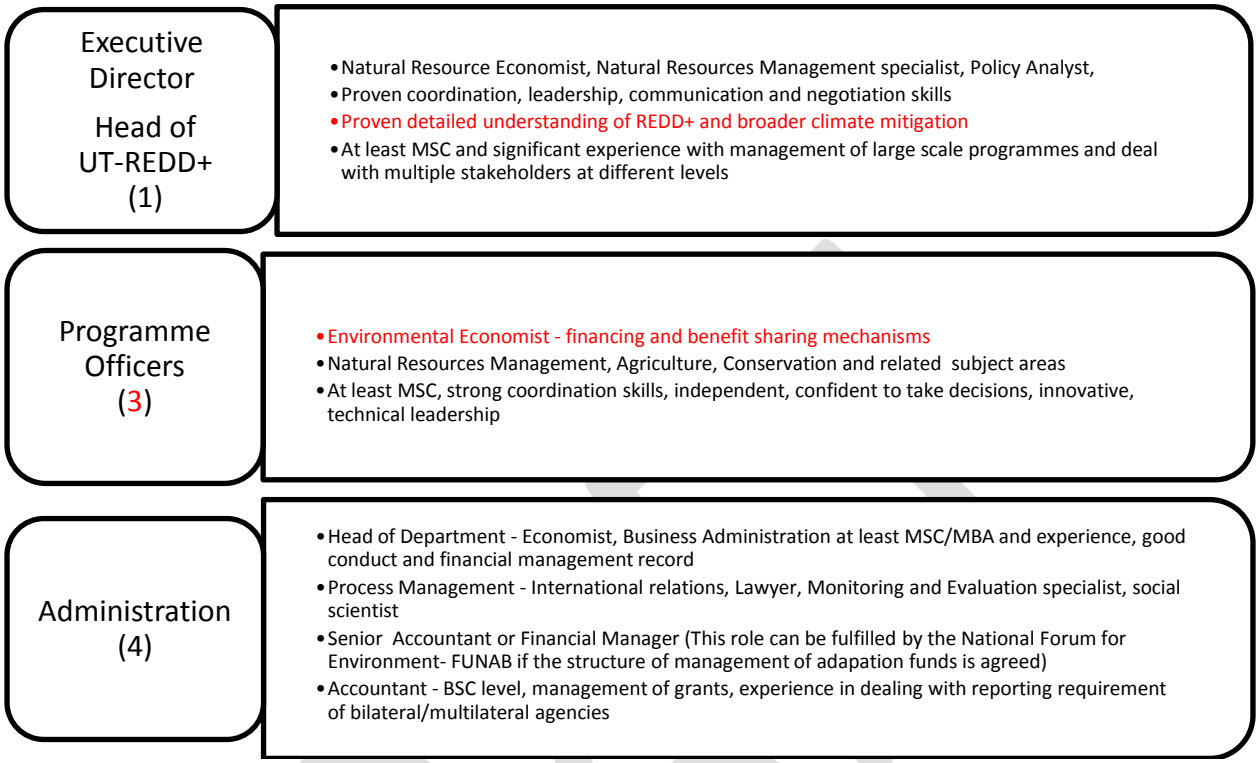
Figure 5 The REDD+ Institutional Framework (implementation)as in a draft national strategy

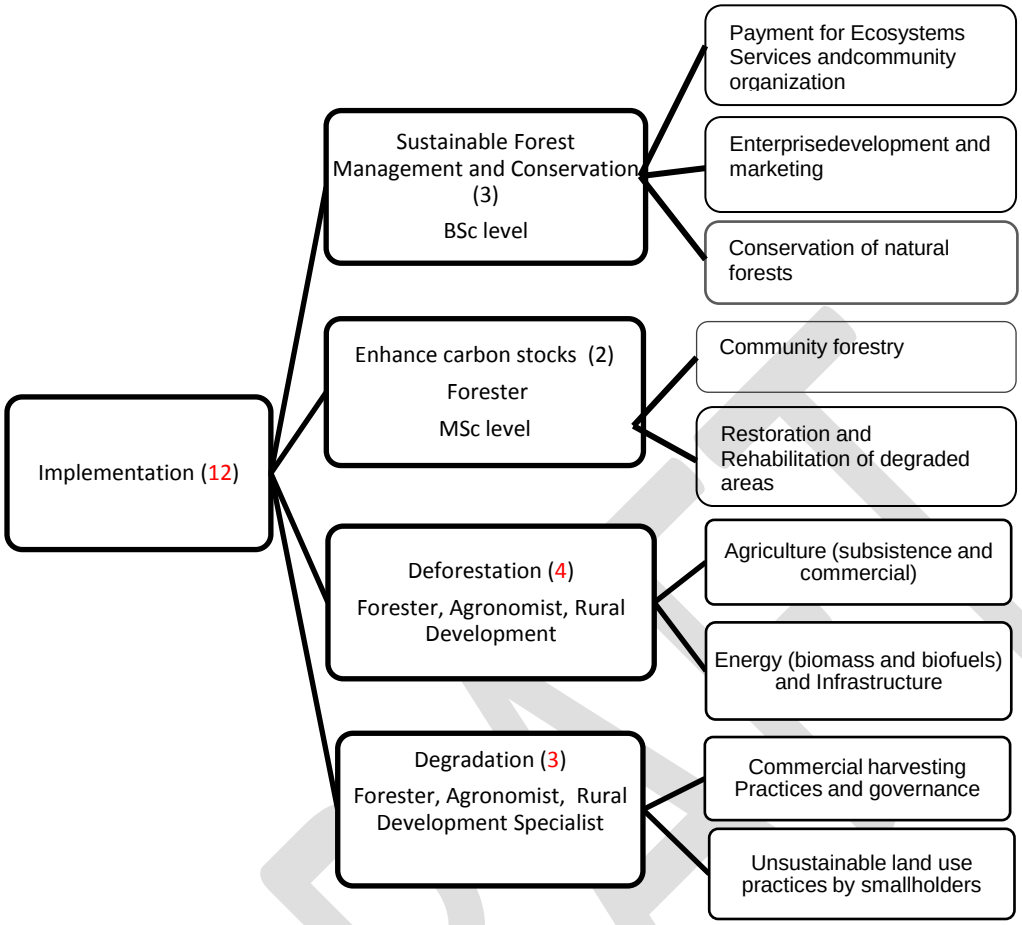


Following explanation is about proposals on Figure 5 and 6 and to be discussed in formulation of National REDD+ Strategy during the readiness phase..

At the implementation stage, the UT-REDD+ shall encompass an Executive Director working closely with i) three Program Coordinators including two environmental economists to assist the design and implementation of incentive mechanisms at national and sub-national level, operationalize financing mechanisms agreed up on in the global negotiations; ii) Process and Financial Administration as well as monitoring and evaluation (with a minimum of four people), implementation officers responsible for each of the key areas of REDD+ and MRV. About 20 technical staff and 4-5 support staff are envisaged to strengthen the coordination process between MICOA-MINAG and other sectors and take technical leadership.

Figure 6 UT-REDD+ positions and brief profile





The UT-REDD+ implementation group shall comprise of:

- Four officers dealing with deforestation could be respectively responsible for overseeing the role of agriculture (small and large scale) and the impact of biomass energy and infrastructure development.
- Three officers dealing with degradation should be dedicated respectively to the role of forest harvesting (concessions and annual license operators) and, unsustainable production practices such as fire used in agriculture and hunting.
- Four officers dealing with sustainable management of forests (SFM) and conservation will focus on improving efficiency, effectiveness and generation of co-benefits (biodiversity, poverty reduction and contribute to sustainable development). REDD+ will give impetus to community based natural resources management (CBNRM) by strengthening national level coordination and technical capacity to provide the necessary leadership. Participation of communities in SFM shall build on interventions of the CBNRM unit at DNTF and CBNRM forum (national and provincial).
- Two officers dealing with enrichment of carbon stocks to lead the definition of eligible activities and associated criteria and indicators. For example, during consultation on the scope of REDD+, the general view was that only plantations for rehabilitation of degraded areas (including mangroves), for conservation purposes (restrain erosion and coastal protection) and, biomass

energy and agro-forestry systems could be contemplated. This activity will capitalize on the concept of 'one leader, one community forest' which fosters community participation in plantations.

MRV would be an operative sub-unit (Figure 5) that should establish robust information management systems to ensure objective data collection according to internationally accepted/verifiable methodologies to ensure national accounting system of REDD+ carbon credit. This will determine the performance based payments that may be received as result of REDD+ interventions. Pilot projects being established in the country offer a learning ground on sub-national assessment of additionality, permanence and possible leakages. The Department of Natural Resource Inventory (DNRI) of DNTF is responsible for national forest and natural resource assessment and monitoring systems including REDD+ MRV and national RLs/RELs in close coordination with UT-REDD members and Provincial and District level forest services. JICA is already supporting capacity development of national monitoring system on REDD+ by providing equipment and training DNTF staff at national and provincial levels. An officer will be nominated from DNRI who dedicate to the UT-REDD+ to facilitating the definition of criteria for selection of implementation and coordinate initiatives of being undertaken by different institutions on MRV and RLs and to share the information on development of cost-effective and participatory methodologies for measuring, monitoring and monitoring carbon stocks and changes.

Delivery of REDD+ at sub-national level

While the UT-REDD+ play the coordination role including links with international processes, there is need to establish local operational units. These should be responsible for identifying interventions; facilitating links with implementers such as NGO, academia, research institutions and others; assess leakages and permanence in REDD+ interventions; monitor and report on implementation including benefit sharing and progress on safeguards.

Three options for establishing sub-national offices are considered: (i) in the provinces identified as critical in terms of deforestation and degradation - Gaza, Manica, Sofala, Tete, Zambézia, Nampula and Niassa; (ii) establish a unit in each of the ten provinces; (iii) have regional offices in the North (based in Nampula and also responsible for Niassa and Cabo Delgado), Centre (based in Zambezia and manage also Manica, Sofala and Tete) and South (based in Gaza and in charge of Inhambane and Maputo). These options have to be analyzed in terms of transaction costs of their establishment and effectiveness in articulating with provinces and interventions at community level.

Sub-national multi-sector coordination institutions

More emphasis would also have to be given to the sub-national level, as the institutional set-up is still subject of discussion during the ongoing consultation. However, similarly to the national level, there is need for cross-sector and multiple stakeholder engagement and ownership of the process. The government's decentralization process has facilitated creation of decision bodies at provincial and district levels that can be capitalized on. However, the REDD+ readiness process needs to strengthen the role of the following critical players:

- Government –
    - Provincial Directorates for the Coordination of Environmental Affairs (DPCA),
    - Agriculture (DPA) working on lands, crop production, livestock, forestry, wildlife outside protected areas, extension services,
    - Energy (DPEnergia),

- Planning, Development and Finance (DPPF),
- Mineral Resources (DPRM).

Similarly to the coordination between MICOA and MINAG at national level, DPCA and DPA should play a leading and catalytic role in the working group and cross-sector coordination at provincial level. The working groups need to be institutionalized within the government structures to ensure long term commitment and delivery of REDD+.

- Academia –
  - Public and private institutions of high level education on agriculture, forestry (including those with expertise and training on mapping and assessment of resources), law and other relevant subjects.
  - Diploma level schools are also vital as they create capacity to support land users in accessing information on sustainable production technologies as well as markets. These will be the front runners in facilitating REDD+ implementation.
- National and International NGOs
  - working on agriculture, agribusiness and rural development,
  - tenure and rights advocacy as well as facilitation of process of land resources registration, conservation, and participatory natural resources management.

There are also provincial and regional (Centre, North and South) NGO forums or coordination platforms – e.g. on CBNRM, Amigos da Floresta, Forest Governance Learning Group, and NGOs also participate in the Forest Forum led by DNTF. These can add value in bringing community voices to the REDD+ process, as well as sharing lessons.

- Representative of local communities through selection of leaders of community based natural resources management (CBNRM) initiatives. There are several CBNRM committees/councils in the country created by the Policy and Law for Development of the Forestry and Wildlife Sector. ORAM is a local NGO that work extensively with communities throughout the country advocating for their rights and helping to establish local decision-making and producer groups (associations). Other NGOs, such as Fórum Terra and the Community Land Initiative (iTC) have an extensive work at local level and they should be part of local level institutions as well as facilitating involvement of community leaders. The concept of indigenous people is not applicable to Mozambique and it is considered pejorative. Rather there are communities facing resources tenure insecurity, principally in the rural and peri-urban areas. Rural and urban populations are still dependent on land resources for livelihoods; thus their concerns and knowledge must be taken into consideration during the REDD+ readiness process. Therefore, this is the context that should define a broad representation and ensure that local voices are heard.
- Private sector – CTA, the Confederation of Private Sector Associations has representation at national and provincial levels. This institution involves businesses across the spectrum of the economy, including mega-investments, large scale agriculture investments and timber concessionaires. Discussions have started at the national level to define engagement opportunities and identify provincial hubs to participate in the REDD+ process. There are also associations of concessionaires and timber operators or service providers, such as transport companies, that can contribute to the development of REDD+ strategy.
- Small scale forest enterprises including charcoal producers, woodcarvers, pole harvesters and other users need also to be involved.

The process of identification and involvement of stakeholders started in 2010 to build overall understanding of the context, challenges, possible interventions and scenarios that culminated with the national REDD+ action plan and the design of this readiness proposal. Consultations continued up to November 2011 to further disseminate REDD+ concepts and initiate discussions of scenarios such as on reference levels and elements of design of sub-national level delivery mechanisms and other aspects mapped in the draft REDD+ strategy and included in this RPP.

Table 2summarizes key activities that will be undertaken to further the strengthening of the REDD+ institutional arrangements for the readiness preparation and for implementation post 2014.

Table 2Main interventions and schedule for Institutional arrangements -Component 1a

Task/Action	Responsibility	2012				2013				2014			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Formal statement of Technical CONDES as the National REDD+ Council by the Council of Ministers Information on REDD+ process to date	MICOA and MINAG												
Target awareness raising to key government sector using special REDD+ related agenda item in the Consultative Councils of the Ministries (MINAG, MITUR MEnergia, MPD, MAE and others)	Technical Review Committee/Working Group												
Design of TOR for all positions of the REDD+ Technical Unit, under the leadership of the Coordinator and Technical Assistant (recruitment underway)	MICOA and MINAG												
Design of TOR for all positions of the REDD+ Technical Unit	MICOA and MINAG REDD+ focal points – Deputy National Director for environmental Management and Head of Forestry Department												
Establishment of coordination mechanisms to evaluate and address social and environmental impacts resulting from REDD+	UT-REDD+												
Monitoring, documentation and sharing lessons from pilot projects	UT-REDD+												

Table 3: Summary of National Readiness Management Arrangements Activities and Budget						
Main Activity	**Sub-Activity**	**Estimated Cost (in thousands US$)**				
		2009-2011	**2012**	**2013**	**2014**	**Total**
REDD+ Technical Unit						
	5 contracted TA (Coordinator, 2 Strategy, 1 Pilots, 1 Administration)		192.0	192.0	192.0	**576.0**
	Travel costs		37.5	37.5	37.5	**112.5**
	Training for UT-REDD+		15.0	15.0	15.0	**35.0**
	Workshops/meetings with REDD Technical Review Committee		30.0	30.0	30.0	**90.0**
Operations	Equipment (car, computers)		45.0			**45.0**
	Unit operational costs		20.0	20.0	20.0	**60.0**
	Office Space		18.0	18.0	18.0	**54.0**
	Financial Management and Audit		54.0	54.4	54.0	**162.0**
	Meetings and capacity building at provincial level		100.0	130.0	100.0	**330.0**
Support institutions towards development of the R-PP	Support to the government and REDD+ Working Group	297.0				**297**
	Total	**297.0**	**511.5**	**496.5**	**466.5**	**1,771.5**
Domestic Government			18.0	18.0	18.0	**54.0**
FCPF						**1420.5**
The Government of Norway (Embassy in Maputo)		297.0				**297.0**

1b. Information Sharing and Early Dialogue with Key Stakeholder Groups

[note: former component "1b Consultation and Participation" has been divided into two new subcomponents: "1b" as shown here (for early stages, pre-consultation); and "1c Consultation and Participation Process" (which contains most of the former 1b material)]

Standard 1b the R-PP text needs to meet for this component:
Information Sharing andEarly Dialogue with Key Stakeholder Groups

The R-PP presents evidence of the government having undertaken an exercise to identify key stakeholders for REDD-plus, and commenced a credible national-scale information sharing and awareness raising campaign for key relevant stakeholders. The campaign's major objective is to establish an early dialogue on the REDD-plus concept and R-PP development process that sets the stage for the later consultation process during the implementation of the R-PP work plan. This effort needs to reach out, to the extent feasible at this stage, to networks and representatives of forest-dependent indigenous peoples and other forest dwellers and forest dependent communities, both at national and local level. The R-PP contains evidence that a reasonably broad range of key stakeholders has been identified, voices of vulnerable groups are beginning to be heard, and that a reasonable amount of time and effort has been invested to raise general awareness of the basic concepts and process of REDD-plus including the SESA.

Previous experience in consultation

Coordination for development of strategies and action plans for the UN Conventions on Biodiversity (NBSAP in 2003), Combat Desertification (draft in 2003) and Framework Convention for Climate Change (NAPA in 2007) has steered cross sector coordination and participatory process at different levels. The National Institute of Disaster Management (INGC) also played a leading role in undertaking studies on disaster management and adaptation to climate change. This coordination relied on national and international expertise; but also conducted various fora where stakeholders provided inputs into the process.

The development of national policies on lands and forestry constitute the main examples of a participatory process from grassroots to the national level with involvement of government, academia and NGOs – this led to what was known as 'Land Campaign'. The main thrust of this campaign was that there are no 'vacant spaces', frontiers of community territories spanned beyond the immediate homestead or cultivated land. This resulted in recognition of customary land rights and implementation of land delimitations for communities and subsequent registration. This also opened opportunity for communities to access forest and wildlife resources and realization of CBNRM. Furthermore, consultations extend to land resources allocation to private sector (for investments) and government (e.g. for establishment of new protected areas or extending boundaries), strategic environmental assessment and other initiatives.

The CBNRM forum, with financial support of WWF, comprising of government and non-government organizations, also led the development of the CBNRM strategy (2009) through participation of regional fora and stakeholders from government, private sector and NGOs.

The World Bank conducted a Global Study, including Mozambique as one of the country studies on Economics of Adaptation to Climate Change. The research process involved participation of national, provincial and district level experts and local government in scenario development and analysis of social impacts.

In addition, during formulation of the Growing Forest Partnership programme for Mozambique, the consultations at regional (North, Centre and South) and national levels included specific themes on climate change mitigation. This was delivered to a range of stakeholders from government, non-government agencies, engaged in rural development, participatory forest management and rights advocacy, academic institutions and private sector. This engagement was undertaken in 2009.

Analysis of environmental impact of investments conducted by MICOA through the National Directorate of Environmental Impact Assessment requires public consultation of all interested and affected parties. Implementation of environmental management plan include periodical reporting on environmental indicators and respond to social and environmental concerns, generally put forward by NGOs.

The main issue, however, is the type of information provided to stakeholders, presentation of that information in a discernible manner for the target group, time allocated for internal discussions and at times manipulation and corruption by businesses (for example, using simple gifts to local leaders and promises of further gains Norfolk et al (2003) on consultations 'Só para o Ingles ver' – The Policy and Practice of Tenure Reform in Mozambique) of the process by raising unfulfilled expectations on benefits of investments for local communities.

The PROFOR funded REDD+ study on miombo woodlands executed by IIED offered a good stock taking on awareness regarding climate change mitigation and role of forests. The national workshop undertaken in April 2009, in Maputo, provided the initial platform for comprehensive discussion of the policy, legal and institutions framework as well as the extent to which they are conducive to implementing REDD+ in the country. The study also investigated the extent to which REDD+ could build ongoing CBNRM initiatives (Nhantumbo and Izidine, 2009).

Stakeholders' identification

The above mentioned study on miombo woodlands contributed to identification of stakeholders with interest on REDD+ starting with the interviews with individual government officials from October 2008 and civil society organizations including facilitators of Nhambita project (Plan Vivo initiative) and culminating with the national workshop. Similarly, development of the Growing Forest Partnership of the Global Catalytic Group (World Bank, FAO, IUCN and technical support of IIED) initiative in Mozambique also was based on wide consultation and cross sector coordination bringing together government, NGOs, private sector, academia and local level actors in designing the process and steering bodies.

The categories of stakeholders included:

- *primary actors* (MICOA and MINAG) ensuring sustainable development of all economic sectors through implementation of environmental standards; sustainable management of land and forests through design and implementation of management plans guiding commercial harvesting and community based natural resources management promoting good land use practices. Communities, private sector and other users constitute key interest groups whose practices determine current and future rate of deforestation and forest degradation. Development partners are put at this level as the preparatory activities, and possibly the performance based payments

are funded by these agencies as part of the commitments of developed countries to contribute to curbing emissions;

- *secondary actors* representing a set of government agencies that manage processes and economic activities that impact on forests such as mining, infrastructure or biofuels requiring stringent implementation of environmental impact assessment and processes that limit the infringement on community rights. REDD+ implementation may bring additional impetus to strengthening law enforcement. Possibly transaction costs of doing so may increase, but gains could result from reduced emissions and associated change in climate;
- *service providers* include training and research institutions, extension services from government and non-government organizations and private sector.

Other key stakeholders include the multi-sector coordination bodies described in the previous section as well as community based organizations overseeing land rights and decision-making on use of forest resources. Given that land tenure provides security of rights to communities and given their engagement in CBNRM, REDD+ offers an opportunity to finally recognize not only direct gains from livelihoods, but also value environmental services such as conservation of biodiversity and reduction of emissions.

Consultation principles

REDD+ is a new concept for many stakeholders including policy makers at different levels, research institutions, academia, NGOs, up to the local level. Despite the cognizance that consultation on REDD+ ought to particularly ensure that concerns of local communities are voiced and their rights as well as livelihoods have to be protected, sensitizing various actors that need to facilitate the process was paramount. Therefore, the first phase of consultations was undertaken with mostly technical actors at national, provincial, district and local level.

As defined in the guidelines (FCPF & UN-REDD) and compilation of international best practices on consultation (Macqueen, 2009), the principles that directed consultation included:

- *Transparency*, for example, all consultations included presentation of background information on climate change mitigation, the south-south collaboration and information on previous activities as well as way forward;
- *Inclusivity*, during the process special efforts were made to engage with the private sector beyond timber operators. A visit was paid to CTA leadership to organize a meeting with the members with a date convenient for them in their space/venue. Despite this effort, CTA members did not show interest in attending the meeting. This illustrates the fact that consultations may be costly as they have to involve persuasion of the leadership;
- *Information* was provided taking into account the diverse capacity of stakeholders; free, prior and informed consent and conflict management mechanisms. Stakeholders had information to aid decision making on options and consider potential impacts on land resources tenure, carbon rights and livelihoods.
- *Representation* of stakeholders was given particular attention and engagement with provincial DPCA facilitated the communication prior to consultations; further consultations at community level will include local authorities including traditional authorities where they exist, CBNRM committees, enterprise association and ensure gender balance.
- *Timeliness* refers to providing sufficient information with sufficient time to inform the opinion. The activities undertaken thus far were the first comprehensive information dissemination and

sensitization on REDD+. Therefore, it was not possible to provide information for stakeholder groups to form an opinion beforehand. Decision making on interventions in pilot areas are now likely to be objectively discussed in terms of impacts and potential benefits to households, communities and climate mitigation in general.

- *Flexibility* in discussion of methods of engagement with stakeholder groups in advance was not practical due to the novelty of issues and high transaction costs. However, the methodology of the consultations were discussed beforehand and suggestions from participants were also incorporated whenever expressed and in line with the purpose of the meeting;
- *Accountability* was addressed by choosing Nampula to present the draft action plan based on previous contributions of provincial and regional consultations. Nampula hosted data collection including visit to districts with high pressure on forests, provincial and finally regional level consultation. For example, Nampula is the only province where stakeholders indicated that *reducing deforestation and degradation was not possible due to cultural norms that allow premature pregnancy and also high birth rate*. According to stakeholders new houses have to be built as well as opening new farms. This view was not simply dismissed, but all views from other consultations contradicted this position and discussion on alternatives to the problem. Besides this, at the end of each consultation, a summary of key issues raised was made and possible differences in opinions from elsewhere highlighted.
- *Reporting* on consultation using language accessible to stakeholders. This will be taken into account as the consultation proceeds at pilot area level. The practice in the CBNRM initiatives, for example, has been to document experiences in Portuguese. Accessing information depend on translation services offered by literate particularly teachers as tend to be respected and trusted in their communities. This is not ideal, but writing in local language also may not mean that people will be able to read. Innovative ways such as voice recording of decisions, use of theatre, posters etc. can also be effective means of recording key decisions and commitments.
- *Continuity* – the engagement process shall proceed to formulation of the REDD+ readiness including strategy, implementation, monitoring and evaluation phases.

A roadmap towards a National REDD Strategy

Arising from November 2009 National REDD Workshop a 'Roadmap towards a national REDD strategy' was developed by the National REDD Working Group. At the World Forestry Congress in 2009 representatives of MINAG, UEM, FAS, IIED, CTV, ORAM and IPEME (Institute for Small and Medium Enterprises of the Ministry of Industry and Commerce) met to discuss this initial roadmap and agreed that the chapters in the roadmap should be prepared as options papers, arranged in a logical order, and covering the main areas in which decisions were necessary in order to develop a national REDD strategy. It was agreed that MICOA and MINAG, as lead agencies should organize a series of National REDD Working Group meetings covering each of these topics in turn. The idea was that expert groups drawn from among or beyond the partners would prepare a background paper on each theme with options for a government decision. In this way the newly emerging partnerships expertise could be channeled into a multi-stakeholder forum where decision-making could occur.

To facilitate this process, the embassy of Norway agreed to provide funding to support this early dialogue. IIED was contracted to facilitate this process and subsequently visited all institutional partners in Mozambique – MICOA, MINAG, UEM, CTV and INDUFOR to discuss the practicalities of delivering the necessary inputs for this process. Draft ToRs were developed with all non-government partners and initial discussions were held with MICOA / MINAG, who agreed to lead the organization of the national REDD

Working Group meetings. At the COP 15 in Copenhagen FAS, together with INDUFOR, prepared a side event or 'cocktail' at which members of the Mozambican delegation together with FAS would present the South-South REDD collaboration and the roadmap towards a national REDD strategy.

In February 2010, the National REDD Working Group met to review the work plan for 2010 for the development of the R-PP. The plan was to start with the production of background papers on inventory and reference level for deforestation and degradation, monitoring as well as the scale and scope of REDD in the country. The first two were under the responsibility of Eduardo Mondlane University, Faculty of Agronomy and Forestry while the content of the last was to be produced by IIED. Materials were prepared for the second technical meeting to be held on 1 March 2010. This was to coincide with the visit of the Norwegian Minister of Environment to Maputo. However, the government, through MICOA, rescheduled this plan to a more limited presentation of the concept and process of South-South REDD during the meeting. In this meeting, the Minister of Coordination of Environmental Affairs urged the REDD Working Group to produce the National REDD Action Plan as soon as possible, preferably by June 2010. This document was deemed necessary to inform the high level policy makers in the country about REDD+ concepts, options and implications for the country. This affected the roadmap designed to develop the R-PP.

The National REDD Working Group approach to these parallel demands was to work on the process towards and drafting of the National REDD Action Plan while simultaneously conducting that process in a manner that will contribute to the content of the R-PP: consult and organize, drivers of deforestation and strategic options, reference levels and MRV. A draft national REDD Action Plan has been developed before holding up the process to align its finalization with the R-PP process and to await further inputs for its finalization.

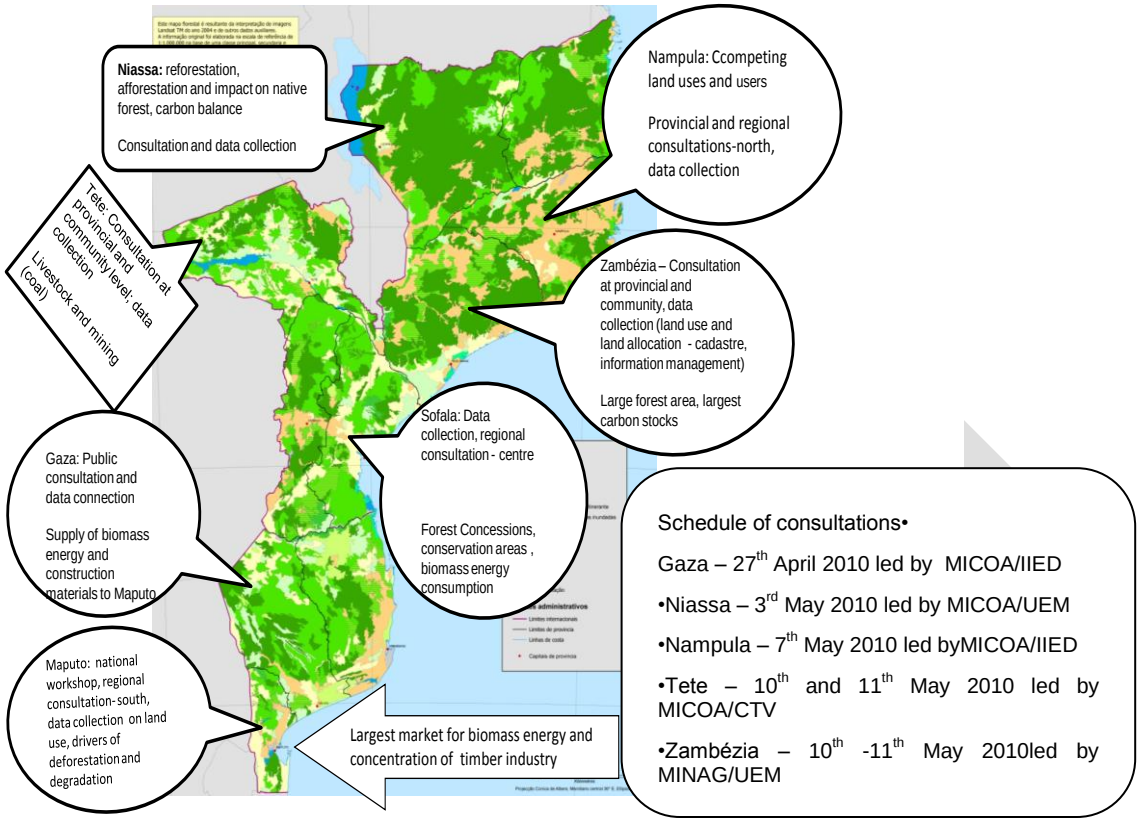
Stakeholder's engagement consisted of three activities: a) consultations undertaken in two phases between April and July 2010 and July to November 2011; b) research on drivers of deforestation and degradation based on interviews with decision-makers and forest land users – May to August 2010; c) training on REDD+ - July and October 2011. Annexes 1b1 presents the list of background documents produced to inform consultations, 1b2 the locations in which consultations took place and participants, 1b2 institutional and gender based disaggregation of participants on the training activities, 1b3 indication of roles played by different members of the working group in the consultations and studies on drivers.

Provincial level consultations and field studies

Five provinces were identified in the roadmap based on different drivers of deforestation and degradation (see map):

- Niassa - large scale industrial plantations are being established and some companies are seeking certification despite conflicts with local communities that lost land;
- Nampula - many competing land uses (large and small scale commercial and subsistence agriculture, biofuels, extraction of high value timber, biomass energy, forest plantations, mining) and users.
- Tete - coal mining, electricity distribution infrastructure, livestock rearing beyond carrying capacity resulting in soil erosion.
- Zambézia - intensive harvesting of forest resources in the biggest carbon reservoir in the country; law enforcement and governance challenges including illegal logging.
- Gaza - pressure on forests due to harvesting construction timber and biomass energy to supply Maputo city, besides agriculture and use of fire

Figure 7 Location of consultations and data collection processes



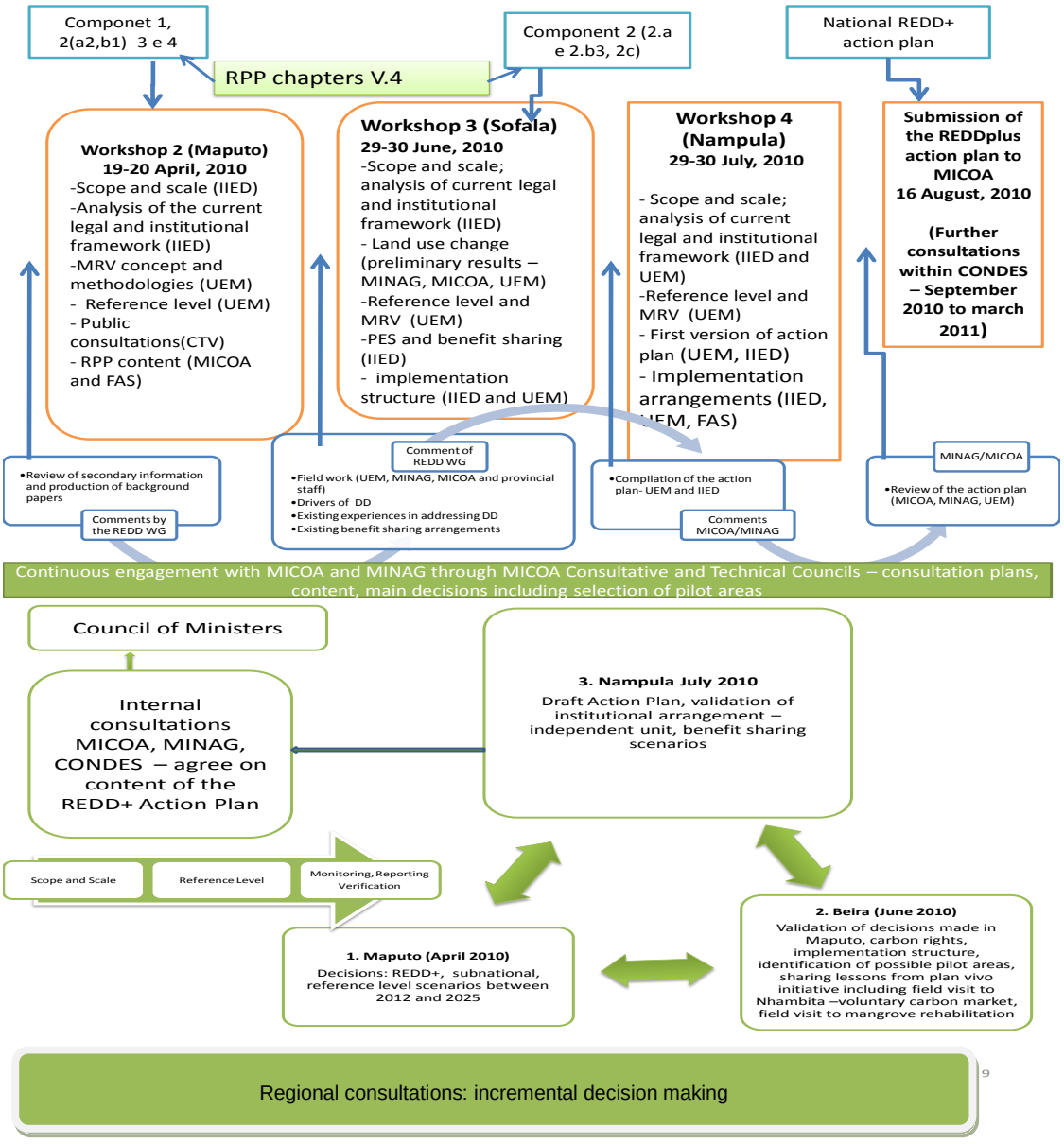
Provincial consultations included invitations to 2-3 district officers in agriculture, forestry or planning (drawn from the District Services for Economic Activities), private sector representatives, NGOs, academia as well as provincial government agencies across sectors previously mentioned. Some administrators attended the consultation as well as municipal authorities. In Nampula all districts were represented. Community consultations were carried out in Tete and Zambézia provinces and data collection exercise focused on understanding the household land uses, practices to gauge potential impact from implementation of REDD+. The regional consultations brought together three provinces each from North and South, and four from the Centre.

In addition to the consultations, three teams (one per region), integrating four specialties (forestry, agronomy, economics and GIS) went to the field (Niassa, Nampula, Tete, Sofala, Gaza and Maputo) to collect information on land cover, land use and threats to forests as well as assessing the opportunity cost for REDD implementation. Staff from MICOA, MINAG and UEM, under the leadership of the latter, participated in these field missions in order to help build their own understanding of, and capacity to deal with REDD. The fieldwork was conducted in an average of 5 days per province. These teams attended the provincial consultations, which gave them an overview of the issues and helped defining districts and communities for further discussions. Methodology for data collection was jointly discussed with all teams. Provincial based technical staff from DPA and DPCA integrated the teams.

Regional Consultations

Figure 8 highlights the plan of the consultation and the themes discussed. The first regional workshop was held on 19-20 April 2010 in Maputo to discuss key issues such as options for RED, REDD or REDD+, reference levels and Measurement, Reporting and Verification (MRV) as well as the consultations in the rest of the country.

Figure 8 Regional (South-Maputo, centre-Beira in Sofala and North-Nampula) consultations



At a third regional workshop in Beira (Sofala Province) from 29 – 30 June, the results of these consultations were presented and the go-ahead was given to a drafting team drawn from the National REDD Working Group to prepare an initial version of the REDD Action Plan. The first draft of this plan was presented at regional meeting in Nampula in July and subsequently various interactions were held with MICOA, MINAG, CONDES and followed-up with Ministry of Planning, State Administration, Ministry

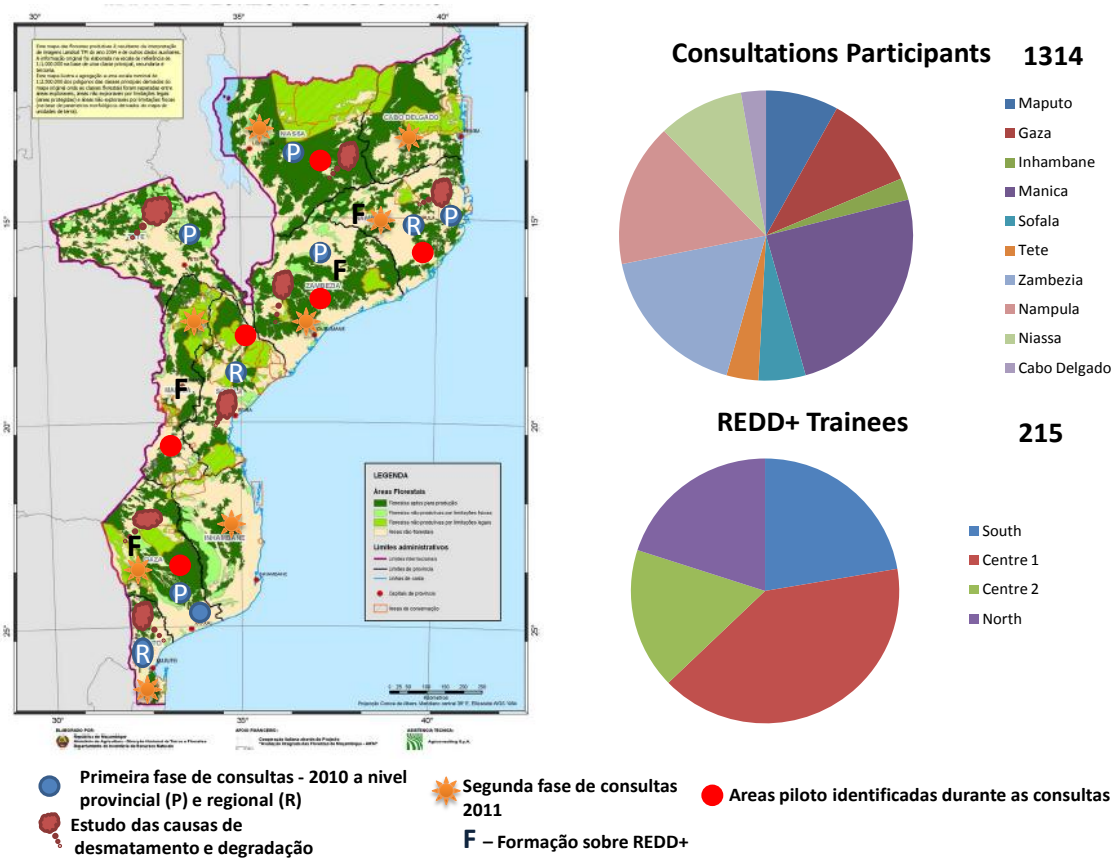
of Finance and others provided inputs. Comments were always integrated and the following meeting generally reflected these inputs. The approach used was incremental validation of decisions or issues raised. However, the workshops had a common framework which was presentation of basic concepts; working groups for identification of main causes of deforestation and degradation, actors and on-going or past actions to address them and, identification of potential pilot areas. Discussions were also conducted regarding lessons on current benefit sharing mechanisms between the state and local communities.

Subsequent to the consultation undertaken in 2010, MICOA, MINAG and CTV have been extending the coverage to local communities with priority to pilot areas and provinces of Manica, Inhambane and Cabo Delgado. Representatives from these provinces participated in regional meetings but were not contemplated in the provincial consultations, which gave opportunity for representatives of all districts to take part. Respect for local communities customs, rights and other aspects are becoming more prominent in the discussions. The team integrated people who work with communities to facilitate communication and consultation through use of appropriate tools and language.

Furthermore, UEM has been conducting awareness raising and training to field level staff (including government and NGOs) in the different provinces in order to create a critical mass with knowledge to move the process forward, either through direct support to land users to change practices or through improvement of law enforcement and governance to reduce illegal activities that contribute to deforestation and degradation. FAS also conducted training in Manica province focus on Bolsa Floresta and Juma experience on planning, approach and implementation as well as fund raising. The second phase consultation and training were concluded in October 2011. In total 24 consultations were undertaken and 4 training workshops. **Figure 9** highlights the activities and locations as well as the number of participants from the different provinces and regions.

Stakeholders included representatives of government (national, provincial, district and local authorities), NGOs, academia, private sector (timber concessionaires and simple license operators, plantations and agriculture), community leaders, women's organizations, forest guards, religious organizations, traditional healers, farmers, agriculture associations, charcoal producers, teachers, students, development partners and others (Appendix 1b).Community consultations were undertaken directly in local languages or translated to Changana, Shona, Jawa, Lolo, Chigorongoza, Lomue and Chimanica and others.

Figure 9 Activities, location and participants



Overall the number of women who participated in the meetings was less than a quarter. This was not by design, but has to do with the structure of actors in various institutions and at the community level, norms and culture might have influenced women's participation. In fact, most of participants in the meetings at community level included the representatives of the natural resources management committees as well as those who depend on forests, i.e., harvesting timber, poles, traditional honey and charcoal. However, this suggests that during the readiness process women should be especially targeted in consultations and various studies that will take place.

Results and Issues from consultation

Participants of the consultations agreed that REDD+ should be adopted to address the whole spectrum of land use and land use change challenges in the country. Such would allow gradual development of capacity to measure change of emissions from deforestation and degradation of forests as result of forest and agriculture activities as well as energy demand. Participants also stressed the need to align REDD+ with development plans of these sectors.

The consultation held in Maputo approved the consultation plan at provincial and regional level. All other consultations subscribed to the use of historical deforestation rate and projected land use changes to establish reference level scenarios as well as to determine the total tree biomass.

Other issues highlighted include:

- REDD+ is encompassing, hence will increase carbon stocks in the country. This can be achieved by:
    - Increasing the number of long term concessions
    - Reducing annual licenses for small scale operators and provide incentives for them to adhere to concession regime.
    - Creating more forest reserve and improve management of existing.
    - Strengthening law enforcement capacity.
    - Monitoring mining practices and enforce requirements for rehabilitation or restoration of degraded areas due to this activity.
- A reference level scenario of reducing the current (0.58%) deforestation rate even by 50 percent constitutes a challenge for Nampula due to population dynamics, cultural customs, reproduction patterns and economic activities. In other words some participants were of the opinion that REDD+ is not viable in this province. However, this was not a unanimous position. Nonetheless, the critical point worth noting is that population increase and demand for products is a challenge to REDD+ implementation. This aspect will be taken into account in determining the scenarios of reference levels.
- Specific legislation to address REDD+ is necessary as current legislation does not provide incentives for conserving forests, but rather rewards deforestation and degradation. Nevertheless, the majority of participants of consultations indicated that the major stumbling block and apparent failure of effective reduction of deforestation and degradation is due to poor policy implementation and vested interests.
- Ministry of Finance should be involved in managing or setting up structures for management of REDD+ funding at national level and consultative councils at district level should be responsible for managing resources at local level. However, accountability measures should be put in place.
- Communities own resources as the land policy recognizes customary land rights. As such these should provide carbon rights to communities. Beneficiaries of REDD+ should reflect this constitutional right.
- Communities are aware of the negative impacts of deforestation particularly due to unsustainable production of charcoal, driven by increasing demand in urban areas and limited employment opportunities in rural areas. Communities must be involved throughout the REDD+ preparation and implementation process.
- Establish community based natural resources management institutions to ensure collective action and responsibility in reducing illegal activities/practices as well as facilitate awareness raising and training of communities in techniques such as agriculture conservation, use of improved stoves and forest plantation for energy and conservation purposes.
- REDD+ pilots should not be confined to areas around protected areas, priority districts should be selected.

- The conflict between land uses such as forest harvesting and mining in conservation areas needs to be addressed. Mining activities have increased manifold in the past three to four years and impacts will soon be comparable to those of biomass energy. There is need to introduce law enforcement officers for artisan mining for example.
- Private sector should be represented in the REDD+ decision bodies. Private sector will only get involved in REDD+ implementation results in profit as such there has to be equal distribution of benefits for developers, communities and government.
- Developing countries also should plant trees as they are also contributing to deforestation in developing countries and to emissions in their own countries. In Mozambique, companies like MOZAL, LAM and Vale should pay an environmental services tax to offset their emissions.
- REDD+ successful implementation needs coordination and leadership of MICOA as a cross-sector dialogue facilitation and policy/plans alignment entity and, MINAG engaging more in the execution of REDD+ activities including measurement, reporting and verification.
- CONDES through technical and ministers' councils should facilitate political buy-in of REDD+ across different sectors and secure commitment to introducing measures to reduce emissions due to forest conversion as well as overall emissions from megaprojects.
- Need to create technical capacity at sub-national level for MRV and disseminate general information on REDD+ to local stakeholders.

Although during consultation discussions included aspects of relevance to SESA, this topic was not explicitly included in this phase. For future consultations, a special focus will be given to analyse the potential environmental and social impacts of REDD+, as well as defining and monitoring safeguards to minimize adverse impacts.

Frequent questions

- How can sustainability of REDD+ interventions be secured (prompted by experience of short term CBNRM and other initiatives)?
    - Addressing land use change needs to be a long term process with adequate investment and technical assistance. The REDD+ design models in terms of interventions to change practices, needs to analyse viability of interventions and adopt a business model that ensure their consolidation before support can cease. An *exit strategy* should be developed during the readiness phase, but more so in ascertaining implementation of interventions in each sub-national project.
- How will implementation of carbon enhancement be ensured when communities' plant and timber operators harvest? Will plantations be of native or exotic species? Are there species which grow fast and are more effective in capturing carbon?
    - Timber harvesting presents a critical governance question. Unless illegal activities can be curbed, REDD+ will not achieve the desired goals. Zambézia province has been selected precisely for piloting information management systems, land use mapping and monitoring of impact of timber harvesting in forest degradation. What proxies will be used to assess the latter? This question will be pursued in this detailed study.
    - All land users need to act according to the REDD+ strategy that the countries adopt, otherwise the net gains of one-sided good practices will nullify the reduction of emissions.

- Planting native species would be preferable; however the final choice of species should be informed by the conditions and objectives of planting besides enhancement of carbon stocks. For example, planting eucalyptus might be adequate in very poor soil and arid conditions; equally acacia sp do grow in water stressed conditions, but the former grows faster. These technical issued need further analysis to provide guidance on which species to plant.

- Can the Presidential initiative of 'one pupil, one tree and one leader, one forest' be part of REDD+ efforts?
  - This initiative has built awareness about the importance of tree planting. REDD+ can contributing to guiding in species selection and plantation where trees will bring added value. For example, erosion control, stabilization of dunes, planting for energy as well as for other valuable products.
- With increase in the number of cars in the country, can REDD+ effectively reduce emissions?
  - REDD+ alone will not solve the problem. Emissions resulting from fossil fuels are large and need to be dealt with at global as well as national levels.
- Will electricity and gas be provided to rural communities to replace biomass energy?
  - Efforts to improve access to hydro electricity (construction of transmission lines from Cahora Bassa to Maputo) in the country will increase number of users. This combined with access to gas can clearly have an impact on demand for biomass energy in the urban areas. Nevertheless, complete substitution of biomass energy is unlikely. Improving management of sources of wood, efficiency of processing of charcoal as well as efficiency of use, can reduce the level of demand, hence conversation.
- How is it possible to reduce deforestation and degradation while provincial authorities continue issuing annual harvesting licenses?
  - The rampant illegal activities associated with the annual harvesting licenses, has prompted the government to amend the legislation in order to discontinue this practices. The legal instrument should be developed by end of October 2011. When approved it has to be disseminated to stakeholders and need to be included in the agenda of consultation on SESA for example.
- What mechanisms will be put in place for equitable benefit sharing?
  - Lessons on implementation of the 20 percent revenue and management of the government fund for district development were collected during consultations. A draft benefit sharing mechanism discussed, however this needs further reflection and development of a mechanism that will provide incentive to land users as well as being equitable and just.
- How does the carbon market operate?
  - The World Bank and the REDD+ Working Group agreed to organize a national workshop to share information on carbon market, financing of mitigation and adaptation as well as discuss the role of private sector. This is tentatively planned for early 2012.
- Will the current planting activities be eligible for REDD+ financing (aditionality?)
  - This is a question that needs further analysis. In principle, only new activities resulting in enhanced carbon sequestration would be eligible.

- What will the strategy for rehabilitation of forests in the arid lands such as Mabalane were water is scarce for human consumption let alone for irrigation of trees.
    - Possible to plant species adapted to the local conditions of poor soils and water stress such as mopane, acacia and others.
    - Promote (assisted) natural regeneration of species adapted to the dryland conditions.

One of the aims of consultation and study of incidence of drivers of deforestation was to identify potential *pilot areas* to test implementation of REDD+. The areas identified are as follows:

a) Chicualacuala-Mabalane-Guija districts in Gaza – these areas are under significant pressure as sources of supply of timber and non-timber forest products to Maputo including biomass energy; agriculture and livestock are also sources of land degradation in Chicualacuala, in particular.

b) Moribane-Maronga-Zomba Forest Reserves complex in Manica including Tsetsera in the buffer zone of Chimanimani Transfrontier Conservation area – threat due to expansion of commercial agriculture, in particular banana plantations that have resulted in loss of significant area of Moribane forest reserves; there are various NGOs in Manica province working in securing land rights for local communities, rural development initiatives, conservation, promoting enterprise development among others. There are local institutions that can lead implementation of REDD+ initiative.

c) Buffer Zone of the Gorongoza National Park, Gorongoza mountains, Canda and Vanduzi in Sofala with the objective of rehabilitating forest ecosystem and learning from Plan Vivo initiative the operationalization of *plus* in REDD – agroforestry systems in particular and, address the imminent threat faced by human activities in the fragile ecosystem of Gorongoza mountain.

d) Mecuburi forest reserve and Naguema-Mussoril in Nampula – this was the largest forest reserve in the country and currently more than 50% has been converted due to cultivation of cotton and illegal timber harvesting continues to degrade the remaining area.

e) Chipanje Chetu in Niassa – test the extent to which REDD+ can build on CBNRM initiatives, it also demonstrates the undermining of community registered rights to land. There are various external interests from international NGOs, such as FFI as well as private sector to establish REDD+ projects in this area. This may be an opportunity for communities but it equally may exacerbate existing land conflicts with large scale plantations and loss of biodiversity due to large scale monoculture plantations.

f) Zambézia, a large area from Gilé to Derre forest reserve up to Mocuba has been selected by stakeholders to cover a variety of challenges from deforestation of protected areas, unsustainable harvesting of timber, and illegal logging among other activities. The latter is so rampant that in June an emergency meeting was held in the province and the head of provincial services sacked. Detailed recording of information management is also vital. With the support of French forest agencies, a viability analysis for establishing a REDD+ project in Gilé is also underway.

Mozambique has been privileged to have received support of the Government of Norway to conduct training of government personnel and NGOs at national and local level to understand the concepts of REDD+ and eventually to undertake further consultations.

Table 4Interventions under stakeholders participation and consultation – component 1b

Activities	Responsibility	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Compile the materials used so far for consultations and training to produce and printed briefs, posters, short documentaries for targeted audiences	Working Group(until full operation of the UT-REDD+)	Maputo												
Capacity needs assessment and opportunities to address them at national and sub-national level	Current REDD+ Working Group (until full operation of the UT-REDD+)	National												
Design REDD+ training and awareness raising materials targeted to different stakeholders at local level	Current REDD+ Working Group (until full operation of the UT-REDD+)	Maputo												

Table 5: Summary of Stakeholder Consultation and Participation Activities and Budget						
Main Activity	**Sub-Activity**	**Estimated Cost (in US$ thousands)**				
		2009-2011	**2012**	**2013**	**2014**	**Total**
Background research on REDD+	Scope and scale, policy and institutions, REL and MRV, facilitation of consultation, leading process	74.0				74.0
Information Sharing and Early Dialogue	Information workshops national level	316.0	25.0			25.0
	Consultations provincial and local level (communities and other land users)		60.0			376.0
	Training (UEM, FAS)	126.0				126.0
South-South learning	Exchange Visits	162.0				162.0
	COPs (Copenhagen, Durban, Cancun)					
Total		**698**	**85.0**			**763.0**
Government						
FCPF			**85.0**			**85.0**
Government of Norway (Embassy in Maputo)		**698.0**				**698.0**

1c. Consultation and Participation Process

Standard 1c the R-PP text needs to meet for this component:
Consultation and Participation Process

Ownership, transparency, and dissemination of the R-PP by the government and relevant stakeholders, and inclusiveness of effective and informed consultation and participation by relevant stakeholders, will be assessed by whether proposals and/ or documentation on the following are included in the R-PP (i) the consultation and participation process for R-PP development thus far (ii) the extent of ownership within government and national stakeholder community; (iii) the Consultation and Participation Plan for the R-PP implementation phase (iv) concerns expressed and recommendations of relevant stakeholders, and a process for their consideration, and/or expressions of their support for the R-PP; (v) and mechanisms for addressing grievances regarding consultation and participation in the REDD-plus process, and for conflict resolution and redress of grievances.

Moving forward with consultations

Mozambique adopted the principle 10 of the Rio Declaration stressing the importance of stakeholders' participation in addressing environmental challenges, as well as the need to provide sufficient and timely information for meaningful participation. The 1997 Environmental Law indicates that participation should go beyond consultation and encompass active involvement in subsequent implementation of policies, strategies and plans.

Consultation so far undertaken informed the production of this readiness plan. However the analysis of options to deliver REDD+, carbon rights, role of private sector, institutional arrangement, capacity, benefit sharing arrangement among others still need further discussion. There is also a need to conduct consultations on the social and environmental impacts and risks associated with different options and design the respective environmental management framework.

Further consultations require:

- development of materials for dissemination at local level;
    - use of community radio managed by the National Institute of Communications (ICS);
    - production of posters and pamphlets to transmit messages to illiterate people in particular;
    - promote use of documentaries, theatre and dance to build awareness on the effect of land use practices;
    - Radio Mozambique broadcasts in Portuguese and all major local languages. The use of this media can broaden significantly the dissemination of information on REDD+. Messages can be tailed to different audiences – local leaders, teachers, farmers, charcoal producers, etc.
- development of materials targeted to key stakeholders such as private sector and local government (particularly district administrators and heads of administrative posts) and non-government institutions at local level. The district has been defined as the *Development Nucleus*.

However, knowledge of policy and legal instruments as well as adequate interpretation are often lacking and technical capacity for integrated planning and impact analysis is limited. Therefore, the involvement of these institutions is critical.

The process of consultation thus far focused on awareness raising and stimulated reflections on issues such as:

- Land tenure, forest and carbon rights – to whom do carbon rights belong? To the state as owner of resources; to the communities since the legislation acknowledges customary rights to land and allows registration of collective rights? Can private companies and international NGOs claim rights to selling carbon?
- To further discuss the extent of *plus* in REDD, particularly the enhancement of carbon stocks.
- The need to establish an independent unit with adequate technical capacity to implement REDD+, which can bring innovations in transparency and accountability.
- Institutional arrangements at local level – what capacities exist or need to be created, decision making arrangements, sustainability.
- Whether REDD+ can achieve the reduction of emissions goal without significant investment in alternative energy sources?
- What are the REDD+ delivery models that can effectively contribute to poverty reduction? What are the costs associated with change in land use practices? What are the transaction and implementation costs?
- Forest governance and rampant illegal harvesting activities.
- Consultation on different reference scenarios and implications on local development, mechanisms of assessing leakages, benefit generation and sharing mechanism, establishment of monitoring and reporting systems with participation of stakeholders.

The Strategic Environmental and Social Assessment (SESA) framework is a tool to pre-empt social and environmental impacts and risks associated with different options and design the respective environmental management framework. SESA therefore provides a guide on safeguards to avoid/minimize negative impacts of REDD+ implementation. This shall be object of further consultation.

Consultations will certainly need to be a continuous process during the readiness and implementation processes. The objectives of further engagement are defined as following:

The target groups and objective of consultation include:

- Government –
    - Continue using CONDES as a platform to communicate on REDD+ to reach institutions such as MEnergia (DNENR), MITUR (DNAC/ANAC once this becomes operational), MAE (INGC and DNPDR), MPD, MOPH (DNE), MMAS, MF, MIC (IPEME); to build awareness and ownership plus commitment to addressing drivers of deforestation and degradation in the different sectors.
    - MINAG – involve more the directorates of agriculture, livestock, rural extension, agrarian economy as well as department of lands.
    - MICOA – bring on board the directorates of environmental impact assessment (DNAIA) and territorial planning (DINAPOT).
    - Targeted provincial level consultations with sectors of government that affect forests – provincial CONDES and district consultative councils

- Extension officers at provincial and national level
- Research institutions in particular INIA (forest, soil and crops)
- Secretariat for Food Security (SETSAN)
- Protected areas managers
- Parliamentarians

Objectives

- Build awareness for cross-sector mainstreaming of activities and monitoring processes that can contribute to reduction of emissions from conversion or degradation of forests.
- Agreement on definition of forests and what constitutes conversation and degradation
- Build sector and cross-sector ownership of the process and outcomes of REDD+ readiness and implementation.
- Ensure that mitigation measures of REDD+ are identified, implemented and monitored.
- Provide information that will enable provincial and local institutions understanding their role in facilitating green economic growth, through good governance.
- Identify indicators for assessing REDD+ performance
- Discuss potential and existing land use conflicts, lessons on conflict management and recommend framework for inclusive and transparent resolution and management

REDD+ successful implementation depends on level of engagement of all sectors and targeting inclusion of REDD+ agenda in the regular ministerial meetings can be an effective way to ensure mainstreaming and ownership across sectors.

- Private sector
  - CTA at national and provincial level
  - Commercial agriculture including contract farming
  - Timber associations (Forest Concessionaires and annual license holders)
  - Mining companies (coal, heavy sands, precious minerals)
  - FEMA
  - Industrial plantation companies (Green Resources, Chikweti,..)
  - Intermediaries in commercialization of biomass energy
  - Environment and rural development consultancy firms – Rural Consult, Impacto, Austral
  - Megaprojects (SASOL, MOZAL, EDM, LAM, coal mining companies)

Objectives

- Build a mutual understanding on carbon rights and legislation to enforce protection of community rights.
- Understanding of changes in resources use practices to contribute to curbing emissions.
- Partnerships with communities to address drivers of deforestation and degradation.
- Benefit sharing mechanisms and potential contribution to funding REDD+ projects in the country.
- Discuss potential and existing conflicts and identify good practices for conflict management mechanisms

Engagement of private sector equally should use the existing platforms in particular CTA and FEMA that congregates several businesses including megaprojects. However, agribusiness, timber companies, large scale plantations and charcoal producers/vendors/intermediaries will be targeted at sub-national level. Pilot provinces already highlight the areas where these detailed discussions should take place.

- Communities

- Small holders subsistence farmers
- Smallholder subsistence and commercial farmers
- Medium scale commercial farmers (cashew, coconuts, citrus, banana plantations)
- Farmers involved in agribusiness
- Biomass energy producers for commercial purposes
- CBNRM committees and other community based organizations
- Local leaders – traditional
- Enterprise associations (e.g. carpentry, bamboo,...)

Objectives:

- Understand the REDD+ design options that could contribute to curbing emissionsand evaluate the tradeoffs associated with change in practices.
- Exercise FPIC in land allocation to investments and REDD+ pilot areas: what does it mean and what are implications?
- Discuss potential and existing conflicts in land use, how REDD+ implementation help minimize or exacerbate those, and good practices in conflict management

Similarly to the private sector, communities are key players in implementation of sustainable land use and management practices. As such this consultation will focus on the pilot areas. However, training extension officers will ensure continued engagement and monitoring of interventions.

- Academia and research institutions
  - Public universities at national and provincial level (agriculture, forestry, economics, social sciences, law, education)
  - Private universities at national and provincial level (agriculture, forestry, economics, social sciences, law, education)
  - Technical Schools (agriculture and forestry extension, enterprise development)
  - Ministry of Education and culture (MINEC)and Ministry of Science and Technology (MST)

Objectives:

- Prompt reflection on adequacy of current curriculum at various levels to respond to emerging challenges and capacity needs.
- Contribute to design of targeted short and long term training to provide the necessary skills for REDD+; for example on MRV systems.

Public lectures should be given to stakeholders as the heads of these institutions in order to sensitize them about REDD+ and ensure the appropriation of the issue through internal academic and other mechanisms.

- NGOs
  - Rights advocacy and protection – ORAM, iTC,
  - Rural Development – CLUSA, CARE, World Vision, ABIODES, AgriFUTURO, OXFAM, LUPA

- Conservation and climate change – WWF, IUCN, FFI,
- Peasant associations – UNAC, Zona Verde
- Women's Forum
- CBNRM fora at national and provincial level

Objectives:

- Fostering integration of climate mitigation in rural development initiatives.
- Reflecting and sharing of lessons on agriculture technologies and alternative enterprises that can contribute to emissions' reduction and co-benefits.
- Capitalization on the existing extension network to disseminate information on REDD+ and build awareness of land users on the impact of their practices.
- Discuss existing conflicts and causes as well as key drivers, how REDD+ implementation can mitigate or exacerbate conflicts, experiences in conflict management and role played by different stakeholders, recommend tested good practices

Understanding of REDD+ concept, process, options by these organization is fundamental as the multiplier effect of their knowledge is immense. They are the main intermediary that enables many communities to access information and technologies to improve land productivity and efficient use of resources. To rationalize resources, priority shall be given in the pilot provinces. Nevertheless, most operate in various provinces, hence the potential benefit.

Communication outreach will explore the use of various means to inform different stakeholders:

- Policy/Briefing notes – for policy makers, corporate and academia;
- Public lectures - for policy makers, corporate and academia;
- Posters and large visual materials in Portuguese and local languages – for general public and local communities;
- Liaise with the National Institute for Development of Education (INDE) to produce basic materials on climate change including mitigation;
- Radio – national and provincial level (e.g. Linha Directa inviting different stakeholders) this is one of the spaces that key national issues are discussed on Saturday and most people tune including researchers, politicians, business people and the public in general;
- Use print media to reach general public;
- Local Radio station including community radio run by the Institute for Social Communication (ICS) – distribute materials disseminate and briefing notes to local radio stations transmitting in the local language - communities;
- Television programmes – broadcast in prime time can reach various stakeholders;
- Documentaries – communities and education institutions, targeted to key policy fora
- Theatre, dance and music - communities;
- Public debates – useful for gauging positions on different actors on REDD+ interventions and challenges;
- Webpage to deposit information regarding the process for wider access;
- Publish technical materials produced in the process;
- Exchange visits, participation in international events – for working group members and UT-REDD+.

While previous consultations have strived to bring together stakeholders from different sectors to the same gathering, there may be merit in disaggregating the target groups in order to collect detailed views on the R-PP and implementation plan. However, the viability of this approach needs to take into account the potential gains and costs.Table 6 presents the consultation plan.

Table 6 Further consultation schedule – component 1c

Activities –	Responsibility	Location	Target	2012				2013				2014			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Awareness raising of CONDES on REDD+ and possible integration in sector plans	MICOA and MINAG and UT-REDD+ once established	Maputo	2011-2012												
Awareness raising of other stakeholders including private sector, communities, academia, NGOs	UT-REDD+ once established	In all areas identified for REDD+ piloting													
Conduct training of extension officers and NGOs in order to massive awareness rising and dissemination of information at all levels and involving all stakeholders.	Current REDD+ Working Group (until full operation of the UT-REDD+)	Inhambane, Gaza or Tete	Second quarter of 2012												
Training and awareness raising at local level	Current REDD+ Working Group (until full operation of the UT-REDD+)	Pilot provinces as priority	From third to fourth quarter of 2012												
Consultations regarding various thematic issues for decision making on course of implementation of REDD+ readiness plan and strategy to be developed															
Rights to environmental services in particular land, forests and carbon credits	REDD+ Working group for UT-REDD+ at national level UT-REDD+ at sub-national level	Pilot areas and national consultation	Fourth quarter 2011-2012												
Assess forest sector governance: how to address illegal logging, inclusiveness and transparency of REDD+	REDD+ Working group for UT-REDD+ at national level UT-REDD+ at sub-national level	Maputo, Zambézia, Sofala, Cabo Delgado, Nampula, Gaza and national consultation	Fourth quarter 2011-2013												

projects; accountability, information disclosure				
Identify REDD+ delivery models and determine their viability (technical, financial and environmental)	REDD+ Working group for UT-REDD+ at national level UT-REDD+ at sub-national level	Pilot areas	Fourth quarter 2012	
Determine tradeoffs between different delivery models and REDD+ interventions	REDD+ Working group for UT-REDD+ at national level UT-REDD+ at sub-national level	Pilot areas and national consultation	Fourth quarter 2012	
Curriculum of agriculture and forestry in the technical schools and universities	UEM for UT-REDD+ at national level	National consultation in Manica (IAC)	Fourth quarter 2012	
Design participatory MRV systems	REDD+ Working group for UT-REDD+ at national level UT-REDD+ at sub-national level	Pilot areas, sub-national and national level	Fourth quarter 2012	
Evaluation of existing conflict management mechanisms at community and institutional level and design a REDD+ conflict management guide	REDD+ Working group for UT-REDD+ at national level	Pilot areas and sub-national consultation	Fourth quarter 2012	
Strategic Environmental and Social Assessment and Environmental Management Framework: what issues and mitigation measures	REDD+ Working group for UT-REDD+ at national level UT-REDD+ at sub-national level	National	Fourth quarter 2012	

Table 7: Summary of Consultation and Participation Activities and Budget						
Main Activity	**Sub-Activity**	**Estimated Cost (in US$ thousands)**				
		2011	**2012**	**2013**	**2014**	**Total**
Consultation and Participation Activities	National workshops and meeting		**25.0**	**25.0**	**10.0**	**60.0**
	Provincial level workshops and meetings		**35.0**	**35.0**	**20.0**	**90.0**
	Preparation of Communication Materials and materials		**50.0**	**50.0**	**50.0**	**150.0**
	National awareness raising campaign; NGO led consultations		**50.0**	**50.0**	**50.0**	**150.0**
Total			**160.0**	**160.0**	**130.0**	**450.0**
Government						
FCPF			**160.0**	**160.0**	**130.0**	**450.0**

Component 2: Prepare the REDD-plus Strategy

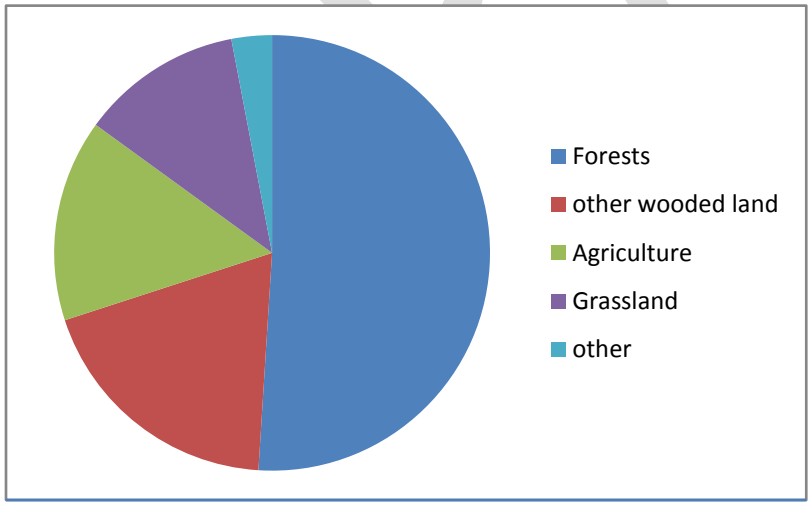
2a. Assessment of Land Use, Forest Law, Policy and Governance

Land cover, deforestation and degradation

Mozambique undertook the last national forest inventory in 2005 which was published in 2007. LANDSAT 5 data from 2004 and 2005 were used to map land cover. The nominal scale used is 1:1,000,000 for the national level and 1:250,000 for the provincial level. The validation was done through ground work in Manica and Maputo provinces, interpretation of high resolution images (ASTER), use of different satellite images (LANDSAT 5, LANDSAT 7 and mosaic of LANDSAT MTID AND MODIS).

The vegetation cover in the country is 70 per cent or 54.8 million ha with 40.1 million ha (51 per cent of the country land mass) being forests, 14.7 million ha of thicket, woodlands and forests in areas of shifting agriculture (Figure 10).

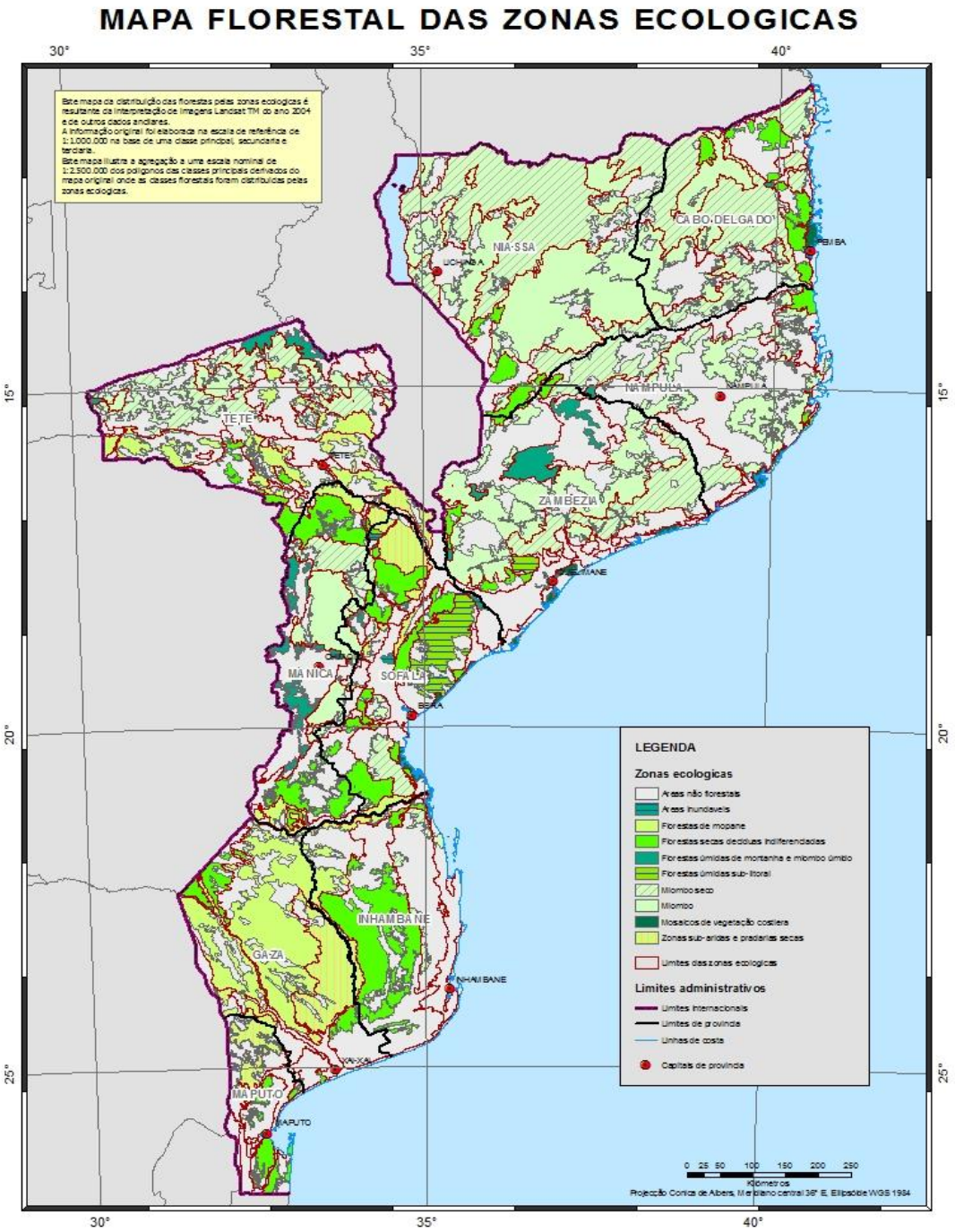
Figure 10 Land cover



Miombo covers about two-thirds of the forest land in the country with Mopane constituting the second largest area of forest cover (**Figure 11**). Mangrove vegetation extends to about 357 000 ha. There are26.9 million ha of productive forests (high-value timber) with four northern provinces providing for the largest shares with Niassa (6 million ha), Zambézia (4.1 million ha), Tete (3.3 million ha) and Cabo

Delgado (3.2 million ha).In addition, 13 million ha of forests are located in protected or conservation areas which includes wildlife protected areas covering 16 percent of protected areas

Figure 11 Forest types (miombo, dry and humid, and mopane) and productive forests (timber)



MAPA DE FLORESTAS PRODUTIVAS

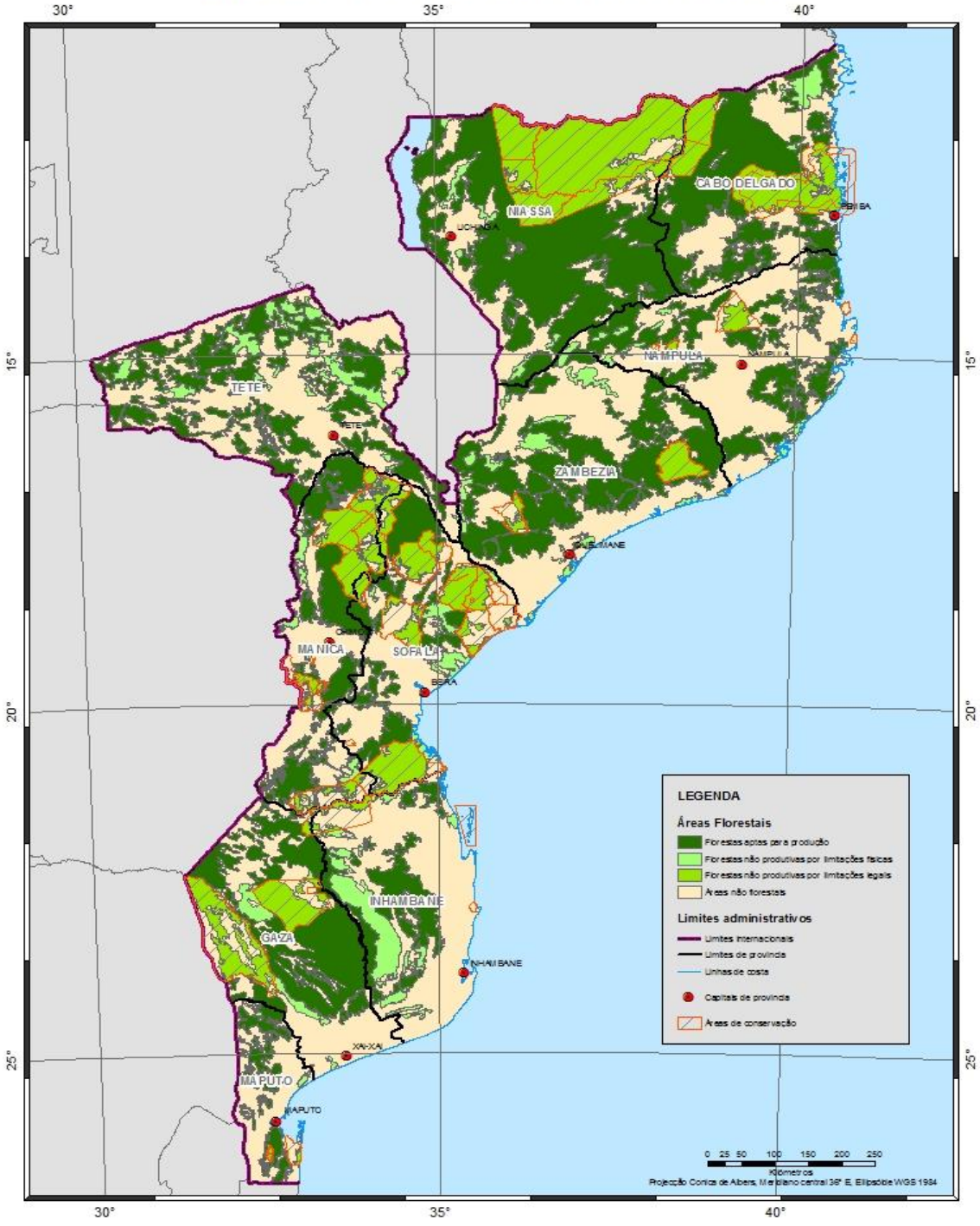


Table 8 provides the areas per province with the different types of vegetation as well as other areas including water bodies and agriculture land.

Table 8 Distribution of vegetation and other areas per province

Type of vegetation	Total (1000 ha)	Cabo Delgado	Gaza	Inhambane	Manica	Maputo	Nampula	Niassa	Sofala	Tete	Zambezia
Desense forests	22518.7	3295.3	1696.0	1099.9	1424.0	268.0	1828.0	5786.5	853.8	1965.9	4301.1
Open forests	16390.0	1458.2	2074.9	1205.7	1853.9	516.4	863.0	3634.5	1995.8	2240.8	546.7
Mangroves	357.0	32.1		29.3		5.4	75.1		93.2		121.9
Open forests with inundation	802.3	17.5	7.9	84.3	178.1	30.6	5.2	8.1	362.0	14.7	93.8
Sub-Total Forests	**40068.0**	**4803.1**	**3778.8**	**2419.3**	**3456.0**	**820.4**	**2771.4**	**9429.1**	**3304.9**	**4221.4**	**5063.6**
Other wooded lands [1]	**14712.2**	**1045.0**	**2007.8**	**2389.7**	**1253.4**	**439.2**	**802.4**	**975.4**	**1261.2**	**2408.0**	**2130.1**
Grassland	9358.8	475.0	994.3	633.6	820.8	699.6	388.5	808.0	1675.9	2133.9	729.3
Agriculture	11368.9	1148.6	564.3	1188.2	627.7	309.3	3391.4	863.6	445.3	861.7	1968.9
Without vegetation	1580.2	238.9	32.8	94.6	52.7	50.2	433.5	134.5	43.6	159.7	339.8
Water bodies	902.9	76.7	154.2	152.0	21.8	43.5	29.9	29.4	39.4	280.0	75.9
Total	**77991.0**	**7787.2**	**7532.4**	**6877.2**	**6232.4**	**2362.2**	**7817.1**	**12240.0**	**6770.4**	**10064.6**	**10307.6**

The 2009 Reforestation Action Plan established the land allocation target for industrial plantations at about 3 million ha of the 7 million ha previously identified having plantation potential. Niassa, Zambézia and Nampula provinces which have large areas of native forests hold significant potential for plantations. A recent national agro-ecological zoning (1:1,000,000), conducted as response to the growing demand for land for biofuels, showed that 7 million ha of land are available for this purpose, predominantly in the provinces of Inhambane, Niassa and Zambézia (with over 1 million ha each).

There are 36 million ha of arable land of which 3.3 million have potential for irrigation. The center and north of the country are richer in fertile soils and have high precipitation.

Estimates of deforestation were 0.21 percent per annum between 1972 and 1990 (Saket, 1994) and 0.58 percent from 1990 to 2002 (Marzoli, 2007). The average annual loss of forests amounts to 219,000 ha. Table 9 presents information on forest cover and loss per province. Maputo and Nampula have the highest deforestation rates reaching more than one percent per year. Maputo imports wood from other provinces to meet the growing demand for biomass energy.

[1] Thicket, shrubs and forests in agriculture land

Table 9 Estimates of deforestation rate 1990-2002 (Marzoli 2007)

Province	Forests and wooded lands 1990 ('000 ha)	Forests and wooded lands 2002 ('000 ha)	Conversion of forests to other land uses ('000 ha)	Annual change of forest areas ('000 ha)	Deforestation rate 1990-2002 (%)
Cabo Delgado	5,322	4,989	28	25	0.54
Gaza	5,182	5,027	13	13	0.33
Inhambane	4,585	4,424	13	11	0.52
Manica	4,340	4,005	28	23	0.75
Maputo	1,280	1,078	17	16	1.67
Nampula	3,958	3,509	37	33	1.18
Niassa	9,635	9,379	21	21	0.22
Sofala	4,430	4,161	22	20	0.63
Tete	7,376	7,025	29	27	0.64
Zambézia	5,819	5,356	39	31	0.71
Total	**51,926**	**48,952**	**248**	**219**	**0.58**

The main causes of deforestation and degradation of Miombo and Mopane forests are similar: agriculture, fire, charcoal production and harvesting of poles for construction. The main difference is that the Mopane forests are dominant in the southern part of Mozambique.

There are no national records of forest degradation as changes in tree density in a forest are less obvious and hence difficult to measure. This constitutes one of the key technical aspects being debated at international level regarding the process of establishing reference levels and monitoring degradation. However, a study being conducted (2011) by the University of Edinburgh in Manica REDD+ pilot area of 7500 Km^2in Chimoio, Chibabava, Sussundenga and Gondola districtssuggests that carbon loss amounts to 3.1% per year and emissions caused by deforestation and degradation are almost the same.

Direct and indirect causes of deforestation and degradation

Drivers of deforestation and forest degradation are interconnected and mutually reinforcing. The separation presented in Table10is only to facilitate discussion and identification of potential options as well as players who can take the lead in addressing them.

Table 10 Direct and indirect causes of deforestation and degradation

	Direct	*Indirect*
Deforestation	a) Unsustainable agriculture practices throughout the country b) Unsustainable production of biomass energy and inefficient consumption (Maputo, Nampula, Beira in particular) c) Construction materials (poles in particular) d) Unsustainable logging e) Illegal logging f) Uncontrolled fires g) Infrastructure (settlements, roads, electricity transmission from Cahora Bassa Dam-Maputo) Mining (and settlements (horizontal expansion of urban areas)	a) Population increase at 2.3 percent per annum b) Economy of the country c) Limited extension network and limited access to technologies and markets d) Demand for commodities in international markets, e.g. – Renewable energy – EU targets => land for biofuels (Cabo Delgado, Nampula, Zambézia, Manica, Sofala) e) Investment policies and taxation (including royalties) – 6mil. Ha – being negotiated with Brazilian farmers to produce soya, maize (Cabo Delgado, Nampula, Zambezia, f) The role of large scale plantations
Degradation	a) Uncontrolled fires (nearly 131,000 fire points in 2009) (Zambézia, Niassa, Tete, Nampula, Cabo Delgado, Sofala and Manica) b) Unsustainable and illegal logging practices (Zambézia, Cabo Delgado, Nampula, Sofala)	a) Limited law enforcement capacity – weak monitoring of SFM and environmental management plans b) Investment policies and taxation (including royalties)

Direct causes of deforestation go beyond the forestry sector and drivers outside of the forestry sector are significant and would largely influence the effectiveness of REDD+ in reducing land-use based emissions. These include:

a) Unsustainable agriculture practices– the rural population depends on low input, rainfed farming and harvesting forest products for their livelihoods

The estimated[2] 3.83 million farms across the country cultivate an area of 5,633,850 ha of which approximately 2.1 million ha are in Nampula and Zambezia provinces. Thirty-four percent of these farms cultivate less than 1 ha and 37 percent between 1 and 2 ha. These farms are considered smallholders and generally cultivate subsistence crops such as maize, cassava, sweet potato, sorghum, peanuts and rice, but are, in the centre and north of the country, also engaged in cash crops such as cotton, tobacco, sesame, sunflower and cashew nuts. Smallholders also manage most of the livestock farming including 1.3 million cattle and 3.9 million goats with larger stocks in arid lands of Tete, Nampula, Manica and Sofala provinces. Livestock rearing is also important in Gaza and Inhambane provinces. Overstocking of livestock in Tete is largely responsible for soil degradation and erosionin that province.

About 400 commercial farmers produce sugar cane (for sugar and biofuels), sorghum, tobacco, cotton, tea, citrus and livestock. Recently, the Ministry of Agriculture indicated the intention to allocate 5.8 million ha to Brazilian farmers to grow soya in Niassa, Nampula, Zambezia and Cabo Delgado. While private

[2]INE (2010) Censo Agro-pecuario 2009-2010. INE/MINAG. Maputo

sector investments are encouraged as part of the country's agricultural development strategy, there is no clear strategy about large scale investments in agriculture.

b) Unsustainable production of biomass energy and inefficient consumption

Access to electricity, gas and other sources of energy is still very limited in the country. The national coverage is only 32 percent and 42 percent of households are coveredin Maputo city, while only 4 percent are covered in Cabo Delgado. In 2008, 80 out of 128 districts had some permanent access to electricity from the national grid. Biomass energy, mainly fuelwood, charcoal and waste from agriculture, meet 80 percent of the energy needs. The remainder is generated through hydro-power (12 percent), oil (6 percent), coal (1 percent) and natural gas (1 percent). 73 percent of the total energy is consumed by households, while respectively 19 and 8 percent are for industry and the transport sector. About 23.7 million m^3 of fuelwood are consumed annually for domestic and industrial purposes such as tobacco and fish curing. Mangrove forests are also harvested for this purpose, particularly in Sofala and Maputo. Charcoal production and consumption methods are very inefficient, leading to even higher loss of biomass.

Table 11 indicates the number of bags of charcoal produced from annual licenses. However, this is only a fraction of the production to meet the demands in the urban areas.

Table 11 Trend of licenses for biomass energy**, 2007-2009**

			Licensed volume			
Product	**Unit**	**Nº Licenses 2009**	**2007**	**2008**	**2009**	**Percentage Change 2008 - 2009 (%)**
Charcoal	bags	1,473	781,566	996,066	1,345,007	+35
Firewood	Esteres	177	46,952	46,486	37,326	-20

A study conducted in 2008 using the FAO methodology WISDOM (Woodfuel Integrated Supply/Demand Overview Mapping) indicated that the total production/consumption does not as yet surpass the annual growth of biomass at the national level, but that there are critical areas at the sub-national level. Maputo City and Matola (capital city of Maputo province) have large and increasing urban populations relying on biomass energy. The productivity of forests in these areas is low, and many years of intensive harvesting have resulted in a substantially degraded area and a deficit of wood. Areas in the immediate hinterland of these cities have, therefore, a very high risk of deforestation and degradation and the districts in the South of Gaza province (the province immediately north of Maputo province) have a medium risk which are currently the main sources of fuelwood for Maputo. Distance and accessibility are the determining factors of pressure on the forest resources. Rural households are the main stakeholders in producing charcoal. Generally, they do not have licenses, except in cases where CBNRM initiatives are being implemented. These activities are important source of employment and revenue for most rural households. A significant number of intermediaries (annual licenses) own lorries used to transport the biomass products to the urban market. A larger number of informal retailers sell to the final consumer. Besides being important in meeting energy needs of low income households in the urban areas, charcoal also provides employment opportunities for a significant number of urban dwellers.

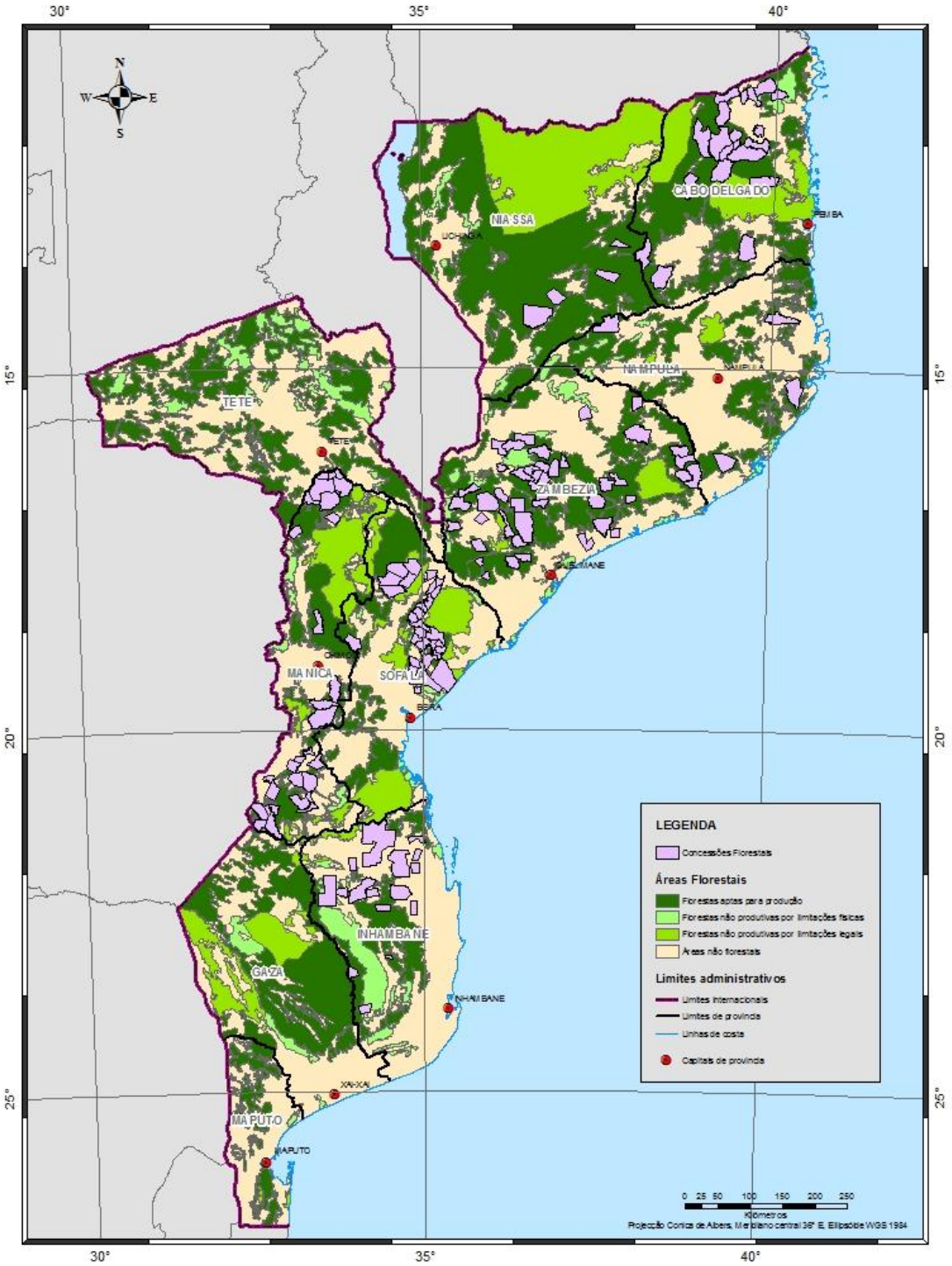
The Ministry of Energy through its National Energy Fund (FUNAE) is undertaking several activities towards diversification of sources of energy, through use of other renewable including small hydro-power and photovoltaic systems, biogas, improved and efficient stoves and kiln efficiency. In 2011, three

hydropower stations we established in Rotanda and Chiurairue(Manica) and Majawa (Zambezia) with a capacity of 1,121 KW. FUNAE established 35 stations countrywide to measure wind and solar energy potential with experiments in, among others, the districts of Matutuine (Maputo), Buzi (Sofala), Barue (Manica), Angoche (Nampula), Inhambane. There are plans of introducing electrification based on solar energy in 6 provinces and construction of industry for production of solar panels in Boane (Maputo). Communities are also being trained (with support from UNIDO) in biogas production in Chicualacuala (Gaza province) and another 120 communities have been trained in the ten provinces to develop and use improved stoves. In 2007 alone, 127 improved fixed industrial stoves were installed and 60 domestic as well as nearly 4,000 portable stoves.The provinces of Manica and Gaza have been selected as pilot projects for2012to develop improved stoves.

c) Construction materials (poles)

Although licenses are issued for harvesting poles, no information on the volume of harvesting is available and, thus, this constitutes one area that needs further assessment to determine the actual volume that is consumed annually. Houses in rural and peri-urban areas are still predominantly constructed out of poles and reads, or poles and clay. The extraction of poles is particularly critical as often young trees are being used, hence affecting forest regeneration.

Figure 12 Forest resources use – concessions



a) Illegal logging

Despite the recognition in the early 2000's that effective implementation of the forest policy needs significant improvement of law enforcement, this challenge has yet to be overcome. The country has only 1,069 law enforcement officers of whom only 489 are responsible for controlling the harvesting of timber and wildlife products outside protected areas. Therefore, one officer is responsible for over 83,000 ha of forests contrary to the recommended 1:5,000 ha. This, combined with poor means of transport and communication, makes the control of illegal practices ineffective.

There is also limited capacity to monitor implementation of management plans and harvesting practices as well as implementation of environmental management plans. For example, monitoring is done through sporadic visits to concessions. Regular law enforcement is only done at road and port check points to verify the volume and species harvested. There are no sufficient dedicated qualified staff to monitor harvesting and forest management practices.

The allowable cut of timber estimated in the 2007 forest inventory is 500 thousand m3 per annum. Formally recorded harvesting in 2010 reached about 50 percent of that volume. However, illegal logging has been ongoing and is partly reflected on the number of cases reported officially and the fines collected annually. For example, DNTF reports that there were over 1,376 fines issued in 2010. However, as observed early 2000's and more recently in 2011 in Zambezia and Cabo Delgado province, illegal practices are increasing. Even though there are dedicated DNTF officers at provincial level, to control illegal acts are very difficult because of limited budget, small number of officers, shortages of transportation means and equipment. The reports called 'Chinese Take Away' and 'Tristezas Tropicais – Tropical Sadness' published by NGOs in 2006 and 2009 indicate that annual operators are opportunistic individuals with no training and understanding of forest operations, but simply driven by lucrative business. The reports indicate that operators admitted harvesting up to five times more than the quota they were officially allocated. Another report published in early 2011 'No fim não vai ficar nada – in the end nothing will be left' analyses illegal logging practices in two forest concessions in Cabo Delgado. The report reveals that there are several actors involved in the illegal activities including local community leaders who succumb to corruption. The report also highlights that illegal logging is also having a negative impact on tax revenue. Harvested volumes are more than declared and smaller trees (<40 cm of diameter) are also harvestedby some of the dishonest concessionaires. Contrary to expectations, timber processed in the country is bought at lower price for export than for logs which renders the incentive (40% deduction on royalties) for adding value before export ineffective. In July 2011, more than 500 containers of logs were intercepted by the authorities in the harbors of Nacala in Nampula province, Pemba in Cabo Delgado province and Maputo in Maputo province that were about to be illegally exported to China. The government, in particular DNTF and the General Finance Auditing body acknowledge the enormity of the problem and is developing legal instruments to limit the simple licenses as they are used as a vehicle for illegal harvesting and unsustainable practices.

b) Unsustainablelogging operations

There are 179 (2011) timber concessionaires covering more than 6 million ha, with contracts spanning 50 years. The map (Figure 12) shows the distribution of these concessions most of which are in Zambezia (28% of the area), followed by Cabo Delgado, Sofala and Manica.

The propensity of these areas to degradation and even deforestation is high as a result of an increased network of roads to previously remote or inaccessible areas. Companies also seem to take advantage of the limited capacity of law enforcement with estimated logging quantities significantly exceeding licensed quantities. About 38 percent of concessions do not have management plans updated (reviewed)and there are only three FSC certified companies in the country, hence little external verification of forest management, social and processing practices is currently conducted.

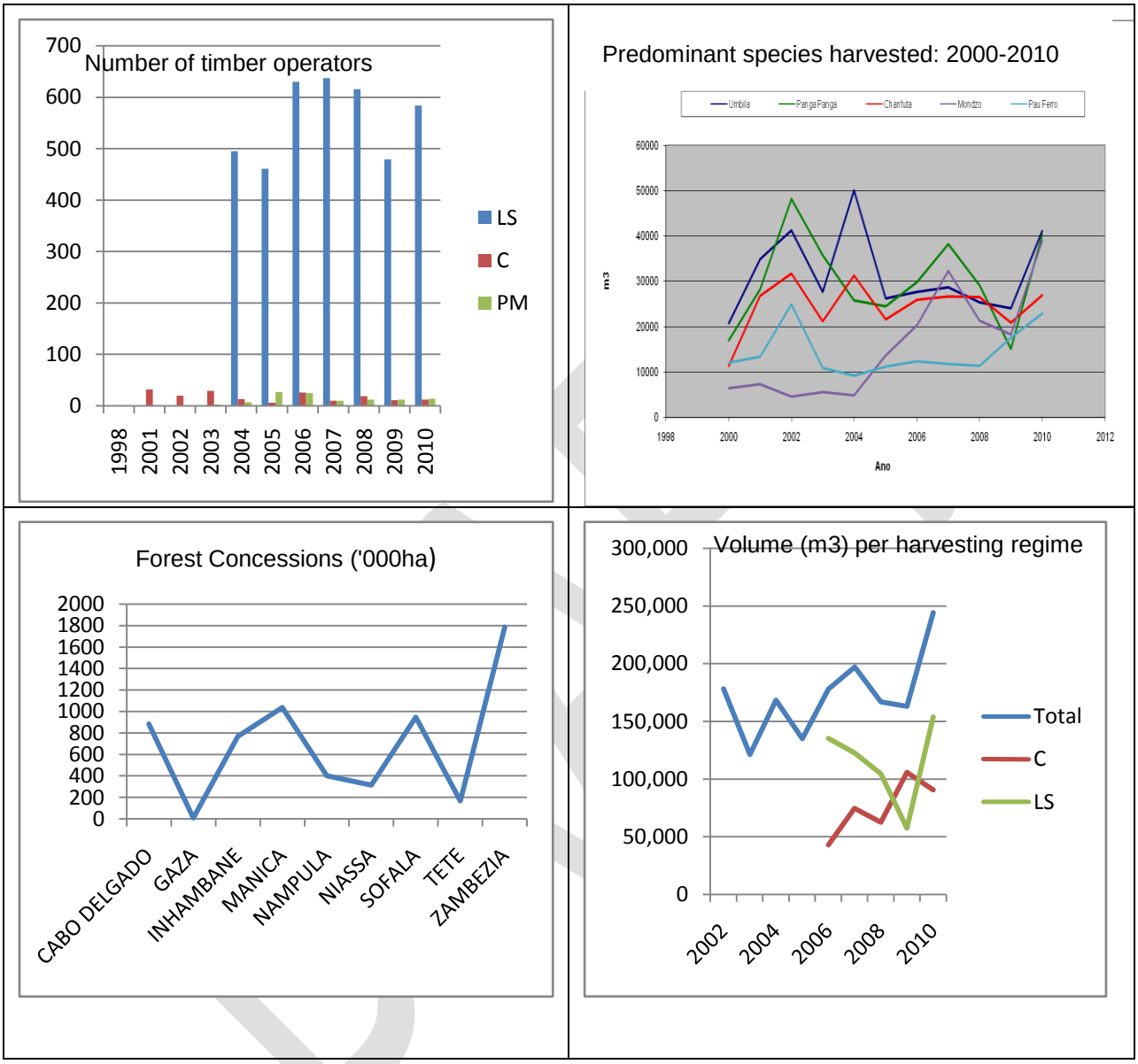
In a recent (October-November 2011) inspection of implementation of management plans in forest concessions a team of DNTF visited Nampula (3), Niassa (4) and Zambezia (6), and observed that virtually all the legal provisions for operation of concessions were not compliance with properly: (i) concession boundaries are not demarcated, there are no fire management such as clear design of fire breaks, there are no harvesting blocks identified, some management plans are outdated,; (ii) many concessions who do not have qualified forest engineers to oversee management and harvesting activities; (iii) many concessions who do not as yet have or operate the processing industries as required by the forest legislation to stimulate value addition in the country; (iv) concessions are very vast some of which engulfing villages and other population settlements; (v) poor record keeping of forest activities, hence the difficulty of establishing the exact amount harvested and commercialized. These violations also have an effect on the ability to tax.

An average of 557 annual (between 2004 and 2010) operators have simple licenses to explore up to maximum of 500 m^3 /year in an area up to 5,000 ha each. This means that approximately 2.7 million ha of forests may be conducted selective logging annually under this regime. Despite notional harvesting plans (Planos de Maneio Simplificados) linked to designated areas, the reality is that these operations shift from one area to another after harvesting a handful of high value timber species selectively, which means that within 10 years all productive forests could have been harvested depending on the dynamics of the species in the market. Given the low growth of forests, the cycles of 10 years would not be sufficient to continue meeting the demand for high value timber. This is exacerbated by the absence of enforceable sustainable management obligations. As a result of the lack of enforcement, this regime is very attractive and the volume harvested is nearly twice as much compared to concessions. Therefore, unsustainable logging practices are still common despite the 1997 forest and wildlife policy intent to reduce the annual harvesting regime. This policy has been recently revised and there is requirement for these regime of harvesting to be drastically reduced and instead become concessionaires.

Selective logging prevails and despite improvements from less than a dozen species10 years ago and to 18 species now. This still uses a fraction of the estimated more than 100 with high commercial value. Selective logging starts with forest degradation in terms of economic value of the forests left standing and carbon sequestration capacity. Deforestation often follows especially in areas under annual licenses, as remaining trees of smaller diameter are also harvested (poles) for construction in rural and sub-urban areas, while large trees of third and fourth classes are harvested to produce charcoal. Thereafter the forest land is converted to non-forest.

Figure 13 illustrates the evolution of forest use in the past decade. Rent seeking is the prime driver of exploration of forest resources. This is also exacerbated by growing international demand for timber products, particularly in Asia, driving the opportunistic involvement of local and foreign players in logging.

Figure 13Logging regimes, operators, area and some of most harvested species



d) Frequent fire

Fire is used as a tool by different land users. Farmers with few implements use fire to clear land and to secure short term soil fertility for their crops; the hunters use it as a hunting tool to capture bush meat for consumption and commercial purposes; beekeepers also use fire for harvesting honey and cut trees to produce traditional beehives; fire is also used to protect communities from wildlife in several remote areas. While burning forests is equally important for stimulating regeneration of certain tree species and pasture, the frequency and intensity reduces its efficacy in restoring ecological functions. **Figure 14** is a snapshot of annual occurrences, particularly with high incidence between August (23,812) and October (29,019) with the peak in September with over 50,000 fires. In 2008 for example, Zambézia had more than 29,000 fire points followed by Niassa with almost 20,000 and Tete with over 17,000. A study by the

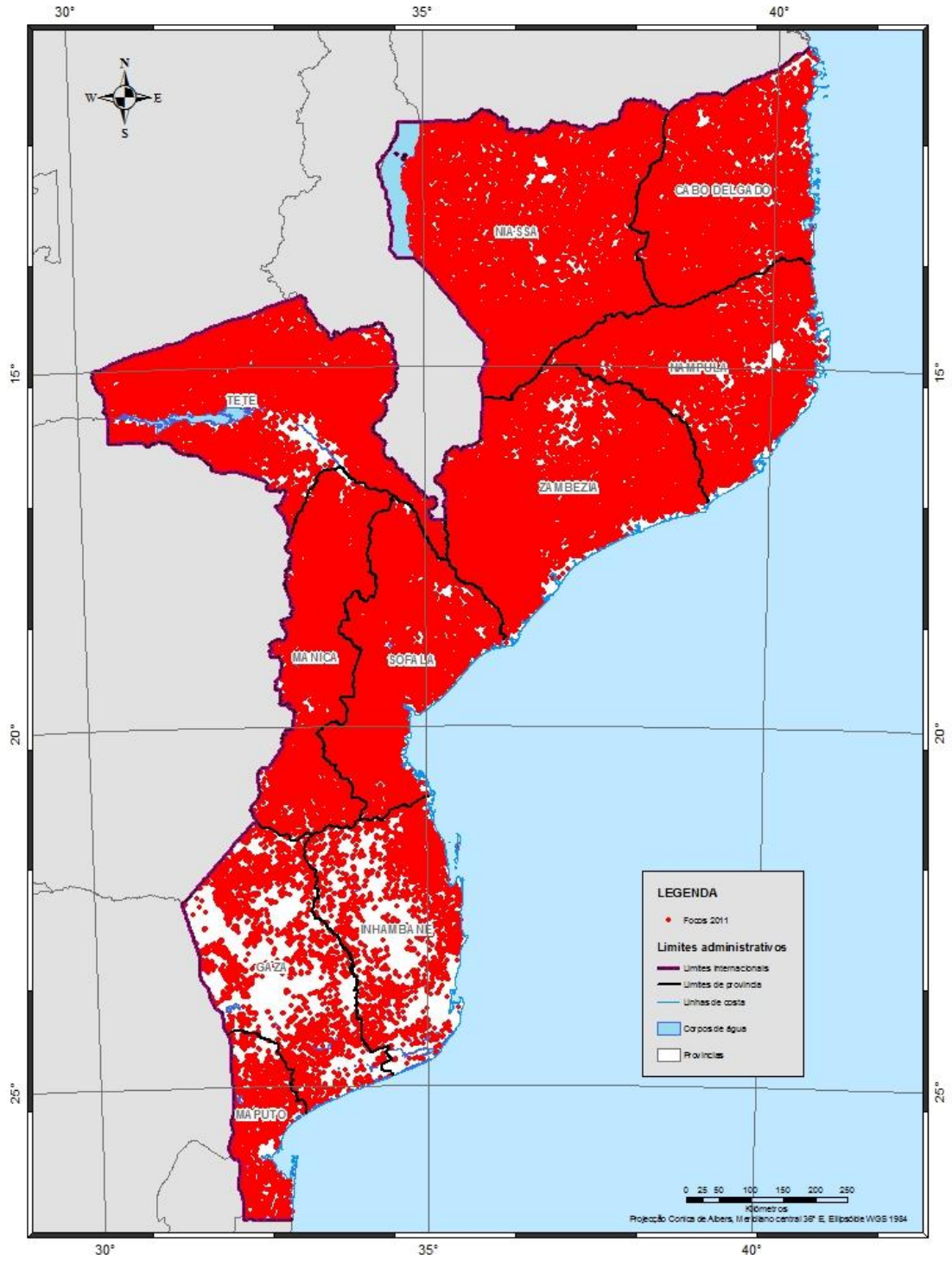
University of Edinburgh in Manica confirms that fire is a significant cause of forest degradation. In 2008, fire was declared a national disaster; and included in the National Institute for Disaster Management (INGC) priorities. Fire is the main source of forest degradation in the country. **Table 12** shows the number of fires that occurred in provinces in 2011 with over 148,000 ha burnt. MICOA, DNTF and INGC are working to develop a system of verifying the areas on the ground based on the active fire spots/fire scars confidence percentage of MODIA products. The information in the table should, therefore, be taken as indicative.

Table12 Fire registration in 2011

Provinces	Number of fires	Area (ha) under fire
Cabo Delgado	12,221	13,198.68
Gaza	4,387	4,737.96
Inhambane	3,677	3,971.16
Manica	16,229	17,527.32
Maputo Província	3,507	3,787.56
Nampula	13,023	14,064.84
Niassa	23,334	25,200.72
Sofala	17,198	18,573.84
Tete	21,204	22,900.32
Zambézia	22,349	24,136.92
Grand Total	137,129	148,099.32

Source:http://modis-fire.umd/BA products.htm

Figure 14 Fire spots in 2011 in 60-100% confidence (Source: FIRMS)



e) Infrastructure

Roads, railway lines, ports and bridges are essential for economic development of the country. However, they also increase accessibility to otherwise remote areas and contribute to rapid change in forest cover. The vicinity of these infrastructures tends to be cleared not only for timber and biomass energy, but also for new settlements. The development corridors of Maputo, Beira and Nacala with road and rail network connecting Mozambique to the neighboring countries, construction of bridges along Rovuma and Zambeze rivers is very important for the economy, new and expansion of harbors (Nacala, Beira and Maputo). These infrastructures also create opportunities for easy access to forests and their markets as well as establishment of new settlements and consequent clearing of forests. In Manica province, for example, while acknowledging the planned construction of a bridge over the river Mussapa in Zomba district would be necessary to improve accessibility, it equally poses a significant threat to the native forests in that area, as land has already been allocated for commercial farming.

In addition, construction of gas pipelines from Mozambique to South Africa, plans to extend electricity transmission from Cahora Bassa to Maputo (more than 1,200 km), the construction of two additional dams along the Zambezi river (Mphanda Nkuwa and Cahora Bassa II) and other associated infrastructure will change land cover not only because of land cleared for establishing the infrastructure, but also the impact on (re)settlements.

Urban settlements have been expanding horizontally for example in Maputo, Matola, Beira, Nampula and other cities, often without following physical planning or weak enforcement, hence causing further conversion of forest areas. This impact goes beyond the immediate land used for housing and includes a larger area of forest to meet energy demands and also conversion for farming.

f) Growing large scale mining investments and unsustainable mining practices

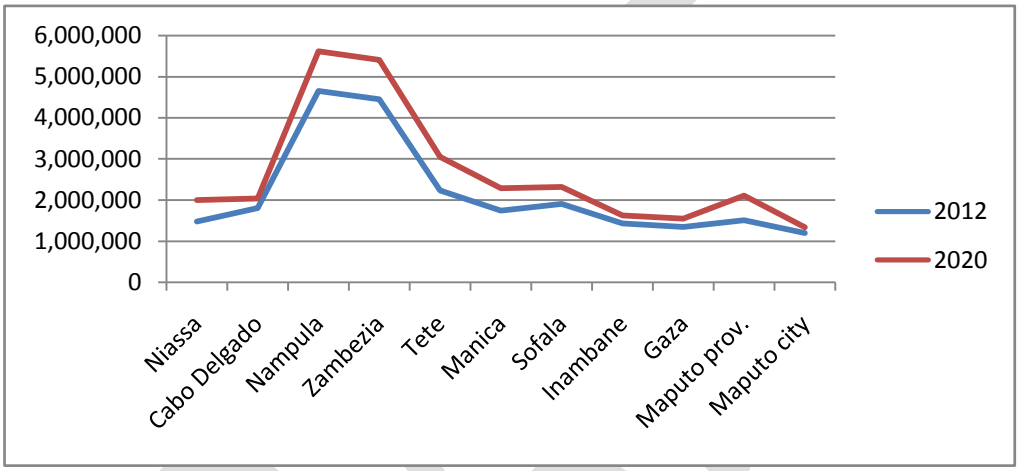
Mining is an increasingly important activity in the country. This includes industrial extraction and transportation of gas (exploration has started in Inhambane but larger reserves have been identified in Rovuma Basin), prospecting for oil, heavy sands (Moma, Chibuto) and gold, diamonds and other precious minerals. There are over 1,125 mining licenses including concessions and prospecting – these include 100 licenses for research on coal. Coal mining in Tete province (Moatize, Benga) is one of most important activities and there are plans of producing electricity.Ninety percent of arable land in this province has been allocated for mining. The number of artisan miners is increasing in Manica, Zambézia, Niassa and Nampula. Statistics on these activities are scanty due to ineffective licensing (Senhas mineiras). The indication of existence of 60 artisan mining association employing about 100,000 people still falls short of reflecting the scale of this activity.Immigrantsfrom neighboring countries as well as from far afield often dominate this small scale but lucrative business.

The **Indirect causes** of deforestation and degradation are socio-economic and institutional and include:

a) Population dynamics (growth, rural-urban as well as international migration and settlement patterns)

Mozambique's population[3] is 23.4 million, 38 per cent of which is urban and the overall growth is 2.3 percent. By 2025, the population will increase to just over 33 million. 7.5 million people are almost equally partitioned between Nampula and Zambezia provinces (Figure 15). Socio-cultural aspects such as religion and customs influence age of marriage and birthrate particularly in Nampula. There has also been a growing population of migrants from the Great Lakes and Asia to Mozambique. The population structure and settlement patterns determine demand for energy, food and also timber for construction, furniture and other goods from land resources. The four percent increase in population of Manica between 2007 and 2010 is responsible for the expansion of small-scale agriculture that contributes 46 percent of net loss in carbon.

Figure 15 Population and population estimates per province



b) The economy of the country

Mozambique relies on agriculture which comprised 31.5% of GDP in 2009. TheGDP per capita is only $410, but the divide between rich and poor is even greater with 55 percent of the population still living below the poverty line.

- Poverty in the three large economic capitals of the country is 53.6% in Maputo City (and 69.3% in Maputo province), 36.1% in Beira and 52.6% in Nampula. However, the highest number of people living under poverty line reaches 80% in Inhambane province.
- The literacy level is 54%, but the variation is between 85% in Maputo City and 32% in Nampula province. Both education and poverty are critical indicators on how people can cease new opportunities to better their livelihoods. 53% of the farms are owned by people with no literacy or who did not have formal primary education.
- Credit for activities related to agriculture is considered to be of very high risk, hence there are few institutions lending to farming households. This limits their capacity to adopt improved land use practices even when technology is available.
- Except a minority in the urban areas, most of the population is forest-dependent and its main economic activity is agriculture. There are nearly 3.83 million of farm holdings in the country of

[3]Projecções anuais da população total, urbana e rural.2007 – 2040

which 1.051 million are female headed households. Of these, 1.658 million farms are located in Zambezia and Nampula.

- Most of the rural population has very limited access to formal employment opportunities. Therefore, cash crop agriculture, fishing, artisan mining and harvesting construction timber and biomass energy constitute the main sources of livelihood.
- A significant number of urban dwellers also rely on the informal economy some of which are dedicated to selling timber and non-timber products acting as intermediaries between producers and consumers of various land based resources.
- Overall fluctuations of food and fuel prices change the consumption patterns towards forest products particularly the domestic energy consumption.

c) Limited agricultural extension services

The governmental extension services are present is all the 128 districts and 391 of 405 administrative posts and 13 towns with significant agriculture practices in the sub-urban areas. The service of technical support to smallholders is delivered by 872 officers covering more than 534,000 producers - a ratio of 1:613 contrary to the recommended 1:300. Therefore, limited access to agriculture production and timber and non timber harvesting and processing technologies as well as packaging and cold storage infrastructures contribute to low efficiency and unsustainable land use practices in the country. Research on technologies adapted to the diverse agro-ecological conditions is also still insufficient to meet the increasing need for efficiency and productivity. To change the scenario in 2011, the Government have approved and adopted the PEDSA as the one to work as a fundamental tool to empower the extension services within MINAG. The equally limited access to finances to invest in available improved technologies to increase productivity and access to markets including slow infrastructure and transportation development further exacerbate the perpetual land expansion rather than efficiency based increase of production.

d) Demand for commodities in the international markets

The need to meet clean energy and blending targets in developed countries such as Europe and emerging economies (South Africa and Brazil), drives demand of land for plantation of biofuels feedstocks has been increasing since 2008 amounting to about 2 million ha by 2009. A recent report on Green Investments in Mozambique indicates that there are 38 projects of biofuels under different stages of development and the area planned reach 5 million ha with Japan also becoming a key player.

A national zoning conducted at 1:1000,000, as response to the pressure showed that 7 million ha of land are available for this purpose, predominantly in the provinces of Inhambane, Niassa and Zambézia with over 1 million ha each. So far, only 240,000 ha have been allocated.

Consumer preferences for soy in China are a key factor for the intended allocation of 5.8 million ha of land in three provinces on the north of the country (Nampula province including Malema, Ribawé, Morrupula, Nampula, Miconta, Mongvolas, Muecate and Monapo; Niassa province in Mandima and Cuamba; and Zambézia including districts of Gorué and Alto Molocue). Cultivation of tobacco is destructive due to conversion of forests into agriculture and use of forests for curing tobacco and the growing demand for pulp and paper in the global markets influence land use and land use change.

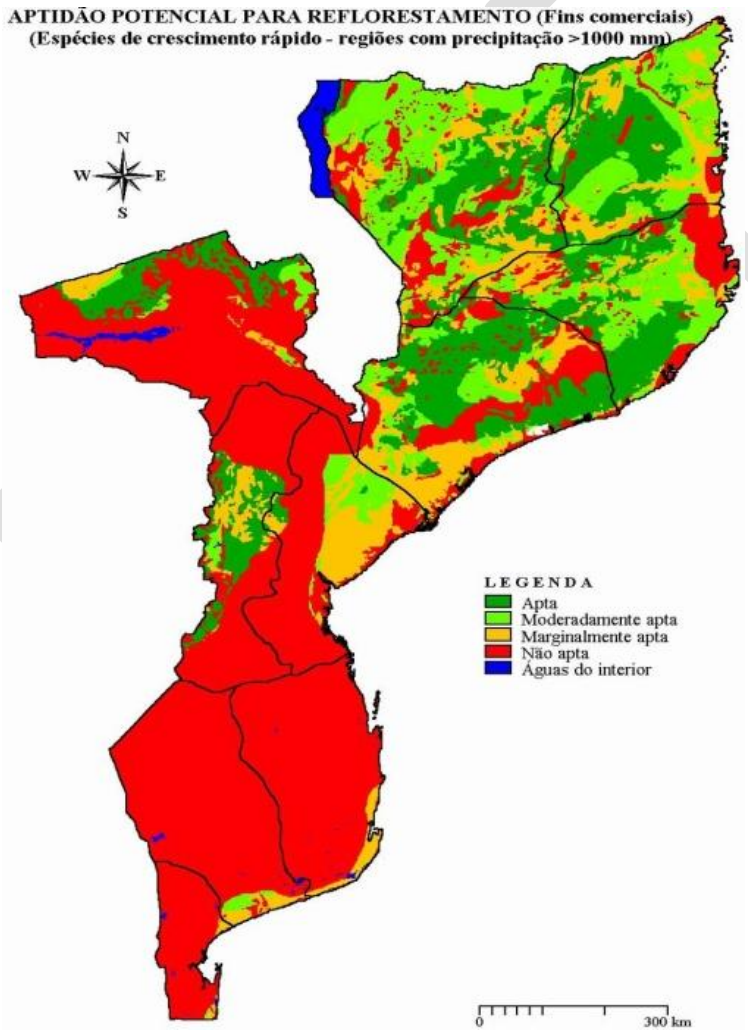
Paying more for logs than for value added timber aims at feeding the growing industry in China and other Asian countries which not only means that the country exports jobs but also represents a significant loss

on revenues[4]. However, the objective of importing non-processed goods is to produce high value furniture and other products that are re-exported to the world market.

e) Replacement of natural forest with large scale forest monocultures

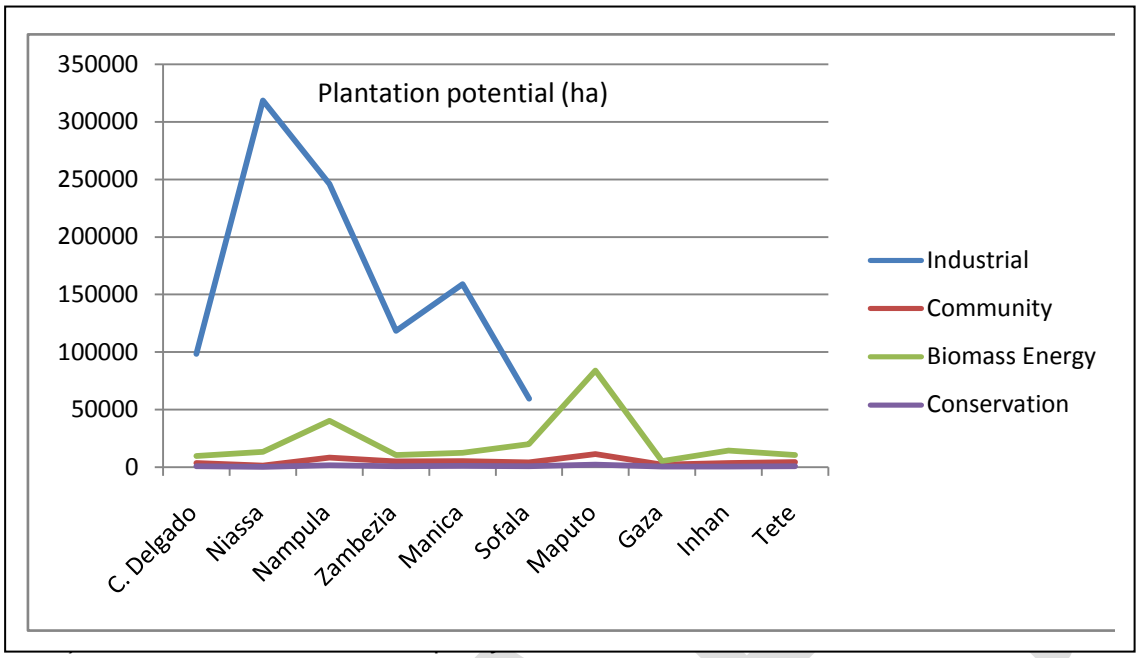
Mozambique has high potential for reforestation – more than 1000mm precipitation, less than 1000 m altitude and good soils. The target for planting reaches 3 million ha. The green (Figure 16) represents areas with high aptitude: Niassa, Cabo Delgado, Nampula, Zambezia and Manica. 1.251 million ha are expected to be planted by 2030 of which 0.5 million has been already allocated to ten companies while other 13 companies have manifested interest for over a million ha for pulp and paper and timber. Plantations for rehabilitation or restoration of degraded areas and for energy occupy a modest are of about 0.25 million ha (Figure 17). The conversion of natural forests (currently defined as more than 10 per cent crown cover) into monoculture might contribute to biodiversity loss, hence affecting one of the REDD+ safeguards. The almost indiscriminate conversion of natural forests to plantations prompted the authorities to reassess the definition of forests, degraded or non-forest in Mozambique. This is still ongoing process and discussion will be conducted during the readiness preparation period.

Figure 16 Reforestation potential



[4]Ogle and Nhantumbo (2006)

Figure 17Potential for forest plantations in the different provinces



g) Investment policies and taxation – 'export' of potential revenue benefits

Undervaluation of land resources, hence low royalties on land, forests and other natural resources is driving rapid land use change on land cover and land use practices. The investment policies within Mozambique create various tax and non-tax incentives for attracting foreign capital. These incentives include exemptions on import duties and other taxes during the investment phase, requirement to process land acquisitions within 90 days or the tax deductions for timber processed in the country. For example, the megaprojects that could generate significant benefits for the country benefit from 30-50 year tax exemption to promote investments. Nevertheless, some limit the prospects of sustainable land management as rapid processes may not always be efficient and equitable. Prices of land and royalties due from forests and water are particularly low. This drives the current land resources rush without bringing the equivalent benefits to the country's economy or fostering sustainability. Transfer pricing is widespread. For example, timber fetching USD80/m^3 in Mozambique is sold at nearly three times the price in China without processing. Often, processed timber products are exported back to the country at a high price. In 2011,DNTF the timber royalties and included additional provisions to ensure sustainable harvesting of timber and this will enter into force during 2012. Also, the national Zonamento Agro Ecologico (ZAE) is mapping land potential to ensure effective and efficient land use. This instrument will further aid decision making about land resources allocations as well as facilitate law enforcement.

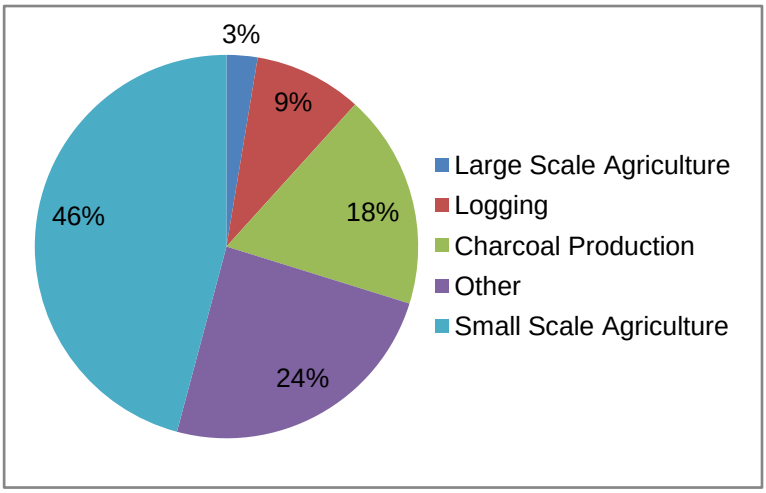
Overall, as of 2010, 15.7 million ha of land have been formally allocated to various uses most of which are likely to lead to conversion of forests.

Case study on interaction of drivers of deforestation at sub-national level

Figure 18 provides a brief illustration of the interaction between several drivers of land cover change.

Figure 18Example of interaction of drivers in Manica pilot area

The University of Edinburg conducted (in the context of the REDD+ readiness process) an analysis of land cover and land use change between 2007 and 2010to determine change in carbon stocks as well as the causes. The analysis was done using images of radar backscatter from the PALSAR ALOS satellite processed into 25 m resolution estimates of aboveground biomass. Preliminary findings indicate that most of land use change is due to agriculture, charcoal and other uses. The latter include infrastructure, settlements, traditional honey production. This baseline, under validation, is important for monitoring changes that might result from the large concessions allocated to biofuels (at least 20,000 ha), fruit tree plantations and livestock (cattle rearing, 10,000 ha) as well as from REDD+ implementation. Preliminary results also indicate that the loss of biomass in this area has been 3.1% with both degradation and deforestation accounting for this change.



This study also highlights the fact that careful zoning of areas to be protected from agricultural expansion (e.g. riparian strips) could greatly reduce the loss of carbon. It is therefore clear that a landscape approach is one of the effective project approaches in Mozambique. With a careful application, it may have a high potential to address the drivers of deforestation and forest degradation effectively. In addition the interaction between activities occurs across a larger area in the Beira corridor. Therefore, undertaking this analysis at larger scale (Manica and Sofala) would provide a better sense of what activities drive changes and how to address the challenges more efficiently at this sub-national level. This will be further discussed in the component 2c.

Table 13 summarizes some of the key drivers of deforestation and degradation in selected provinces for field research to inform the readiness process.

Table 13 Drivers of deforestation and forest degradation in selected provinces

Causes of deforestation and degradation	Areas of incidence and other information
Maputo province	
• Charcoal production • Shifting agriculture • Rapid (horizontal) expansion of Maputo and Motola urban areas • Biofuels	*Affected areas* Matutuine, Namaacha, Moamba Marracuene, Matola, Boane Manhica and Moamba *Interventions* Zoning and urban planning Alternative sources of energy (gas, electricity) accessible Improved stoves
Gaza province	
• Harvesting of poles and timber • Production of firewood for domestic consumption in Xai-Xai and Maputo • Plantation of sugar cane for production of biofuels (30,000 ha PROCANA investment later abandoned, communities continue deprived from use); • Construction of gas pipeline and railway Limpopo; • New settlements • Uncontrolled fires and illegal hunting	*Affected areas* Chibuto, Malehice, Chipadja, Chigubo -Canhissane and Solane, Guija, Naladze, and along Guija-Chibuto and Guija-Mabalane railways Bilene, Macuane, Massingir *Forest types* Cimbirre and Mopane *Interventions* Strengthen law enforcement Promote conservation agriculture Use of improved/efficient charcoal stoves Forest plantation for energy
Tete province	
• Uncontrolled fires associated with agriculture (cotton) and illegal hunting • Charcoal production • Population settlements • Extension of electricity grid/transportation lines • Illegal logging • Overstocking and soil erosion • Mining (coal)	*Affected areas*: Tsangano, Changarra, Angonia, Mutarara, Moatize, Tete *Interventions* Awareness raising on environment and sustainable practices Law enforcement to reduce illegal logging Monitor impact of mining on soil and vegetation Reforestation
Nampula province	
• Shifting cultivation • Commercial agriculture (cotton, tobacco, and food crops – peanut, sesame, cashew nut,..) • Illegal hunting and use of fire • Timber and poles harvesting • Charcoal production • Uncontrolled fires • Forest degradation (Moma and Morrupula) due to illegal artisanal mining • Forest degradation (Moma and Morrupula) due to mining of heavy sands and other resources without implementing mitigation measures for the impacts • Rapid population growth • Concentration of illegal migrants from Africa and Asia • Harvesting of mangrove in Moma and Mossuril	*Affected areas*: Mossuril, Moma, Murrupula, Muecate, Meconta, Nampula-Rapale, Murrupula and Mecuburi *Interventions*: Strengthen law enforcement including engagement of community guards, Incentives, equipment and training of forest guards, Promote alternative sources of income Sustainable agriculture
Zambézia province	

• Timber harvesting • Harvesting of poles and bamboo for construction • Charcoal production • Mining • Commercial and subsistence agriculture (cotton, fruits, coconuts, tea,) • Livestock rearing • Illegal logging	*Affected areas* Mining, agriculture and forest harvesting Mocuba, Maganja da costa, Nicuadala, Namacurra *Logging* Gilé, Morrumbala, Mopeia, Ile, Lugela, Pebane *Interventions*: Zoning, Delimitation of community areas Intensive and semi-intensive agriculture and livestock rearing Stop issuing annual logging licenses Build more resistant houses Introduce charcoal saving stoves
Niassa province	
• Agriculture (cotton and tobacco) • Harvesting of poles • Forest harvesting • Use of fire in agriculture practices • Forest plantations with substitution of natural forests • Richness in forest resources, high aptitude for agriculture, abundant wildlife, accessible, proximity to urban areas	*Affected areas*: Mavago, Sanga, Muembe, Lichinga Plains *Interventions*: Promote beekeeping, aquaculture, Intensive agriculture and livestock rearing Sustainable agriculture Plantations according to zoning Improved stoves in rural areas Promote use of gas and hydroelectricity in urban areas Training and equipment of forest guards

Addressing the above context specific drivers requires development of indicators (economic, social and environmental) for monitoring. This might include establishing baselines of deforestation and forest degradation at sub-national and national levels, definition of national parameters for *Tier 2*, and criteria to establish leakages at sub-national and national scales, sampling procedures, and time frames for monitoring and reporting, data generation, management and access.

How does policy shape the way resources are used and influence the potential for REDD+?

a) International Conventions

Mozambique's government approved the *National Biodiversity Strategy and Action Plan* (NBSAP) (MICOA 2003) for the Convention on Biological Diversity (CBD). This provides for ex-situ and in-situ conservation of biodiversity, equitable access and benefit-sharing and advocates environmental accounting to complement the conventional National Accounts Systems to assess sustainability of the economy and use of natural capital.

The United Nations Convention to Combat Desertification (UNCCD) emphasizes the introduction of measures for sustainable land management in agriculture, forestry and mining including improved management and enhancement of productivity of arid and semi-arid lands.

As one of the main thrusts of the United Nations Framework Convention on Climate Change (UNFCCC), Mozambique government submitted the *National Action Plan for Adaptation to Climate Change* (NAPA) to UNFCCC in 2007. One of the listed adaptation activities "adaptation in the coastal zone of Mozambique" was approved to issue a LDC fund. Clean Development Mechanism (CDM) is one of the mitigation mechanisms under the Kyoto Protocol to curb greenhouse gas emissions by market mechanisms. As one of the mechanisms for a long term cooperative actions after the Kyoto Protocol commitment period(s), Reducing emissions from deforestation and forest degradation, conservation, sustainable forest management, and enhancement of carbon stocks (REDD+) have potential to curb approximately 12-20 per cent of global greenhouse gas emissions. It is in this context that Mozambique is seeking to develop a readiness plan including or developing and financing new policies and legal instruments that will enable its implementation.

b) National forest and land use policies

One challenge for the country will be the identification of activities that can be eligible for performance based payments for enhancing carbon stocks. Consultations suggested that plantations for rehabilitation of degraded areas, or for supplying energy as well as agroforestry systems to enhance land productivity should be eligible. Further debate regarding large scale commercial plantations is necessary as it is not only replaces natural forests and reduces biodiversity which is problematic for potential financing under REDD+. Key policies that lay the ground for REDD+ include:

- 1995 *Policy on Rights to Use and Improve Land* and the respective legislation and regulations of 1997 and 1999 (MAP 1995a; GoM 1997a; 1998).
- 1997 *Policy and Strategy of Forests and Wildlife Policy* (MAP 1997) and subsequent law and regulations of 1999 and 2002 respectively (GoM 1999; 2002).
- 1997 Environmental Law and subsequent Regulation
    - Decree n^{o} 42/2008 4th November on EIA process amending Decree nº45/2004;
    - Decree nº129/2006 of 19 July on public participation;
    - Decree nº32/2003 of 12 August on Environmental Auditing;
    - Decree nº18/2004 of 2 June on Environmental Quality Standards;
    - Decree n^{o} 19/2007 on Access and Benefit Sharing from Genetic Resources.

- Action Plan for implementation of the Strategy for Sustainable Development (2007)
- Action plan for prevention and control of soil erosion (2007)
- Action plan for prevention and control of fire (2007)

- The *Policy and Law of Territorial Planning (2007, 2009*) provides an opportunity to organize space and land use according to its potential. Its regulation was approved by the Decree n^{o} 23/2008. Currently, there are discrepancies between land potential and allocation to different economic activities. Preliminary data collection for the development of the readiness process demonstrates the existing land use conflicts, for example, between production forests and conservation areas with mining, and agriculture land with horizontal growth of urban areas.
- The *Conservation Policy and Policy (2009) and law (under development)* promotes conservation of biological diversity and promotion of tourism in the national parks, game reserves and hunting areas. However, almost all protected areas of the country have settlements inside and around them. This brings challenges to effectiveness of protected areas management as well as on livelihoods of the communities. Consultations process and zoning of areas within protected areas has been used to mitigate the competition between biodiversity conservation and meeting population needs. In some instances where resettlement was considered an option the World Bank guidelines for resettlement of population were used. This has been the case in the Limpopo National Park, which is part of the Great Limpopo Transfrontier Park[5].

- The 2009 *Action Plan for Reforestation* also creates opportunities for enhancement of carbon stocks. A zoning of the country was conducted indicating that about 7 million ha were available for tree planting; nevertheless, assessment of carbon balance and loss of biodiversity is necessary to establish the extent to which there will be positive contributions to the REDD+ goals. One of the key questions that the country has to answer refers to the identification of activities that can be eligible for performance based payments for enhancing carbon stocks. While country

[5] Including Gonaredzou and Krueger

wide consultations suggested that plantations for rehabilitation of degraded areas, or for supplying energy as well as agroforestry systems to enhance land productivity, should be eligible, the debate was not conclusive as regards large scale commercial plantations that not only will replace natural forests and reduce biodiversity but are also claiming potential financing under REDD+.

- In 2012, a new Forestry and Wildlife Law is going to be enacted (already approved by Prime Minister in January 2012).After 12 years since the passage of the former Forestry and Wildlife, it is uncovered the weakness of some legal frameworks. (1) Ensure the sustainability of Simple License by oblige the submission of management plan on the ground, and extend the licensing period from 1 year to 5 years. (2) Update the stumpage fees for logging concessionaires and wildlife hunting fees.

Through land and forest legislation, the government allocates use rights to communities and investors, following a consultation process. The legislation equally acknowledges customary rights to land and although formal registration is not mandatory communities can choose to delimit, demarcate and acquire land use certificates for their land. Harvesting of forest resources on that land for subsistence is not subject to license. However, if explored for commercial purposes communities are liable to meet the same requirements applied to investors. Consequently, they would have to undertake resource inventories, design management plans and install processing facilities. While private investors can acquire land use rights within a period of 90 days, communities land rights are weakened as the consultation process generally has a 'wish list' that the investor undertake to finance, which often does not happen. Therefore, these provisions tend to exclude communities because of capacity and resources deficits. The readiness process can contribute to developing more equitable policy provisions and implementation mechanisms. The SWOT (Table 14) analysis provides further insights on the extent to which the existing legislation is conducive to implementation of REDD+.

Table 14SWOT analysis of the key policies and legislation

	Land policy and legislation (MAP 1995a, GoM 1997a; GoM 1998; GoM 2003; GoM 2007a; GoM 2007b)	Forestry and wildlife legislation (GoM 1999; 2002), MADER (2003), MINAG and MF (2005)	Environmental legislation (GoM 1997b)
Strengths	• Acknowledgement of community rights to resources and their use according to customary norms, indigenous knowledge, gender equity in access to natural assets, rights of occupation acknowledged irrespective of registration. Land use rights certificate (DUAT) can be issued for collective rights. • Communities have access to productive forest resources. • Acknowledgement of the role of local communities, the private sector, and civil society organizations in the management of natural resources. • Community consultations prior to land allocation to third parties (private sector and state). • Economic, social and ecological objectives of forest policy: forests should contribute economic growth; participation of communities in forest management and access to benefits; sustainable use and management of resources, including conservation and maintenance of ecological processes. • Community based natural resources management including creation of sacred areas by community is a strategy for participatory sustainable forest management. • Promoting sustainable management of natural resources (including agrarian, energy, water, fisheries and other extra-sectoral policies). • 20 per cent of revenue from royalties and fees from exploitation of forests and wildlife should be given back to communities. • 50% of the fine for contravening a forest regulation is given back to the guard (official or community scout). • Community can created socio-cultural protected areas: sacred areas. • Environmental Impact Assessment (EIA)and respective Management Plans are mandatory to mitigate impacts of investments on environment. • Public participation during EIA development and monitoring of implementation. • Sustainable use of natural resources is central to all economic activities. • Need to value indigenous knowledge in resources management. • Participation of community members in environmental management. • Local contribution to addressing global environmental challenges. • Priority actions to address climate change (vulnerability, mitigation and adaptations). • Platform for inter-institutional coordination. • REDD+ can be implemented using provisions of the current legislation.		
Weaknesses	• Not all rights have been identified and prescribed by law (in particular the rights to exploit services such as carbon sequestration); the contribution of forests to watershed maintenance (for subsequent supply of drinking water, irrigation water, and for power generation) needs assessing. • Limited financial resources and understanding of the procedures of communities to formally register land use rights (DUATs) • Differentiated application of the land law (poor consultation or simply ignored by some investors). • Land administration capacity is still weak especially at local level, hence the difficulty in publishing and harmonize land registration database.	• Poor coordination of the national, provincial, district and local authorities as regards management of natural resources. • Limited capacity for enforcement of sustainable-use practices in productive and protected forest areas. • Limited capacity, as yet, for formulation of REDD-related projects. • Formulation of laws on commercial forest harvesting precludes most communities. • Despite improvements in the process of channeling 20 per cent of revenues to the communities, there are still communities who are eligible that have not as yet received the funds.	• Knowledge of environmental law at local level still very poor despite efforts made by MICOA and ONGs to provide environmental education. • Poor institutional capacity, particularly at local level.

Opportunities	• Approval of the *PolicyandLaw on Territorial Planning* (GoM 2007a). • Overall public reform – 'one-stop shop' for provision of information on the process of issuing land-use certificates and investment licensees. • Adoption of the anti-corruption policy and strategy. • *Law of Local Government* (GoM 2007b)providing greater legitimacy and participation of local authorities in decision-making processes, including use of natural resources. • Development of district development plans including zoning; inclusion of natural resources management in the decentralized planning process led by MICOA.	• Existence of resources (from multinational and bilateral partners) for REDD support. • The experience of payment of 20% royalties back to the communities can be used as entry point, and provide positive lessons for REDD payments. • The existence of local CBNRM institutions and provision for natural resources management councils (known as COGEPs) integrating local communities, local authorities, NGOs and the private sector can enable negotiation of rights to land, forest and to carbon payments. • 68 experiences in community forest management have provided lessons on enterprise development, generation of income, and its equitable sharing.	• Large awareness and strong civil society engagement in implementation of the law by different stakeholders including the private sector (corporate social and environmental responsibility), 'Friends of the Forests', and other environmental advocacy organizations. • CBNRM implementation has helped in raising awareness on the importance of environmental sustainability.
Threats	• Poor coordination between the different organs dealing with allocation of natural resources (land, minerals, energy, tourism, conservation, etc.). • Corruption and illegal practices, particularly in consultation process leading to land allocations and investment. • Limited knowledge of the rights and obligations regarding access to different resources by the local authorities and the communities.	• Trying to reform the legislation may undermine the use of the existing opportunities for REDD implementation as the process may take a long time. • Poor understanding, as yet, of the REDD mechanism by many stakeholders (including at policy level) – agriculture, mining, energy, conservation areas. • Limited access to information, on exact geographical extent of land use allocations, their impacts on carbon stocks; hence the lack of understanding of the potential for developing carbon markets and deriving benefits at local level. • Continuous increase of crop production based on land expansion and non-intensification of land use (through introduction of improved agriculture technologies and crops resilient to the environment). • Access to REDD funding and implementation may not be simple and able to meet expectations in terms of future economic benefits.	• Use of unsustainable practices (such as shifting cultivation due to limited access to inputs and technologies; poor fire management, non-implementation of environmental management plans) leading to degradation of forests. • Continuous increase in demand for biomass energy, perpetuating dependency on forest resources and impacts thereafter. • Proliferation of climate change-related initiatives without government leadership on priority-setting and inter-institutional coordination may result in many lost opportunities.

Adapted from **Nhantumbo and Izidine (2009).**

Mozambique land and forestry policies and legal instruments contain important provisions that can constitute a platform for defining carbon rights and also benefit sharing in the context of REDD+ implementation. For example, where the transfer of 20 percent of the royalties on timber harvesting and hunting as well as tourism in protected areas has successfully occurred, it resulted in: (i) dissemination of laws to local level; (ii) capacity building efforts including the establishment of community bank accounts; (iii) establishment of community management institutions; and (iv) discussion of benefit sharing

mechanisms with in some cases communities also having their land demarcated. But there are several failures too: (i) communities leaders also subject to corruption practices; (ii) the insignificance of the amount limit the potential positive impact; and (iii) the 20 percent is at times substitute for the lack of investements in social services such as health and education that should actually have been provided through governmental funds. Devolution of resources to local communities and participatory decisions in allocation of the resources to investments (private and public) and benefit sharing mechanisms are an important basis for development of safeguards. Consultations for development of this R-PP recommended association of carbon rights to the customary rights to land. Further analysis of impacts of such provision will be analyzed during implementation of the R-PP.

c) Extrasectoral policies determining land use and emissions

Agriculture

The *Agrarian Policy* (MAP 1995b) defined sustainable management of natural resources as the key to the development of the agriculture sector, particularly in respect to its contribution to food security. Technology is yet to reach the smallholders and the lack of a number of services is one of the limiting factors to agriculture intensification and specialization, as well as increased productivity and production. The Strategic Plan for Development of the Agrarian Sector (PEDSA) from 2011 to 2019 outlines the priority interventions. The objective of this strategy is to contribute to food security and revenue generation from agriculture products, as well as increase production aimed at the market in a rapid, competitive and sustainable manner. Delivery of these goals depends on five pillars:

1. sustainable use and management of natural resources;
2. research and extension services to enable knowledge generation and dissemination on technologies of production and agro-processing;
3. infrastructure development particularly increase of road network in the rural areas and access to markets;
4. improved financial services to contribute to investment in increased production and productivity;
5. institutional development and human capital at central and local levels.

Implementation of this strategy will certainly require clearing of forests as in previously indicated the allocation of 6 million ha of land in forest rich areas for commercial agriculture pave the way for conversions. This clearly highlights the conflicts and challenges on reconciling the achievement of the various pillars within the context of PEDSA itself. Increased productivity in the current areas under smallholder, and large scale commercial farmers is also an important strategy for delivering the goals of PEDSA. Better management is paramount to reducing fire and optimizing shifting cultivation. Assessment of land use change and mapping of carbon stocks will allow monitoring of impacts of implementation of this strategy.

The agro-ecological zoning undertaken by MINAG is due to be completed by the end of 2012.Analysis of land suitability for crops such as for peanuts, cassava and biofuel feedstock as well as defining other land uses. Allocation of land for REDD+ initiatives or projects also will apply this land use suitability instrument and also generate information that can further inform zoning decisions.

Energy Policy

Mozambique produces and exports hydro-electrical power mainly to South Africa and other countries in the region. The country is also exploring coal and gas resources. However, there is still a large deficit in terms of provision of this energy to fuel the country's development. With World Bank support, the country

is investing in establishing a transmission line that traverses the country in order to increase the coverage and quality of electricity.

The Ministry of Energy (MEnergia) has a Directorate of New and Renewable Energies with a mandate for investing in alternative sources of energy and establishes policies to ensure access to the same. An experiment on solar and wind energy is being piloted in the country. MEnergia and MINAG have been coordinating efforts over the years on identification of strategies to address the increasing demand for biomass energy in the country.

Mozambique approved the Policy and Strategy for Biofuels in 2009. The objectives include promoting sustainable production of biofuels; reducing the country's dependence on fossil fuels; diversifying sources of energy; promoting sustainable rural development; and generation of foreign exchange through increased exports; exploring regional and international markets; promote research on technologies for production of biofuels by national institutions, including technologies applicable to local communities; ensuring food and nutritional security; reduce cost of fuel for the final consumer; and protecting national consumers against the volatile prices of fossil fuels and energy insecurity. However, the size of the economy and hence fossil fuels consumption is relatively small; hence biofuels are unlikely to serve as an important source of clean energy for the country.

Mining

The mining policy defines state ownership rights that supersede customary and other use rights. However, mining, like most of legislation in Mozambique, is progressive regarding environmental sustainability obligations. The companies are required to identify and define plans to address negative environmental impacts during prospecting and implementation of investments. The requirements include environmental impact assessment and development of related management plan, and implementation of best mining practices.

Governance

Mozambique has been productive in terms of producing legal instruments that are both socially progressive and environmentally sound. However, the government has been facing enormous challenges to fully implement these policies and legislation.

World Bank (2009)[6] identified five pillars to analyze forest governance. This framework is used to provide a snapshot assessment on governance challenges (Table 15); however a detailed analysis will be conducted during the implementation of RPP.

[66]Roots for Good Forest Outcomes: An Analytical Framework for Governance Reforms

Table 15 Assessment of key governance challenges

Forest governance pillars	Brief assessment
Transparency, accountability and Public participation	Public participation- community consultation is conducted before adjudication of forests and land to commercial exploration or for protection purposes. Government decisions have to be made within 90 days of submission of application. The challenge is to improve timely availability of information to give opportunity for an informed response by communities. Experience and several case studies (e.g. Nhantumbo and Salomao, 2009; Norfolk, 2010) have documented that this process is often not implemented according to law and regulations and some parties might use it to further their interests. In 2010, 548 land related conflicts were reported of which only 475 were settled. Due process on land acquisition aimed at preventing these conflicts. Transparency – Annual reports are produced indicating land and forest allocation, the progress on development of management plans in concessions, revenue from royalties etc. Though this information can be solicited, it is not printed and distributed publically. A summary report is generally presented in the annual meeting of the sector, and elements presented to the Forest Forum comprising of private sector, academia and NGOs and chaired by DNTF. The representativeness of NGOs is generally limited, while community representatives are completely absent. Land use data base under construction which extends beyond the forest sector is yet to be published. Recently, a Land Forum was created as platform for dialogue on issues of rights and processes of rights adjudication. Dialogue between stakeholders on the mechanisms of operation of these fora could ensure maximum benefits, including a proactive engagement in setting the agenda of the meetings, schedule and chairing. The Ministry of Agriculture does not have a strategy to deal with public demand for clarification on governance of the sector. Accountability – Since adoption of CBNRM as one of the forest strategies, four national conferences have been organized through collaboration between government and civil society. This is one of the few platforms for stock taking on policy implementation lessons and challenges. Although there have been instances where forest authorities in the provinces were removed as a result of rampant illegal logging, this is often an internal response to the problem. There is no clear mechanism for the Head of Provincial Forest/Land Services to communicate with local stakeholders regarding forest resources, revenues generated and law enforcement. There are, nonetheless, interactions with private sector actors through their associations and some provinces such as Cabo Delgado, Zambézia and Sofala conduct *ad hoc* stock taking meetings. When communities are given the 20% royalties by the Forest authorities, there is no information on the quantity of timber extracted, total value of revenues as well as the share received by other forest dwellers.
Stability of forest institutions and conflict management	The forest sector has been stable for several years in terms of leadership, policy and clear vision and program. However, in the past three to four years there were successive changes in leadership, at high level and for about a year the deputy national director assume the two roles of director and deputy director. This affected the normal functioning and decision-making within the institution and also affected DNTF's involvement in the REDD+ process and its potential to present the issues to the wider audience within the Ministry of Agriculture.
Quality of forest administration	Forest and land administration are secured by national level institutions such as the resources assessment department and centre for land mapping departments. These are responsible for collecting land cover and use; monitor and map information on land allocation to various economic activities. At provincial level collecting and collating information on use is also important. However, the work done in the context of REDD exposed many problems that need to be addressed in order to create a reliable information management system which can improve efficiency and effectiveness in forest administration.

Coherence of forest legislation and rule of law	Mozambique has good policies that devolve resources to local communities and create provisions for sustainable use of resources. Yet, law enforcement is a stumbling block. The number of field officers is small (1: 50,000 km^2), with limited means hence vulnerable to corruption. At National level there is also insufficient personnel dedicated to law enforcement, including technical verification of implementation of management plans. There are nearly 179 concessions in the country but only 106 fulfilled legal requirements; fewer implement the management interventions and most implement minimum processing. There is a gap in technical staff to monitor the content and implementation of management plans beyond sporadic visits by senior staff. There is also need to monitor implementation of environmental management plans by the timber industries including large scale plantations. The average number of annual licenses issued reduced 22, but in reality the number increased in the provinces of high value timber. In fact, the volume harvested is nearly double what was harvested under concession regime. Poor law enforcement of legislation on processing requirements, classes of species that can be exported facilitates illegal exports; loss of value added and employment. Recently more than 500 containers of logs were intercepted in the different harbors' in Mozambique destined to China. Community delimitations and registration of land rights is undertaken generally with NGO support. Likewise, distribution of the 20% share depends on external institutions to support community organization processes. Implementation mechanisms have to be strengthened.
Economic efficiency, equity and incentives	The current legislation clearly defines economic, social, ecological and institutional objectives and defined strategies to achieving them. All objectives are underpinned by sustainable use, ecological integrity, creation of benefits to the national economy and ensuring that forest dependent communities also benefit. The private sector, for example, benefit from 40 per cent reduction of royalties for wood processed in the country to promote value addition; 15 per cent of surcharge on royalties is aimed to support reforestation and enrichment of harvested areas; 20 per cent of the royalties are given back to communities. The legislation contains the right instruments for sustainable management, but implementation is the major drawback. The royalties are generally low, as they have not been adjusted for inflation since 2002. For example, the highest royalties for precious species is nearly half of the value a few years ago. The royalty for charcoal is US$0.3/bag of 50 Kg, being that the producer sells it at US$1.67 to an intermediary or middlemen who sell it in bulk in Nampula city for US$4-5.There is indication that both the state and the producer loose revenue for the middlemen. A new Law and its Regulation for Timber will soon be in place (*Lei da Taxa de sobrevalorização da madeira).*

While basic studies have been conducted for the preparation of both the draft National REDD+ Strategy and the RPP and the draft strategy, there is still need to compile and analyze information (biophysical and socio-economic) related to policies, plans, programs and intervention in the different sector that influence land use change. **Table 16** presents a summary of the main actions and **Figure 19** highlights the key outputs of the analysis. Appendix 2a provides summary TOR for the studies.

Figure 19 Outputs of analytical studies on land use, drivers of DD and policies

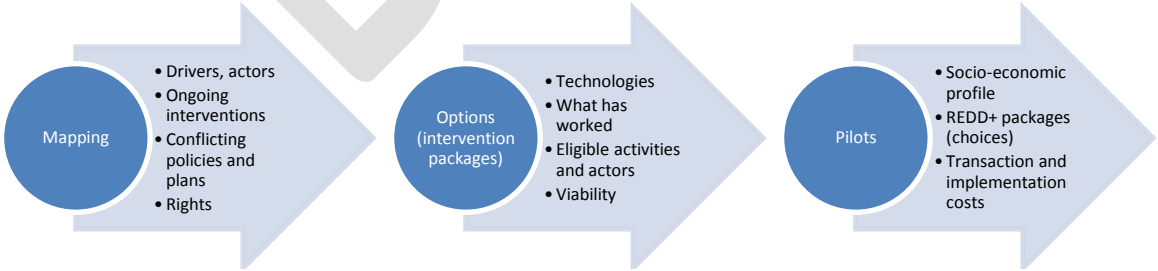


Table 16KeyInterventions to address priorities in Component 2a

Activities	Responsibility	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Accessible mapping of land use														
Identification of land use/users and mapping at sub-national (corridor or woodshed) level with view of scaling up to national level using higher resolution satellite data and publication of data in accessible formats	REDD+ working group and DNTF/UT-REDD+ once established -	Pilot provinces - Zambézia, Nampula, Gaza, Manica, Sofala and Niassa.(Maputo, Beira and Nacala) and others												
Map forest areas previously explored through simple licenses and assess practices in a sample of concessions	REDD+ working group and DNTF/UT-REDD+ once established	All country												
Map mangrove forests and ongoing interventions	REDD+ working group and DNTF/UT-REDD+ once established	Maputo, Inhambane, Sofala, Zambezia, Nampula and Cabo Delgado												
Inventory of degraded areas and land use mapping	DNTF, DNGA, IIAM and UT-REDD+	Maputo												
Analysis of and harmonization of cross sector development plans														
Review of pricing systems, including transfer pricing, species classification; royalties for land resources and investment incentives	REDD+ working group until UT-REDD+ is operational	Maputo												
Research on sustainable land use practices including in drylands and costing	IIAM, UEM, INGC and sub-national based universities and other institutions	28 districts in drylands and other REDD+ pilot areas												
Mapping of land rights (who own what, registered rights or not, conflicts) and assess implications for REDD+ goals	REDD+ working group and DNTF/UT-REDD+ once established	Zambézia, Nampula, Gaza, Sofala and Niassa, Tete, Inhambane												
Review the	REDD+ working	Maputo												

existing benefit sharing mechanism between the state and communities as well as explore wider application to mining, energy and other industries	group until UT-REDD+ is operational		
Analysis of sectoral and extrasectoral policies plans and map them and determine tradeoffs	REDD+ working group and DNTF/UT-REDD+ once established	National level	
Facilitate cross-sector dialogue on macroeconomic policies and development plans vis a vis REDD+	UT-REDD and CONDES (national and provincial)	Maputo and all provinces	
Baseline studies of eligible activities in pilot areas			
Analysis of potential and eligible activities for REDD+ implementation and potential tradeoffs	REDD+ working group and UT-REDD+ once established	Maputo	
Development of baseline information and case studies on drivers, ongoing activities, rights and other socio-economic aspects	REDD+ working group and DNTF/UT-REDD+ once established	All pilot areas	
Compilation of land use options and technologies and economic viability	REDD+ working group and DNTF/UT-REDD+ once established	All pilot areas	
Identification of gaps based on the above	REDD+ working group and UT-REDD+ once established	All pilot areas	
Synthesis of key drivers of DD, their significance, and link with specific governance issues	REDD+ working group and UT-REDD+ once established	All pilot areas	

Table 17: Summary of Assessment of Land Use, Forest Policy and Governance Activities and Budget (Follow-up Activities Needed)						
Main Activity	**Sub-Activity**	**Estimated Cost (US$ in thousands)**				
		2009-2011	**2012**	**2013**	**2014**	**Total**
Accessible mapping of land use	Drivers of DD along landscape-level corridors of land use (Maputo-Gaza, Manica-Sofala, Nampula-Niassa)	45.0	45.0			**90.0**
	Areas explored by simple licenses and concessions over the years		10.0			**10.0**
	Change in mangrove forest cover and ongoing rehabilitation		30.0			**30.0**
Analysis of and harmonization of cross sector development plans	Spatial distribution of land use, conflicting uses and rights Spatial distribution of key sectoral plans – forests, agriculture, environment, mining, infrastructure, energy Analysis of sector policies and tradeoffs due to REDD+ (investments, taxation, benefit distribution)		20.0	40.0	10.0	**70.0**
Baseline studies of eligible activities in the pilot areas	Socio-economic analysis and identification of potential intervention packages and delivery models		50.0	50.0		**100.0**
	Analysis of viability (costs and benefits) of the intervention packages and ongoing activities to build on		40.0	40.0		**80.0**
Total		**45.0**	**195.0**	**130.0**	**10.0**	**375.0**
Government						
FCPF			**195.0**	**130.0**	**10.0**	**335.0**
Government of Norway		45.0				**45.0**

2b. REDD-plus Strategy Options

Development strategies and climate change mitigation

Mozambique is striving to improve economic growth through sustainable use and management of its wealth of renewable and non-renewable resources. In the past decade the government developed three poverty reduction strategy papers (PRSP) to address the Millennium Development Goals (MDGs) and two agriculture sector activity investment programs (PROAGRI I and II). Poverty reduction, food security, value addition, employment creation, reduction of vulnerability, improved research and extension services; access to markets for financial resources and goods and services; community engagement; proactive private sector are some of the goals/challenges pursued in these strategies. The Strategic Plan for Development of the Agriculture Sector (PEDSA) has just been approved for 2011 to 2019. National Forest Plan (NFP) is under formulation in which the strategic actions for REDD+ will be described. Decentralization of planning to district level provides platform for integrated operationalization of various development plans including mitigation and adaptation to climate change.

There will be tradeoffs to be considered in implementing REDD+ and the growing potential of extractive industries, particularly mining as well as promotion of agriculture in the Zambezi Valley and northern Mozambique.

In 2009, Mozambique embarked on the process to develop the R-PP including the road map outlining the studies that needed to be conducted and consultation process. The studies were undertaken in line with the FCPF guidelines for development of R-PP – V4. However, the government decided to create an instrument that could inform the cabinet on options and provide guidance on REDD+ implementation and potential implications for the country. The development of a so called National REDD+ Strategy was therefore a key priority for the government. As such on 1st March 2010 during the visit of the Minister of Environment from Norway to Mozambique, the Mozambican Minister of Coordination of Environment Affair tasked the REDD+ working group to develop the strategy for submission to the cabinet. The draft strategy was concluded in August 2010 and has been discussed by CONDES at Technical Level and it has been used to further disseminate and discuss its content with various stakeholders including communities during the consultation held up to November 2011. The draft strategy was also presented to the development partners in February 2011. This draft strategy was built on the elements of the R-PP that had almost been prepared by then. Eventually, further elaboration of this national strategy was paused in order to align its further improvement and finalization with the R-PP process. After approval of the RPP, the draft national REDD+ Strategy will be finalized.

Vision and principles on the draft strategy for REDD+ readiness phase

The readiness process aims to develop legal, institutional and capacities to address the drivers of deforestation and degradation as well as promote conservation, sustainable forest management and enhancement of carbon stocks. Valuing natural capital and acknowledging the contribution of environmental services to the economy and social wellbeing through multi-sector interventions, gender sensitive and compliance with good governance principles are an important platform for delivering REDD+ goals.

The REDD+ options within the draft National REDD+ Strategy aim at (i) reducing emissions from deforestation and forest degradation as well as promote enhancement of carbon stocks; (ii) delivering co-benefits (poverty reduction, sustainable development and biodiversity conservation) to the people and to the country. The general principles guiding the choice of effective options include:

- the extent to which they contribute to additional carbon sequestration capacity (with potential payment for carbon credits as complement to development activities);

- permanence (long-term commitment to reduction of emissions);
- leakage control within the country borders, between neighboring countries as well as address international leakage as investments shift from elsewhere to Mozambique;
- objectivity in assessment of performance in terms of carbon emissions and removals as well as co-benefits;
- equitable rights to carbon and sharing of costs and benefits resulting from REDD+ interventions;
- access information to enable participation of land users and making informed choices;
- transparency in management of the REDD+ process and activities that inherently will affect emissions reduction;
- effectiveness of interventions to address drivers of deforestation and degradation and low transaction costs.

The draft National REDD+ Strategy further highlights the following priorities: mapping land use and assessing stocks of carbon; developing alternative and sustainable sources of energy; sustainable intensification of agriculture; improvement of law enforcement of land resources use including auditing environmental management plans.

Options, models and interventions to address direct and indirect drivers of deforest and forest degradation

Addressing direct and indirect drivers of forest conversion or degradation calls for a strong technical capacity of coordination and multi-sector dialogue to ensure commitment and mainstreaming of interventions in sectoral programs. This should be based on development of:

- Degraded forest land and its causes mapped.
- Arid and semi-arid 28 districts including Tete, Gaza, and other areas identified and mapped.
- Land use (current and potential) planning at national and sub-national level harmonized and database publically available.
- Conflict between potential and current land use and allocation for different economic activities assessed in terms of its impact on deforestation.
- REDD+ included in the CONDES agenda to ensure harmonization and continuous monitoring of sector mainstreaming and potential synergies or conflicts. The participation of the Coordinator of the UT-REDD+ and, possibly, a member of the Technical Review Committee in CONDES meetings would be critical.

Strategic actions to address direct causes of deforestation and degradation

The strategic actions are presented in order of priority.

a) Sustainable Agriculture (unsustainable agriculture practices)

- Accurate agricultural land use mapping including included in the national systems. Tradeoffs between agro-ecological zoning and current trends in land occupation and use in the country assessed with priority given to REDD pilot sites in Nampula, Zambezia, Niassa, Cabo Delgado, Gaza and Tete.
- Financing of priority areas of PEDSA that support reduction of emissions from agriculture sought after including synergies with UNCCD. These priority areas may include:

- Sustainable agriculture intensification, including conservation agriculture and mainstreaming of climate smart and evergreen agriculture.
- Agroforestry systems to improve land productivity.
- Determination of livestock (cattle and goats) carrying capacity particularly in Tete, Manica and Inhambane and production of biogas and organic fertilizers.
- Value addition of agriculture products and improved access to markets and price information to smallholders

- Technologies, finance and markets
- Gender disaggregated roles in the value chain of key agriculture commodities driving rapid land use change and intervention technologies sensitive to these roles identified.
- Use and impact of research in land use practices evaluated and opportunities for improving its effectiveness identified and budgeted
- Opportunity costs and transaction (including implementation) costs and well as viability of proposed interventions assessed.

The potential for leakage from implementation of these actions is minimum. There is limited area within which shifting cultivation takes place limited by labour and reasonable distance that people can travel on foot or regularly by other means to their farms. For large scale investments in agriculture, the flexibility in terms of choice of location is higher. Therefore the sub-national REDD+ implementation boundaries should be sufficiently large and informed by the on-going agro-ecological zoning, which will indicate the land potential, hence providing the necessary information to track leakage.

b) Sustainable biomass energy (unsustainable production of biomass energy)

- Cconcessions (long term management of forests) for biomass harvesting and production of charcoal introduced and pilot in Gaza, Sofala and Nampula provinces.
- Forest management capacity to ensure sustainable harvesting of forests for biomass production built in pilot areas of Gaza, Maputo, Sofala and Nampula provinces.
- Charcoal makers trained in improved kiln efficiency in Gaza, Sofala and Nampula provinces.
- Value chain and role of women and men evaluated to establish adequate interventions for both actors and pilot in Gaza, Maputo, Sofala and Nampula provinces.
- Viability of alternative renewable energy sources such as wind, solar, biogas and others assessed in Inhambane, Nampula and Tete provinces.
- Large scale production of affordable energy efficient stoves promoted through identification and financial support of producers (SME) in Gaza, Sofala and Nampula provinces.
- Plans of expansion of electrification network and accessibility in medium and long term evaluated.
- Alternative packaging and commercialization of gas to increase accessibility and usage assessed.
- Opportunity costs and transaction (including implementation) costs as well as viability of these operations determined.

This activity is relatively more mobile, which increases the potential for domestic leakage. This is particularly with the existence of several middlemen who own lorries and travel long distances in search of charcoal in particular. The railway network also facilitates direct engagement of the producer in taking

the biomass energy to the market. In the case of Maputo biomass energy market, the sub-national unit for testing effectiveness of the strategies above is to include Maputo and Gaza province, in case of Beira, the unit should be Sofala and Manica as the latter also supplies biomass energy to the second biggest city. The rest of the provinces, including Nampula are relatively self-sufficient. Therefore, monitoring leakage within the provincial boundaries would be possible.

c) Construction materials

- Introduce concessions for harvesting of poles from native species in combination with management of forests for biomass energy was the market exists.
- Plantation of fast growing native and exotic species for poles.

Potential of leakage follows the same patterns as biomass energy, therefore the same subnational boundaries would be considered (Maputo-Gaza, Manica-Sofala and provincial boundaries in the other areas).

d) Sustainable logging (unsustainable logging)

- Accurate forest allocation mapping included in national information system.
- Establish incentive mechanisms for more widespread forest certification and pilot in Sofala, Zambezia, and Cabo Delgado.
- Viability of financing mechanisms to support transformation of annual license operators into enterprise associations operating long term concessions assessed and tested in Zambézia, Nampula, Manica, Sofala and Cabo Delgado.
- Viability of establishing and supporting community timber concessions to be explored as sole venture or linked in the value chain with private sector determined and supported.
- Relative shares in private-community ventures (gender sensitive) in timber and charcoal production assessed and tested.
- Opportunity costs and transaction (including implementation) costs and viability of these interventions determined.
- Independent monitoring organisation approached and engaged in Mozambique.

Logging has very high potential of domestic leakage. There has been experience of exemplary law enforcement in Sofala which resulted in migration of logging companies to other provinces, particularly to Zambézia. In order to implement meaningful strategies for improving forest degradation the recommendable sub-national boundaries area: Manica-Sofala-Zambezia; Nampula; Cabo Delgado.

e) Illegal logging

- Improve information management systems within the Ministry of Agriculture and Ministry of Industry and Commerce – species classification, identification and control at different points of exportation of goods including to neighboring countries as these are used for transition.
- Training of customers' officers in issues related to timber industry to improve their capacity to detect illegal trade.
- Training of police officers to contribute to detection of illegalities including the road traffic police.

Boundaries set for unsustainable logging practices would also apply in this case to control leakage.

f) Fire management (uncontrolled fire)

- Undertake awareness raising and environmental education on sustainable fire management.

- Introduce extension services on sustainable hunting and cultivation techniques with gender focus to engage the key actors and beneficiaries.
- Strategy for fire management and action plan particularly awareness and incentive systems implemented and financed.
- Opportunity to use the Presidential Directive on 'one pupil one tree, one leader one forest' to building firebreaks assessed.
- Transaction (including implementation) costs measured.

While this practice is widespread there is no evidence of potential leakage. People use fire because of lack of access to high productivity technologies. Therefore, land users are likely to adopt these practices.

g) Sustainability of infrastructure

- Urbanization and vertical growth of cities plans developed and enforced.
- Planning of large infrastructure interventions such as roads, harbours, railways and bridges looking at options to minimize conversion of forests during construction and as a result of development opportunities created.

h) Sustainable mining

- Inventory of artisan mining conducted and viability of organization and licensing assessed with allocations included in national land use mapping systems.
- Licensing of artisan (both men and women) mining and environmental awareness and establishment of local institutions to oversee and enforce good environmental standards introduced or enforced.
- Tax structure of mining activities and percentage that can be allocated to local communities to promote sustainable land management established.
- System for regular updates on implementation of mining environmental management plans to district and community stakeholders where the mining operations take place established and implemented.
- Agreements between communities and other local institutions with mining companies to monitor restoration and rehabilitation of land degraded by mining activities established and operational.

Areas of potential for mining are limited. While small scale miners can migrate from one are to the other, during the readiness process this should be analysed in the context of the boundaries set for logging.

Strategic actions to address indirect causes of deforestation and forest degradation

a) Population increase at 2.3 percent

- Impact on land uses and emissions for key commodities driving conversion of forests due to domestic consumption patterns and production trends for meeting external demand assessed.
- Cultural and social aspects including gender related defining the role that drive population expansion and link with deforestation and degradation analysed.
- Historic and project price trends and consumer behaviour in domestic and international markets in relation to key commodities that drive land use patterns and practices assessed.

b) Economy of the country: poverty, literacy, employment

Poverty Reduction Strategy aims at improving socio economic indicators such as the above. Therefore, prioritising actions related to education, creation of economic opportunities will impact emissions reduction in the medium and long run. Strategic actions lead to:

- Improved enrolment including access to education by girls is a long term intervention that will change the patterns of land uses.
- Diversified rural economy.

c) Extension services (limited extension

- Coverage of extension services expanded and refreshment training to existing officers to strengthen capacity to deal with emerging issues including REDD+ introduced.
- Registered informal sector in the urban areas and raised awareness on the value chain of different products, the role of different actors as well as influence on land use practices.

d) Demand for commodities in international markets

- Monitor trends and potential impact of land investments in different sectors on conversion of forests to other uses.

e) Investment policies and taxation

- Reviewed taxes and fees applied to environmental licensing with view of assessing robustness in incentive for compliance with environmental management practices in key sectors of the economy impacting land use.
- Pricing systems, species classification and royalties for timber harvesting reviewed and reviewing effectiveness of fiscal incentives offered to private investors to promote sustainable practices assessed.
- Transparency on revenues generated from investments in various sectors including mining and how they are (can be) applied as incentives to improve land use practices and emissions reduction introduced.

f) Replacement of natural forests with monoculture

- Biodiversity and forest types prior to conversation to plantations assessed and mapped.
- Guidelines for protection of mosaics of biodiversity and areas with significant forest cover developed and enforced.

g) Strengthen law enforcement (limited law enforcement capacity)

- Monitoring of forest harvesting practices and implementation of environmental management of large scale investments.
- MINAG, MITUR and MIC law enforcement officers for forest and wildlife and customs trained and equipped.
- MINAG personnel trained for systematic technical verification of execution of management plans in forest concessions especially at provincial level.
- A report on status of implementation of sustainable forest harvesting in concession and annual license practices produced.

- MICOA environmental audit officers especially at provincial level trained and equipped.
- Participatory law enforcement strengthened through identification of actors, organisation needs, training and establishment of reward systems for community scouts.
- Enabling environment for establishment and operation of independent forest monitoring institutions created.
- Existing benefit sharing mechanisms (e.g. 20% community benefit and land tax revenue allocation to district authorities) reviewed and wider application to mining, energy and other industries explored.

Policy and legal framework: addressing weaknesses and threats identified in the SWOT analysis

a) International conventions

- Awareness rising to local institutions and communities on legislation relevant to REDD+ as well as in the development of specific legislation for REDD+ strengthened.
- Harmonized climate change adaptation and mitigation strategies and action plans.
- Capitalize on resources for financing the three UN conventions (CBD, CCD and FCCC) and integrate interventions at local level.
- Effective operation of CONDES as platform to identify conflicting policies and align sector interventions for effective REDD+ implementation promoted.

b) National forest and land use policies

- Effectiveness of CBNRM in reducing deforestation (through better forest management, enterprises and benefit sharing) assessed as REDD+ delivery models that can be maintained and scaled up.
- Established legal requirement for allocation of land use rights based on potential and understanding of impact on emissions.

c) Extra-sectoral policies

- Identified and developed policy and legal instruments necessary for operationalizing any of the previous strategic options.
- Sectoral and extra-sectoral policies harmonized with the REDD+ strategy and action plan.

d) Overarching governance issues

- Opportunities within the Constitution, Land, Forests, Conservation and other policies and legal instruments for establishing clear legislation on rights to services (including carbon sequestration, watershed, biodiversity, and landscape) assessed. Specific legislation on rights to environmental services developed building on consultations' suggestion that carbon rights should be linked to land and forest tenure.
- Opportunities and challenges of carbon financing and markets evaluated and necessary legislation to safeguard equitable benefit sharing developed.
- Public participation

    - A system for stakeholders' assessment of their role in the implementation of the readiness plan and development of the REDD+ strategy introduced.

- Transparency
    - Annual reports on land allocation and use (with sector, location and stakeholder disaggregated information), forest harvesting, processing, markets and revenue compiled at national and provincial level and published.
    - Land administration capacity and necessary investment to improve land information management systems at sub-national and national level assessed.
- Accountability
    - Effectiveness of existing institutions such as the Anti-corruption unit, consultative fora such as Land Forum, Forests Forum, CBNRM Forum, Provincial and district consultative council, civil society fora on poverty and sustainable development evaluated and identified opportunities to strengthening.
- Leadership
    - Agreement between MICOA and MINAG at high level to jointly coordinate and facilitate the readiness process, development of strategy and subsequent implementation established.
    - CONDES formally recognized as the cross-sector coordination body to steer REDD+ readiness process.

The strategic actions discussed will only be effective in reducing emissions in the context of clearly identified and gender sensitive delivery models that take a landscape approach in pilot areas. For example in responding to the direct drivers of deforestation and degradation, these might include a combination of:

- Climate smart and evergreen agriculture in large commercial agriculture investments to minimize conversion of forest resources.
- Conservation agriculture, agroforestry systems, organization of producer associations to increase production and access sustainable agriculture production technologies and resources.
- Participatory natural resources management with development of alternative livelihoods as well as payment for ecosystems services (reduction of emissions, conservation of biodiversity and watershed maintenance).
- Community forestry and private sector plantations for rehabilitation or restoration of landscapes and for biomass energy.
- Partnership between communities and private sector with the value of land resources and labor determining community's shares into the business and representation in decision making bodies.
- Small and medium enterprises; among other models to be explored during the readiness implementation process.
- Establishment of forest conservation areas to protect biodiversity and protect carbon stocks.

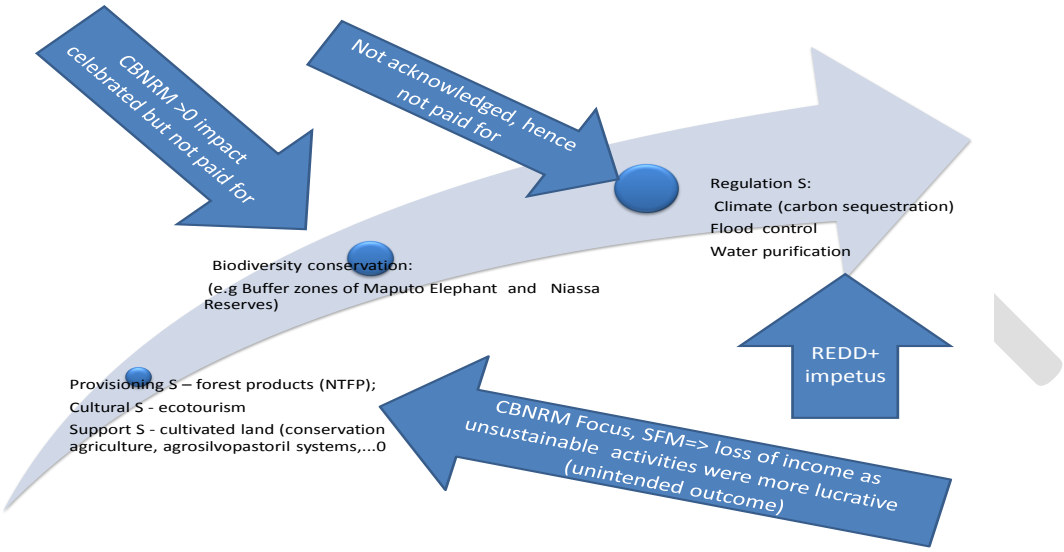
REDD+ implementation needs to build on previous experience and lessons.

First, deforestation causes cannot be dealt with through short term projects of less than five years. Analysis of viability of some interventions promoting participatory natural resources management indicated that in most cases at least seven-ten years were necessary for reaching the break-even point

and realize modest net benefits. Therefore, REDD+ interventions need to be long term to produce the desired outcomes.

Second, compensation is a key factor in intervention design in reducing carbon emissions and generating other REDD+ co-benefits. It is important to acknowledge that most communities did forego income from changing land use practices without compensation, for example, communities did loose income with sustainable production of charcoal introduced in CBNRM initiatives (Figure 20).

Figure 20 REDD+ needs to build on CBNRM



There are about 70 CBNRM initiatives, one community with a forest concession in Manica, more than 600 communities organized in the context of benefit sharing of forest and wildlife royalties, several communities that hold land use rights (DUAT), several others that plant trees in the context of the Presidential Directive 'one pupil one tree, one leader one forest'. REDD+ should build on these initiatives and the impetus it brings will certainly boost commitment to explore resources in a sustainable manner. National and international organizations such as ORAM, CTV, iTC, LUPA, MICAIA, Forum Terra, IUCN, WWF and others have supported the communities to secure land rights, implement sustainable management practices to protect biodiversity and develop sustainable enterprises. More than 5 million ha across the country have been formally registered as community land. All these initiatives offer an opportunity to start implementation of REDD+.

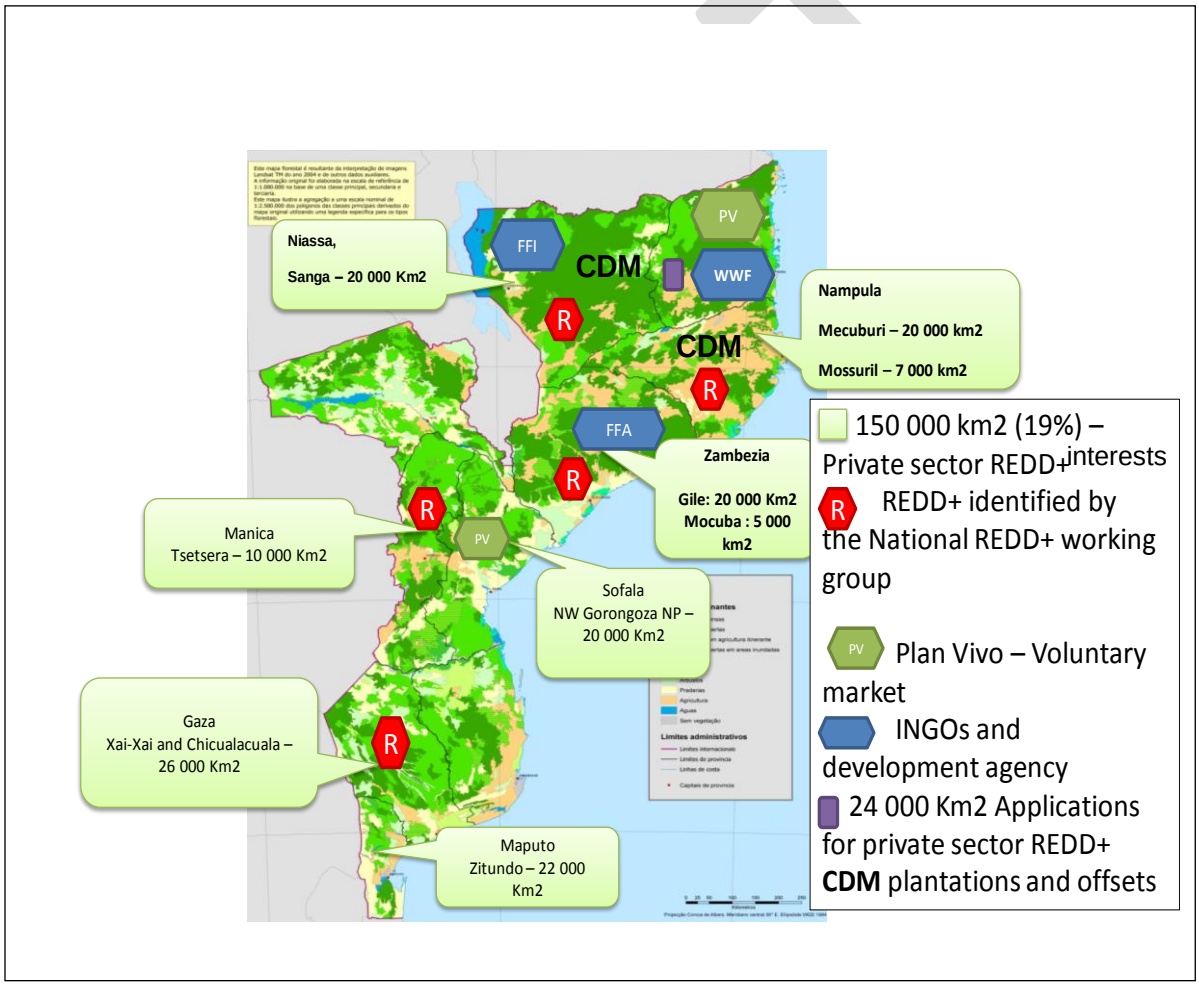
Third, success in REDD+ implementation will require a combination of (a) policy harmonization and clarification of rights and benefit sharing mechanisms; (b) local dissemination and capacity building through pilot programs; and (c) financial mechanism that translate successful pilots into nationwide programs.

REDD+ piloting areas and interest for large scale investment in REDD+ in Mozambique

The REDD+ pilot areas indicated in the map (in red –Figure 21) were selected as shown in Figure 10 (1b) during consultations. As discussed later in the document the areas aim to address a number of overarching drivers, such as biomass energy in the case of Maputo and Gaza, logging and large scale investment across sectors in the provinces of Manica, Sofala and Zambezia and large scale forest

plantations mining and biofuels in Nampula and large scale plantations in Niassa. The areas selected are sub-national units large enough for internal leakages to be monitored. Within each of these areas, there is a myriad of ongoing activities contributing to reducing deforestation such as CBNRM, protected areas by the government or by NGOs or private sector and certified logging companies. In the readiness phase, MRV/RL subunit of UT-REDD+ will lead the establishment of a national Forest Resource Information Platform (Component 4a) which compile these geographic information in the platform database. These information shall be managed and published transparently. In a subnational pilot project level, in Manica province, the South-South collaboration is has supported the assessment of deforestation, land rights mapping, socio-economic analysis to determine structure of land users and preferences for REDD+ interventions, in order to move on to providing capacity and means to implement such actions as well as support local institutions.

Figure 21 Examples of investment proposals & on-going projects in climate change mitigation



There has been a significant interest by the private sector and international conservation organizations to establish REDD+ projects (not issue government approval): (i) There is a private company allegedly having been provided with the potential opportunity to engage in carbon trading for 15 million ha in all provinces identified for piloting REDD+ in the context of the development of the National REDD+ Strategy. The company has been undertaking carbon assessments and intends to start implementing

REDD+ project in Sofala (Gorongosa, Nhamadzi, Vanduzi) covering 273.6 thousand ha; (ii) There also another company in cooperation with international NGO in the Niassa Reserve intends to implement REDD+ in the Niassa Reserve; (iii)Another company applied for 3.4 million ha in Cabo Delgado including the districts of Macomia, Montepuez, Muidumbe, Mocimboa da Praia, Palma, Nangade, Mueda and Quissanga; (iv) WWF intends to implement REDD+ in 250,000 in the Zambezi Delta; (v) Envirotrade intends to convert and expand the Plan Vivo initiative in the Gorongosa buffer zone and also to implement a REDD+ pilot in the Quirimbas National Park; (vi) AfD is working with the Gilé reserve to investigate the potential for REDD+ (Figure 21).The total area currently being applied for under these different initiatives amounts to 30-40 percent of the surface area of the country.The government continues to receive applications from private sector and international organizations to implement REDD+ related projects.

While piloting is an important step in the readiness process, having *guidelines on minimum conditions (legal, institutional and operational) to minimize negative effects on communities and the state* is urgent given the above described pressures. These can include application of existing legislation on land and forests, in addition to engaging stakeholders in discussions on carbon ownership and benefit sharing mechanisms. These are some of the key determinants of social impacts of REDD+, including effectiveness in addressing the drivers of emissions from change in forest cover. Furthermore, early discussion of the funding mechanisms for such interventions can contribute to better understanding at sub-national level of opportunities that they offer as well as risks associated. It is therefore envisaged that such guidelines as well as an inventory of ongoing and planned private sector initiatives and their status are being developed early in the R-PP process. This will allow the relevant governmental agencies to make more informed decisions and it will increase transparency of the process.

Estimation of costs and benefits of strategic actions

Success in REDD implementation in the country requires implementation of viable strategic options that different land users can adopt in order to improve land use practices and contribute to reducing emissions, conserve biodiversity and also address poverty. There are three costs that to the extent possible should be determined: the opportunity cost to gauge the benefits foregone by the land users for adopting land use practices that will contribute to the objectives above. The World Bank has developed a manual for determining these costs and some stakeholders from the government took part in regional trainings. However, further training might be needed to ensure that widen the knowledge of the instrument. Transaction costs associated with delivering the technological options to different land users and this can include costs of research, policy development and dissemination, extension services, training, cost of facilitation of REDD implementation for example by NGOs and other institutions responsible for working with land users. Assessing costs of implementation is also fundamental particularly were smallholders might need financial support to acquire new technologies (e.g. inputs, access to credit to acquire equipment). Besides these costs it is important to conduct a cost-benefit analysis of the main interventions to establish the viability of the suggested interventions.

As such, the strategic actions being suggested need further analysis in order to define the typical activities, typical practices and typical cost structures associated with the current practices and alternative:

- Small subsistence and/or small-commercial farmers or both; within small commercial farmers what key crops are driving land use change – e.g. tobacco, sesame, cotton, sugarcane, etc; detailed analysis of the technological options for improving productivity of land and agriculture systems. There is need to identify dominant cropping systems and specific practices to be changed;
- Large scale agriculture practices, technological options being used and potential for improvement. Commercial food crops such as soy (planned introduction), seasame, biofuels are driving acquisition of large areas with investable conversion of some forests.

- The same approach should be used for (i) forestry related drivers where analysis of potential improvements on management of resources and processing of timber, biomass energy and construction materials; plantations for pulp and paper and industrial timber; (ii) mining and indication of technological options for extraction and processing different minerals particularly where small scale miners are involved; (iii) and different options for establishing infrastructure. SESA will also help highlight some of the impacts and possible options for example in choosing the best routes for establishing energy transmission lines, railways, new roads etc. in order to reduce immediate and associated long term forest conversion. SESA recommendations should also feed into the costing of the options. Overall SESA will also highlight the potential impacts of REDD+ implementation in biodiversity conservation and also social impacts including effects of tenure security, livelihoods and poverty.

During the process of development of this RPP, the Mozambique developed TOR to include a preliminary assessment of how these costs could be determined (TOR in appendix 2.b). The study was not completed to satisfaction. Extensive work to collect secondary information such as the regular information gathering by MINAG which gives a good idea of the range of typical farming activities and farms, studies conducted by universities, research institutions such as IESE, consultancy firms and even donors should be sought in order to minimize the cost of undertaking this activity.

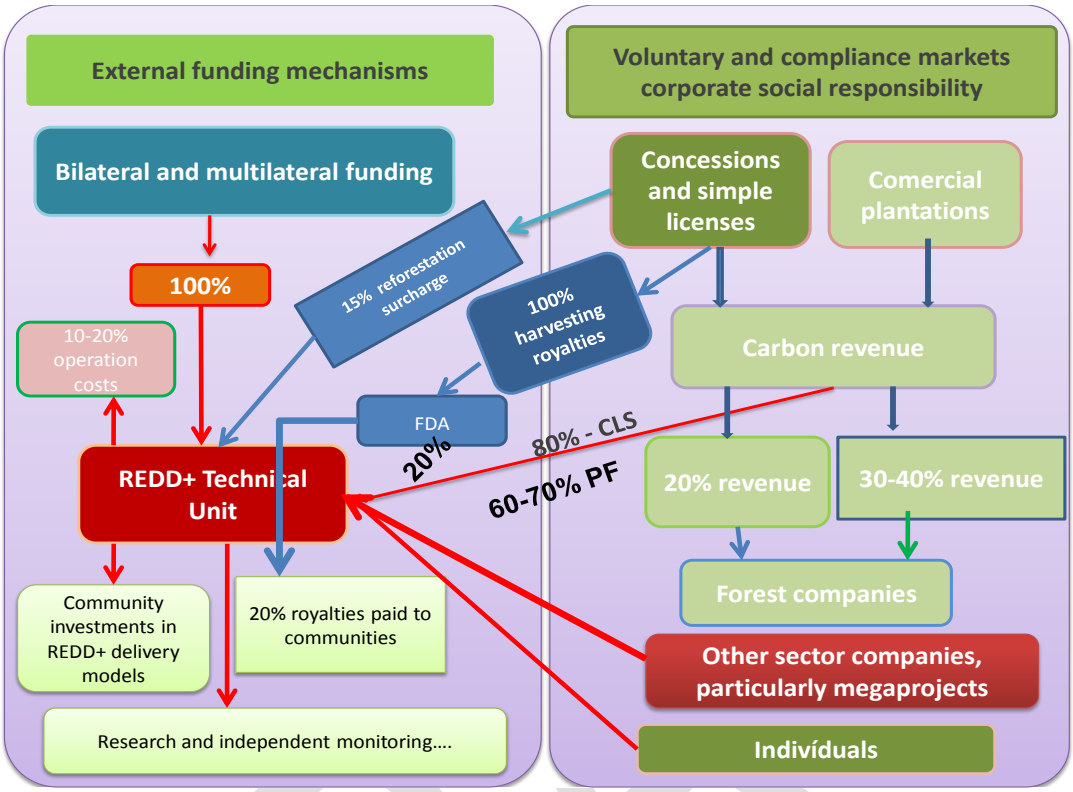
Financing and benefit sharing mechanisms

Defining financing mechanisms has dominated international negotiations yet uncertainties prevail. For developing countries there remains the dilemma of designing REDD+ strategies without creating unduly expectations, particularly regarding potential payment for carbon credits. Fund and market based mechanisms, despite having different underlying principles and operation, are not mutually exclusive. The question is whether conditions for transparent operation of markets exist or not and whether safeguards are in place to ensure equitable benefits. The only example that has been operational in Mozambique is Plan Vivo which adopted a benefit sharing of one third for each of the three parties involved: private developer; communities and intermediaries in marketing carbon.

Corporate social responsibility experiences and recent interest of transport companies (e.g. LAM) in engaging in carbon offsets will provide a learning platform to define potential fundraising mechanisms at national level to support mechanism to reduce deforestation and degradation.

Potential benefit sharing mechanisms (Figure 22) have been discussed during consultations to establish the extent to which existing taxes in the forest sector can contribute to REDD+ implementation. Sustainable forest management and enhancement of carbon stocks as options are available both to communities and private sector. But, how benefits from carbon revenue should be shared, will continue being debated during the readiness phase. The most important aspect is, the fact that, while multilateral/bilateral funding may be the main source of funding for REDD+, it will be important to also explore internal mechanisms to generate funds. For example, the UT-REDD+ could manage revenue from taxes aiming to support '+' activities. Secondly, potential transaction costs need to be clearly defined to allow operation of mechanisms in a transparent manner while ensuring that the bulk of funding actually goes to support improvement of land use practices. Thirdly, eligible activities for REDD+ should include knowledge generation and dissemination processes, including critically the collection, analysis and public dissemination of accurate land use allocation data.

Figure 22 Analysis of possible sources of funding for REDD+ and role of private sector



The country has experiences of private organized deals between commercial plantation companies (Chikweti and Lúrio Green Resources) and communities whereby the latter are paid $3/ha of unburned forest plantation. This is conflict management tool. Despite the fact that the basis of calculation of the price may need clarification, the concept may inform the development of appropriate incentives for sustainable land management.

Furthermore, balancing benefits to individual households and communities is important. Other scenarios need to be considered during the next two years in order to identify either one scenario that can universally be applied or multiple scenarios applicable to different sub-national contexts. These questions need to be explored in the pilot areas.

Figure 23indicate the key expected outputs from studies and analysis of the various aspects related to policies, options and pilots. **Table 18** shows priority interventions for developing robust options for REDD+ that will contribute to achieving the objectives.

Figure 23 Key outputs of implementation of strategic actions

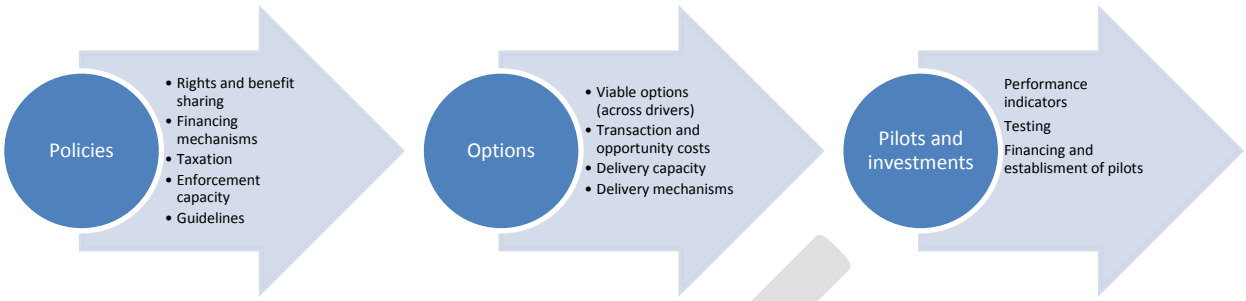


Table 18 interventionsfor preparation of the REDD+ strategy

Activities	Responsibility	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Formulation of REDD Policies														
Development of policy and legal instruments for effective implementation of REDD+ (carbon benefits, eligible activities and actors, financing, compensation and benefit sharing)	REDD+ working group until UT-REDD+ is operational	Maputo												
Options and Pilots														
Conduct studies or compile information on gender disaggregated land use options/models that can be introduced, scaled up or replicated to address drivers of deforestation and forest degradation.	REDD+ working group until UT-REDD+ is operational	Maputo												
Analyze the viability of the different delivery models and options including transactions costs, implementation and opportunity costs	REDD+ working group until UT-REDD+ is operational	Maputo												

Table 19: Summary of Strategy Activities and Budget (or Results Framework)

Output (major activity)	Organizations involved	Activities or Sub-activities	Budget allocation in thousand (estimated cost in US$ thousands)				
			2011	2012	2013	2014	Total
Outcome 1: Viable REDD+ options identified and piloting initiated to pave the way for effective reduction of emissions from land use practices							
Output 1.1 REDD+ policies developed and published in BR (government gazette)	Working Group until UT – REDD+ is operational	1.1.1 Formulation of policy and legal instruments for REDD+ (gap filling)		*32.0*	*23.0*		***55.0***
		1.1.1.1 Develop instruments clarifying rights to land resources and services		40.0	40.0		**80.0**
		1.1.1.2 Develop instruments to guide the process of establishing and eligibility to REDD+ projects		20.0	20.0		**40.0**
		1.1.1.3 Review taxation and pricing systems and other forms of raising internal resources for financing REDD+ and sustainability in general		15.0	30.0		**45.0**
		1.1.1.4 Develop benefit sharing mechanisms for compensation resulting from verifiable emissions reduction		50.0	50.0		**100.0**
Output 1.2	Working Group until UT – REDD+ is operational	*1.2.1 Detailed economic analysis of options against likely impacts*		*35.0*	*40.0*	*15.0*	***90.0***
Reports on costs of options (investment packages for REDD+ published)		1.2.1.1Determine opportunity costs		30.0	30.0		**60.0**
		1.2.1.2 Determine transaction costs		25.0	25.0	15.0	**65.0**
Output 1.3		*1.3.1 Implement pilots*					
Pilots for REDD+ successfully established in six provinces	Working Group until UT – REDD+ is operational	1.3.1.1 Institutions with ongoing activities in the pilot area to implement REDD+ pilots		6.0			**6.0**
	Local based institutions	1.3.1.2 Establish pilot project in Gaza and Maputo taking an integrated approach with biomass energy as central driver to be addressed		50.0	150.0	150.0	**350.0**
		1.3.1.3 Establish pilot project in Manica and Sofala (Beira corridor	150.0	50.0	200.0	200.0	**600.0**

		woodshed) with logging as central drivers					
		1.3.1.4 Establish integrated pilot project Nampula and Niassa with agriculture and tree planting as central drivers/ intervention	180.0	200.0	300.0	220.0	**900.0**
Total			330.0	**553.0**	**908.0**	**600.0**	**2,381.0**
Government							
FCPF				**150.0**	**150.0**		**300.0**
Government of Norway (Embassy in Maputo)			**330.0**				330
TBI				403.0	758.0	600.0	**1,761.0**

Notes: 1. Countries are encouraged to include outcomes, outputs, and organizations involved in this table for this component, for consistency with normal program outcomes and indicator procedures. If identifying outcomes and outputs is difficult at this stage, include your tentative early ideas and then revisit them during Readiness Preparation.

2. Outcome: Actual or intended change in development condition that project interventions are seeking to support. Outcome includes key results such as governance reforms functioning national inter-ministry coordination, national or regional policy or legal reforms, etc.

3. Output: The direct result of project inputs, achieved through the completion of project activities, including tangible products for services necessary to achieve the outcomes of a programme or project. E.g., workshop reports, studies, new training courses, etc.

2c. REDD-plus Implementation Framework

The R-PP aims to create conditions for the country to adopt a development path that is sensitive to the need to minimize the conversion of forest land into other uses, hence reducing emissions, but equally introduce actions that will enhance the sequestration capacity. Implementation of REDD+ is a multi-sector and multi-stakeholder endeavor and comprises actions at the national and sub-national level.

Mozambique has prepared a draft strategy for REDD+ that will be refined during the readiness process. The principles of the draft strategy include the basic requisites of REDD+ such as to ensure additionality, minimize and control leakage, permanence, efficiency, effectiveness, co-benefits and demonstration of performance. In addition, it emphasizes that ecosystems services are a public good that should benefit people contributing to their maintenance, consultation and participation of stakeholders in decision making, access to information and transparency and equitable access to carbon rights and benefit sharing. In order to implement the R-PP bearing in mind these principles, the following key steps will be critical:

- Establish the institutions at national and sub-national level to implement the R-PP including operationalizing thematic groups that will support the Technical REDD Unit (UT-REDD+) in addressing: a) REDD+ strategy and policy framework; b) REL and MRV; c) piloting and investments including safeguards and, d) financial management. There are sector coordination bodies and multi-stakeholder platforms at all levels including the local level discussed in component 1a. These have mandate to include REDD+ in their agenda.
- Develop legislation including carbon rights and role of different stakeholders in REDD+ and harmonize development, sector and district plans with REDD+ priorities.
- Conduct research to inform key strategic decisions on reference and crediting levels and identify potential sources of conflict and management mechanisms.
- Development of national coefficients for the IPCC equations to assess carbon stocks and facilitate monitoring REDD+ impact.
- Develop financing mechanisms, implement pilots and consolidate lessons and develop REDD+ strategy for post 2014.

As indicated in the Institutional Arrangements in Component 1a, a UT-REDD+ will be formed to fulfill key functions such as:

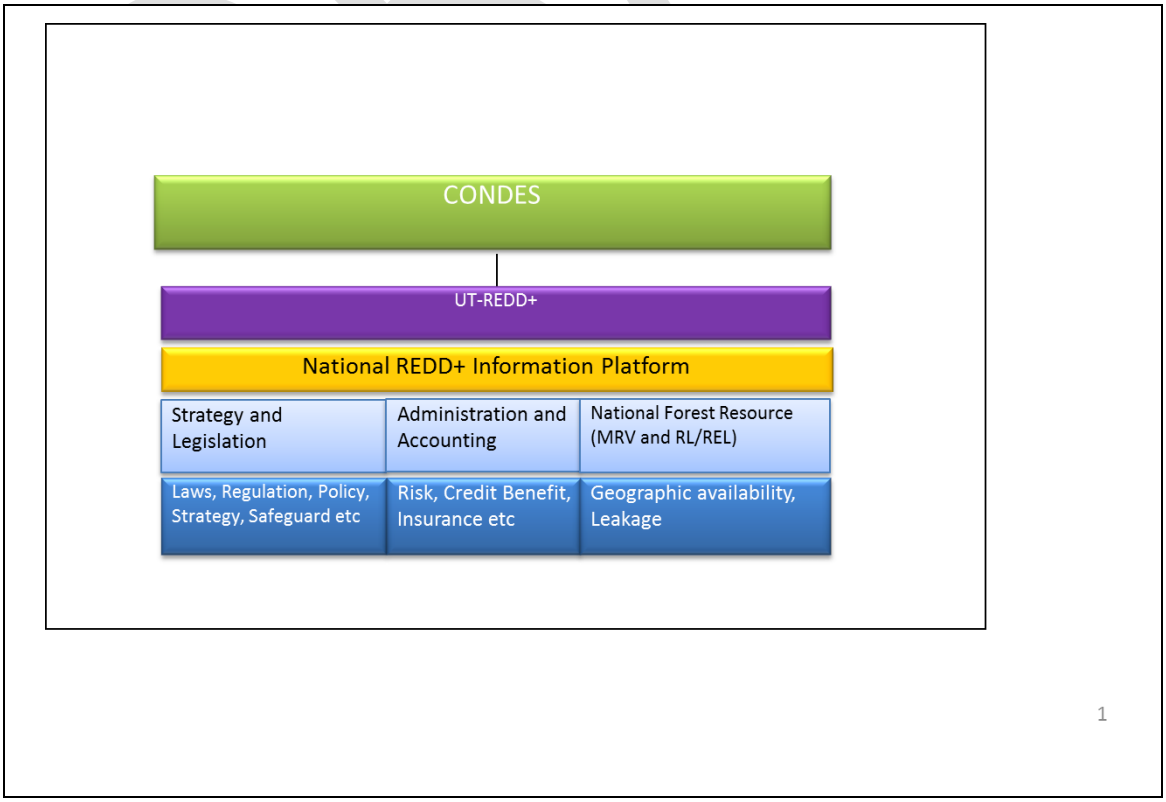
- Establish processes for consultation and development of a national REDD+ Strategy including design and facilitation of approval of the various legal instruments that are necessary to complement or strengthen existing legislation for reducing emissions from land use changes;
- Develop baseline information on land use, assess biomass and establish carbon stocks to be used for setting up the reference and crediting levels, bringing together the various entities with capacity and means to collect relevant information at national and local level. Facilitate development and implementation of land use planning to meet development goals as well as emission reduction goals.

- Ensure development of guidelines for implementation of REDD+ investments and for implementation of REDD+ pilots in a transparent manner as well ensure implementation of gender sensitive strategic actions.
- Establish systems and mechanisms for financial management of REDD+ financing and equitable distribution of benefits.

Mozambique shall establish a National Accounting System to implement REDD+ (Figure 23) in a fair, transparent and independent manner. Such a system shall ensure that a landscape and sub-national REDD+ interventions (Figure 24) shall comply with both national and international policies and guidelines. A key element of the system of the *National REDD+ Information Management Platform* within the UT-REDD+would be for CONDES to make appropriate decisions to :

- organize and publish information on legislation, requirements and safeguards that should be considered for approval and implementation of REDD+ projects;
- Register REDD+ projects in the GIS system in the National Forest Resource Information Platform (Component 4) which provides spatial data and information on existing REDD+ projects and other land use locations for REDD+ implementation to know, allow appropriate accounting and avoid duplication and overlapping for eventual carbon crediting;
- establish a transparent application and approval process of REDD+ projects to avoid corruption;
- administer and allocate benefits and risks of carbon credits referring to RLs/RELs;
- detect and avoid leakage through a robust MRV system to allocate equitably the benefits and risks associated with REDD+ at national level;
- monitor impact of REDD+ on poverty, food security and other co-benefits; and **develop guidelines to access and review REDD+ proposals.**

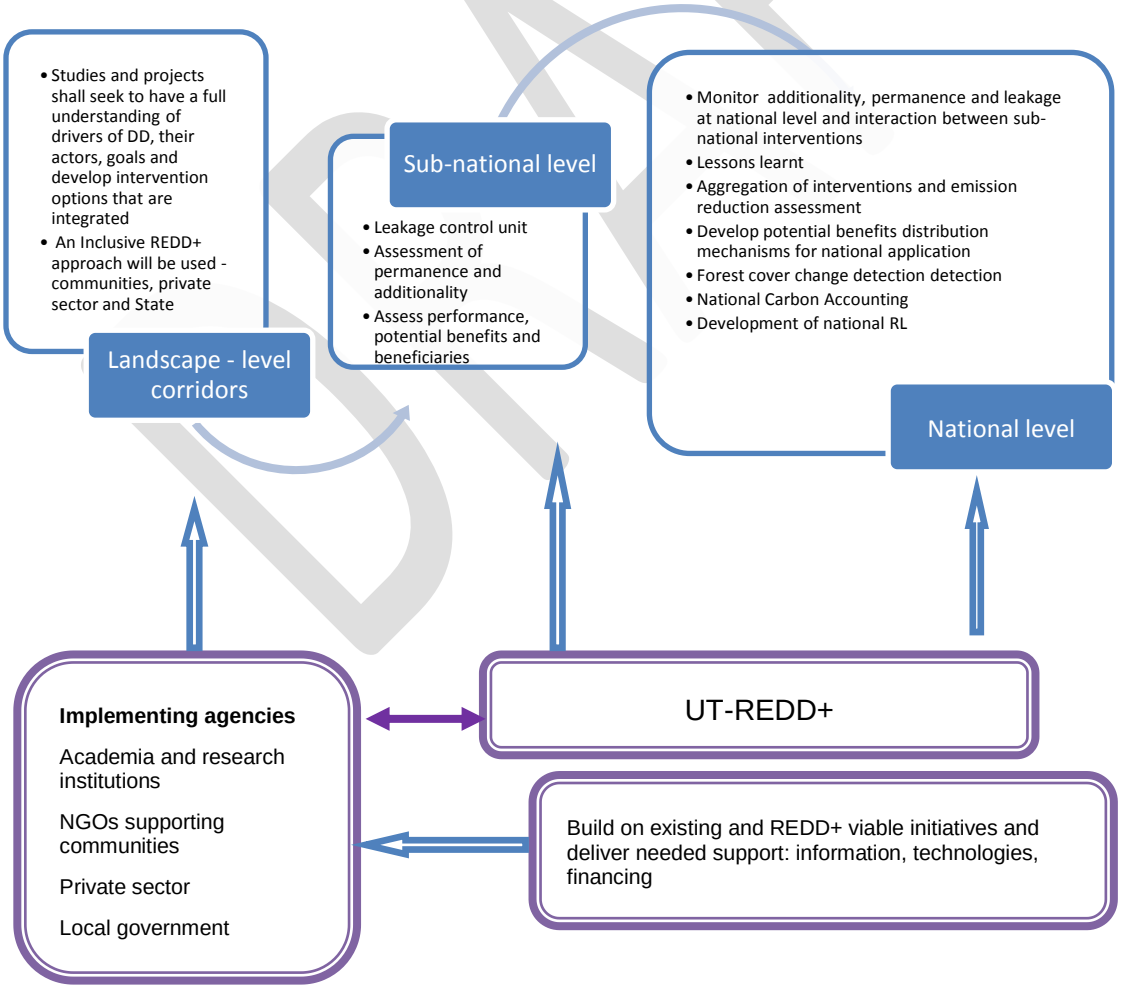
Figure 23 REDD+ implementation framework (National Carbon Accounting System)



A landscape and sub-national approach project(Figure 24) is recommended to address the various sources of deforestation and degradation and integrate different actors. Implementing pilots taking a development corridor approach will ensure that both drivers and key investment opportunities effect changes in practices. For example the draft national REDD+ strategy identified several pilot projects that would better be implemented in a landscapes/corridor approach to effectively address deforestation and forest degradation: (i) the Nacala corridor which includes Nacala-Cuamba railway going through Nampula and Niassa could be a pilot unit addressing a combination of virtually all direct drivers of deforestation identified; (ii) the Beira corridor reflects issues of large scale investment opportunities particularly agriculture and forestry, yet significant challenges in terms of containing emissions from land use change; and (iii) the Maputo-Gaza area which is an important biomass energy supply and consumption corridor.

However, this landscape-level corridor approach needs to ensure analysis of additionality, leakage and permanence of REDD+ interventions. Choosing sector specific activities in pilots such as tobacco, charcoal production, timber annual licenses, artisanal mining etc. to test REDD+ interventions would not allow to obtain sufficient information on the complex incentive environment and bundle of activities that are part of rapid land use changes as observed in the above mention areas.

Figure 24 REDD+ implementation framework

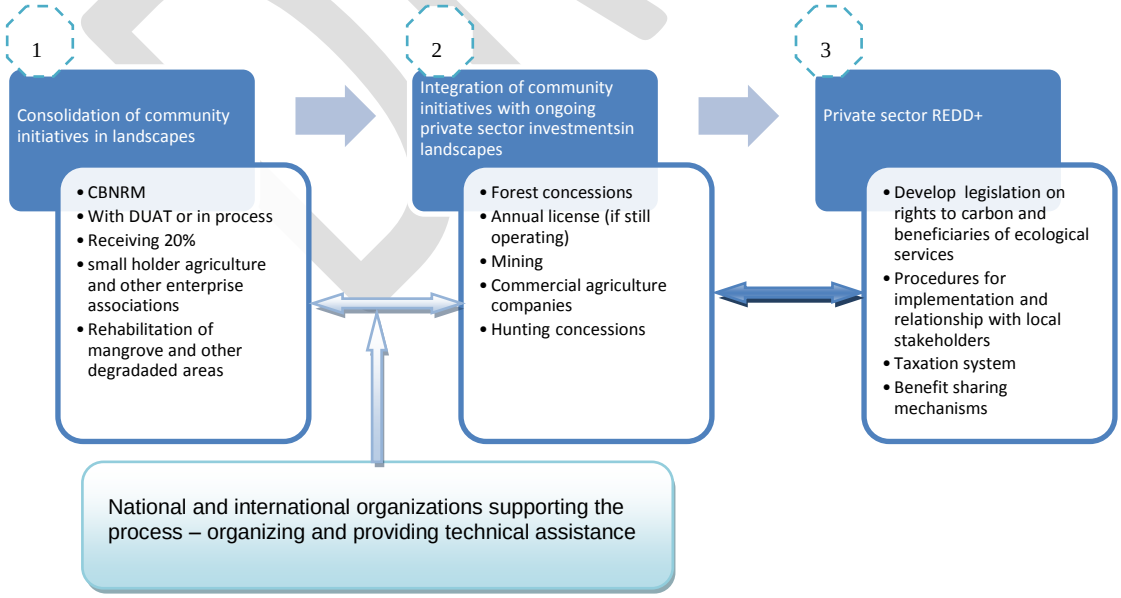


Another element that is fundamental for the readiness process is building on past experiences (**Figure 25**). This was emphasized during the various consultations by stakeholder across the board including government officers and communities. While there are several unknowns about the future performance based compensation mechanism, interventions can be undertaken that create indirect compensation for emission reductions, for example resulting from increased productivity of land and efficient use of various other resources.

Communities, the government, NGOs (often working with local communities) and the private sector can contribute to REDD+ implementation. There is clear legislation defining community rights to land, participation in natural resources management outside and inside protected areas, enterprises development and benefit sharing between the State and communities. NGOs have played an important role as facilitators of community engagement. A staged approach is therefore suggested which prioritizes community initiatives where poverty reduction and climate change adaptation are most pressing. The engagement of ongoing private sector activities that already deal with communities will be a second important priority and REDD+ delivery models within the landscape where both operate should be complementary and clear distributions of benefits and management of potential conflicts in operation (**Figure 25**). These areas may include state agencies responsible for managing protected areas where these are part of the landscape.

The engagement of the private sector for implementation of REDD+ activities also needs tp be further piloted and appropriate guidelines and legislative framework to be developed as part of the National REDD+ Strategy. This will allow particularly defining rights, clarification of beneficiaries of environmental services including carbon, how investments will contribute to generating revenue for the national economy as do other economic activities and benefit sharing mechanisms. Developing safeguards is priority as the government requires instruments to harmonize the basis for decision making on REDD+ investments. The engagement of both ongoing and prospective private sector actors will follow the process laid out in component 1c.

Figure 25 Staged approach to REDD+ piloting



Such a staged approach will allow the UT-REDD to revisit and revise early proposals for benefit distribution as specifics of pilot work and its impact become clear.

Financial management

a) Resources for piloting REDD+

It has been established that FUNAB (Fundo do Ambiente – Environment Fund) would manage the FCPF funds and for the preparation of the country to implement fully fledged REDD+ initiatives after 2014. FUNAB would work together with DNTF's Finance and Administration Department as a channeling vehicle of funds to implement activities that the technical departments of the UT-REDD+ will establish in coordination with the Technical CONDES (Component 1a). This would also include management of financial resources for MRV. Given that also funds from JICA and all other sector support including pilot project implementation for REDD+ readiness are available and would support the R-PP process, a working group comprising of the main institutions contributing to the sector shall review and reconcile the budget. While a decision about the sub-national implementation body has not been made, the funding for pilots suggested in this section should go directly to the implementing agency. However, for accountability and transparency, these implementing agencies should regularly share budget and financial reports with relevant multi-sector bodies within the landscape (e.g. District and Provincial Consultative Councils). This process might be further developed and discussed, but by and large it provides for use of the existing institutions and strengthens them. There is also a possibility that the management of REDD funds would be combined with the management of broader climate change funds depending on the final decision of the set-up of a climate change secretariat.

b) Revenues from REDD+

The implementation of REDD+ should allow generation of revenue from: increased agriculture productivity and production resulting in generation of surplus for the market; diversification of production systems to maximize production; development of sustainable enterprises, value addition and access to mainstream markets for products and services. Reduction of emissions and accounting process at local level is a medium term endeavor besides being possibly a small source of additional income.

The basic premise is that households and communities adopting new practices should be able to benefit from technical support and financing to establish the necessary improvements in practices and generate benefits that directly go to individual households. At community level, mechanisms to subsidize the development and formalization of associations should be discussed. This might include establishment of community funds. The 20 percent forest revenue sharing has lessons to offer related to how communities can be organized and registered, the challenges of using formal institutions for managing the financing vis-a-vis accessibility of the resources for the communities as well as decision making processes on application of the benefits. Recommendations of component 2d shall guide the establishment of viable management structures and operation mechanisms.

National and sub-national accounting

As mentioned in earlier, Mozambique shall establish a National Accounting System to implement REDD+ (Figure 22).

Zambézia province is located in central Mozambique and has the following characteristics:

- One of the two provinces with the largest population in the country – over 3 million

- Largest area of productive forests
- Largest number of farming families, including commercial crops
- Highest number and area of forest concessions (49, 1.8 million ha) and an average of 107 annual licenses which means every year about 0.54 million ha are harvested unsustainably.
- It has been a center of illegal logging operations and two provincial heads of forests were dismissed from their job and Chinese companies are also based in this province.
- Has a sizeable potential for reforestation, biofuels, mining, commercial agriculture and others.
- It has many CBNRM initiatives, communities with registered land rights.
- Relatively strong/organized civil society organizations

The province was among the ones selected for a rapid analysis of the existing information management systems (land allocation to various economic activities, and forest harvesting) in the context of development of the RPP. The work was led by DNTF in 2010.Various weaknesses were identified. Developing an information management system that can effectively help in organizing the cadastre in Zambézia and monitoring land use changes, could lay a good foundation for the development of a cadastre in the rest of the country.

Therefore, activities in the province of Zambézia will include land use mapping based on existing information (digitized or otherwise) and verification of conflicting information such as overlap of uses, areas and rights holders; land resources rights mapping; determination of biomass and carbon stocks, assessment of extractive industries (forests including illegal logging and mining) and impact on land cover. The challenges of land administration in the province also illustrate the need to devise improved systems of collection, compilation and analysis of information. This is a pre-requisite for producing accurate accounts of the impacts of land use in emission levels. The information collected will be used to define sub-national reference levels and an approved MRV system. Detailed assessment of methodologies for reconciling with the national MRV system will be developed. Two provinces (Gaza and Tete) and 20 districts will be included in a detailed collection of spatial information by DNTF (see further details in component 3).

This process should also inform how the registry for REDD+ activities and transactions will be conducted. The government is discussing institutional arrangements for managing all mitigation aspects of climate change, including CDM and low development carbon. National accounting of emission is contemplated and a registry can provide a more realistic picture for net carbon in the country and effectiveness of different interventions. The sub-national accounting can also be undertaken by a landscape-level corridor project interventionas previously discussed.

Monitoring performance

A preceding step from monitoring is the definition of indicators to be monitored: land use, rights, carbon stocks, socio-economic impacts of REDD+, financial management, benefit sharing. The Mozambican Institute for Economic, Social and Environmental Studies (IESE) could be engaged in monitoring impacts on the local and national economy; the primary accounting of carbon will be under the responsibility of DNTF as indicated in component 1a. This institution deals with resources assessment in the country. Universities such as UEM and others based in the provinces could take the role of independent monitors if adequately trained to do so. These institutions could provide detailed analytical studies in the different REDD+ pilot areas.

The National Institute of Statistics (INE) conducts regular surveys on various socio-economic indicators such as the 2007 Population Census and the annual reports of the national accounts. INE also coordinates with MINAG the production of the Agriculture Sector Census which evaluates the trends in land use in the agriculture sector focusing on crop production and livestock related activities. This instrument can be improved to ensure collection of information on land allocation and forest activities. The Ministry of Energy, Ministry of Tourism and Ministry of Mining have also units that are responsible for planning and systematization of information on sector activities. Therefore, the system, referred to in Figure 24, should allow construction of a unified information management system to assess REDD+ implementation, effectiveness and impacts at sub-national and national level.

Management of conflicts

REDD+ implementation related conflicts can have various origins and diverse nature:

- Conflicts between rapid development goals and low carbon development responsibilities.
    - CONDES and the Council of Ministers are best positioned to address the issues of conflicting policies and sector plans at national and sub-national level.
- Conflicting land uses and users who get compensated and those that might be excluded:
    - Zoning and land use planning should clarify what land should be used for what;
    - There are various institutions that can contribute to monitoring implementation and prevent conflicts from occurring. The mains institution is the Provincial Services of Cadastre that should collect, compile and publish reports indicate spatial land potential and occupation.
    - DNTF has been managing several conflicts related to land allocation involving communities and private sector, communities and state as well as between neighboring communities.
- Carbon rights and benefit distribution at national and sub-national level:
    - Participatory development of legislation and dissemination for easy understanding by the different target groups.
- Financial management responsibilities between government agencies and NGOs and between national and local levels:
    - It was early indicated that taking the landscape-level corridor also requires that agents involved in implementation of REDD+

Many NGOs working on land issues at local level, such as ORAM, also have knowledge and experience of managing conflicts between land users. There are also other experiences of using local tribunals to address conflicts as well as human rights organizations at national level. Anti-corruption legislation and institutions to facilitate implementation are equally in place. Nevertheless, a review of these mechanisms and development of a framework for prevention, management of conflicts and redress of grievances will be prepared drawing from existing instruments.

While there may be merit in looking at different REDD+ implementation issues in different pilot projects, it is also necessary to test all relevant aspects (legal, institutional, funding, benefit sharing, conflict, etc.) in the same site. Manica, Nampula and Gaza should be the anchors (linked with respective Sofala and possibly Zambézia; Niassa and Maputo) in the landscape-level corridor approach and used as REDD+ laboratories. The Norwegian government is funding the initial work for establishment of these pilot areas,

but there would be great merit in this R-PP providing additional funds towards full implementation of REDD+. Manica is a potential candidate as there are other donors such as Ford Foundation support to MICAIA, the World Bank funding to the Chimanimani reserve, Carbon Free Consulting supports an agroforestry REDD+ project in Gaza Province in cooperation with WFP, JICA and DNTF.AGRA through the Beira Corridor Agriculture Growth and potential leverage from government funding to district programs.

Table 20Implementation framework activities

Activities	Responsibility	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Establish and validate boundaries of landscapes and corridors for REDD+ implementation at sub-national level	Working group or UT-REDD+	Maputo												
Inventory of institutions involved in the undertaking of the different activities	Working group or UT-REDD+													
Establish Regional/corridor REDD+ coordinating institutions	Working group or UT-REDD+	Maputo												
Build capacity at national, provincial and district across sectors and stakeholders to deliver innovative land use and emission reduction practices	REDD+ working group until UT-REDD+ is operational	Maputo and provinces												
Partnerships and leveraging existing experience including synergies between the Rio Conventions (UNFCCC, CBD and UNCCD-IMBMs for SLM)	REDD+ Working group or UT-REDD+ and UNCCD	Pilot projects												
Identify options likely of leakage and locate where that might be	Working group or UT-REDD+	Maputo												
Carbon accounting level	DNTF, REDD+ Working group	Pilot provinces												

and challenges to assess domestic and international leakages	or UT-REDD+	and national level	
Detailed analysis of information management systems and options	Working group or UT-REDD+	Zambezia Gaza Tete and in 20 selected districts by DNTF	
Conflict management institutions and processes	Working group or UT-REDD+	Maputo and REDD+ corridors	
Finalize National REDD Strategy and submit for approval	UT-REDD+	Maputo	

Table 21Summary of Implementation Framework Activities and Budget						
Main Activity	Sub-Activity	Estimated Cost (in thousands)				
		2011	2012	2013	2014	Total
REDD+ at sub-national level	Landscapes and corridor boundaries validation		30.0	10.0	10.0	**50.0**
	Operation of institutions at local level		100.0	100.0	100.0	**300.0**
Leakage assessment	Analysis of potential internal displacement of activities		10.0	10.0	10.0	**30.0**
	Impact of international displacement of activities to Mozambique		10.0	10.0	10.0	**30.0**
Land resources use management systems	Reconcile land allocation with mapping in Zambézia, Gaza and Tete		15.0	15.0	15.0	**45.0**
	Set up a system to collect, store, compile quantitative, qualitative and spatial information on land use changes		5.0	5.0	5.0	**15.0**
	Validate the management system and establish		(500.0)	(250.0)	(250.0)	**(1,000.0)**
	Training of personal to use the new information management			(50.0)	(50.0)	**(100.0)**
Total			**670.0**	**450.0**	**450.0**	**1,570.0**
Government						
FCPF			**170.0**	**200.0**	**200.0**	**570.0**
Japan International Cooperation Agency (JICA) (budget in bracket is included in Component 4a)			(500.0)	(250.0)	(250.0)	**(1,000.0)**

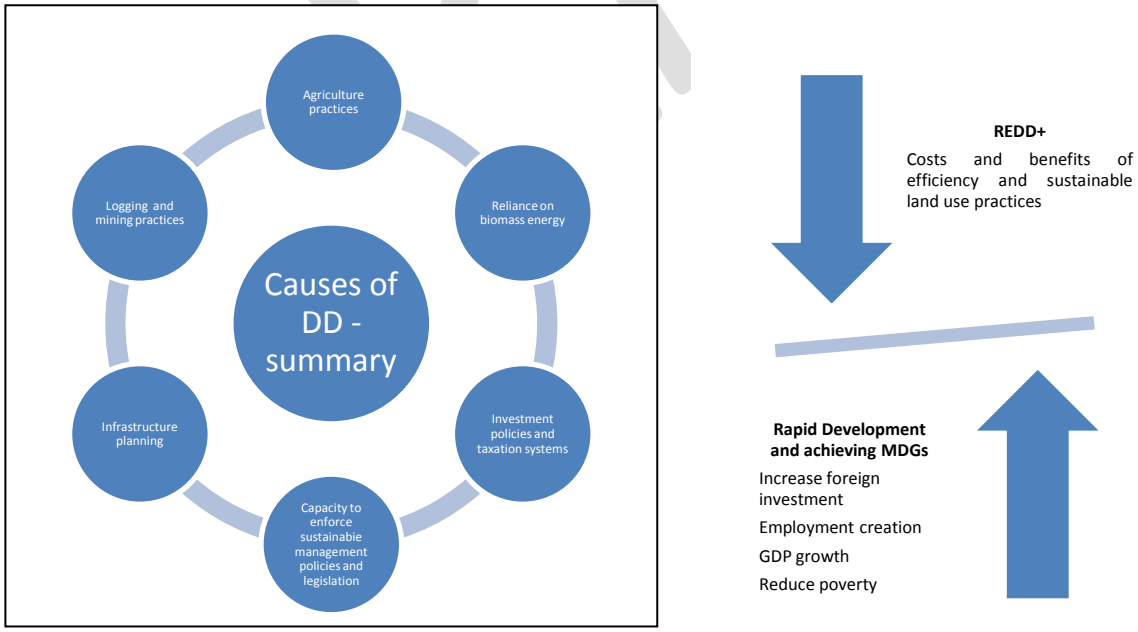
2d. Social and Environmental Impacts during Readiness Preparation and REDD-plus Implementation

Standard 2d the R-PP text needs to meet for this component:
Assessment of social and environmental impacts:

The proposal includes a program of work for due diligence for strategic environmental and social impact assessment in compliance with the World Bank's or UN-REDD Programme's safeguard policies, including methods to evaluate how to address those impacts via studies, consultations, and specific mitigation measures aimed at preventing or minimizing adverse effects. For countries receiving funding via the World Bank, a simple work plan is presented for how the SESA process will be followed, and for preparation of the ESMF.

Drivers of deforestation and degradation identified in component 2a, and the strategic options identified in component 2b have potential to bring positive impact in mitigation of climate change impacts. However, unintended negative impacts on the economy, environment, community livelihoods and rights, private sector businesses might also occur. As such during the REDD+ readiness preparation process the potential impacts of REDD+ on the economy of the country and environment will be assessed. There might be tensions (**Figure 26**) between the objectives of economic development and overall achievement of MDGs, mainly addressing poverty, food security, gender equity and other benefits to improve education and health of the people while pursuing growth with low emissions from land use change.

Figure 26 Anticipate challenges in balancing rapid with sustainable development growth



Some of the questions that SESA can address include:

- Analysis of implication of land resources tenure and rights to environmental services in particular carbon, rights to sell and profit from it?
- Assessment of impact of large scale REDD+ on development taking into account that the current manifestations of interest of private sector REDD+ already reaches about 30 per cent of the country and many community initiatives are equally going to be implemented during the readiness period and beyond.
- The impact of REDD+ on investments and on the current right holders and people whose livelihoods depend on forests both in the rural and urban areas?
- The issue of additionality and involvement of communities in various forms of PFM to upscale their activities and get compensation in the context of REDD+?
- What kind of tree planting should qualify for REDD+ financing or compensation? What are the tradeoffs between large scale plantations, carbon balance and biodiversity conservation?
- What are the economic, social and environmental tradeoffs between REDD+ implementation and meeting development goals? How can these be harmonized?
- How the reference level will be achieved? What role different stakeholders are likely to play and what are the likely impacts?

Past experiences

The Ministry of Agriculture, through the National Directorate of Agrarian Economy (DNEA), facilitated the development of the only Strategic Environmental Assessment (SEA) conducted for a national program – PROAGRI. The SEA of PROAGRI included analysis of social, economic and environmental impacts as well as legal instruments and institutions to implement mitigation measures. The work was conducted under IUCN leadership with the involvement of the Eduardo Mondlane University (agriculture, forestry, economics and social sciences).

WWF through its programme on Forests led the review of the status of all forest reserves in the country as they had contributed to establish and manage some protected areas. The review contributed to an assessment of biological/conservation hotspots to be considered in zoning of areas for reforestation in the country and a similar analysis was conducted for areas allocated to plantation of crops for biofuels.

The Ministry of Tourism (MITUR), through its National Directorate of Conservation Areas (DNAC), manages protected areas (16 percent of the land surface) in the country, including transfrontier conservation areas. They can contribute to analysis of impact of REDD+ predominantly in biodiversity conservation and potential impacts to tourism activities in protected areas.

ARPAC- the Institute of Cultural Patrimony and Studies - has a wealth of information on social aspects that may be relevant in the development of the REDD+ strategy. There is a Centre for African Studies as well as Political Sciences in UEM dedicated to research on community issues and governance. Therefore, these can contribute in the analysis of potential social impacts of REDD+.

This are preliminary indications of potential institutions to be involved; however, liaison with provincial based institutions, particularly in the critical provinces, in terms of deforestation and degradation will be sought.

NGOs working on environmental issues and community support will also play a key facilitating role in consultation with local communities. Furthermore, private sector (investor and consultancy companies) also has experience in developing and implementing Environmental Impact Assessments. Despite the

relative micro-scale of the latter, there are important lessons to learn on effectiveness of implementation of mitigation frameworks.

The elaboration of Environment Impact Assessment (EIA) on forest related projects constitute a source of experience on various levels. The assessment reports represent a comprehensive collection of data and information available on the specific sites but more importantly there are various lessons learnt in the process of elaborating the EIAs.

Mozambique being a country in the process of development, having gone through a prolonged civil war and not having a wide research tradition mean that data and information in general including in the forest area is very limited particularly at the district level. Data, especially long and uninterrupted time series on forest ecosystems, biodiversity, hydrology, soil, meteorological data and other data relevant to assessment of the environmental viability are extremely limited. Nevertheless, efforts have been made since 2000 to gather and systematize data by universities, and consultants carrying out the EIAs.

Secondly, the approach to forest management has for many years been one of exploration and not conservation or more holistic forms of management such as for example REDD schemes. The research, forest inventories and studies of forests as well as the training and education in forest management is to a high extent dominated by a utilitarian approach to forest management and not e.g. conservation. This will be a limiting factor for establishing comprehensive reference levels on forest ecosystems.

Although several legal provisions for inclusion of communities in forest management exist (The Land Law and the Forest and Wildlife Regulation) it is general the experience of technicians in MICOA that a legal tool for negotiating benefits and obligations between the local population and forest project developers is lacking as well as procedures for conflict management. Technicians in DINAIA find that there is a lack of a specific guidance in the form of a directive to guide EIA in the forest sector particularly regarding social issues and conflict management.

Lastly, the follow up on recommendations from the EIA and the monitoring of implementation of management plans and compliance with environment licenses is rather weak due to inefficient law enforcement. The weak law enforcement can be attributed to inefficient coordination between sector institutions, within MICOA and in some cases not full compliance with the procedures for licensing. A strengthening of law enforcement would have a positive impact on the possibility of doing efficient monitoring, registration and verification under a REDD a scheme.

Institutions that can play a role in SESA and ESMF

The integration of environmental and social assessment into the readiness process will require that additional expertise is brought into the process. As mentioned in component 1a, the National Directorate of Environmental Impact Assessment (DNAIA) in MICOA is a case in point. DNAIA is responsible for development of policies, review environmental impact studies and mitigation plans, as well as conducting environmental audits, should be part of the mandate of the UT-REDD+. MICOA also has Sustainable Development Centres for the Coastal Zone based in Xai-Xai (Gaza province) and forest and other resources in Chimoio (Manica). The former conducted the first macro-zoning and Strategic Environmental Assessment (SEA) of the Coastal Zone using the SEACAM framework. Private companies undertaking environmental assessments may also play a role.

Given the sectoral and extra-sectoral nature of causes of deforestation and forest degradation in Mozambique, SESA process shall seek to bring the various perspectives of the ministries and land resources users on potential negative and positive impacts of REDD+. The consultation process during SESA and development of ESMF should involve the following stakeholders at central and provincial level:

- Ministry of Agriculture – subsectors of lands, forestry, crop production, livestock, food security and agrarian policy and economics.

- Ministry for Coordination of Environmental Affairs – impact assessment and auditing, environmental management, territorial planning, environmental education.
- Ministry of Tourism – Conservation Areas
- Ministry of Energy – electrification, new and renewable energies, Fund of Energy
- Ministry of Public Works and Housing – roads, bridges, dams and other infrastructure.
- Ministry of State Administration – rural development and disaster management.
- Ministry of Mineral Resources – mining licensing, registry, environmental standards and small scale mining.
- Ministry of Planning and Development – central and decentralized planning
- Ministry of Finance – budgeting and taxation.
- Centre for Promotion of Investment (CPI) and Centre for Promotion of Agriculture Investment (CEPAGRI) – Incentive packages for foreign investments.
- Ministry of Women and Social Affairs – social impacts and gender equity.
- Private sector – investing in agriculture (cotton, tobacco, biofuels feedstock, cattle ranching etc) timber (concessionaire and annual operators), mining, megaprojects.
- Communities of land users across the spectrum of resources.

A detailed plan of consultation during the SESA will be developed by the entity that will carry out the study using FCPF framework but also exploring UN-REDD and Care International principles, criteria and tools where relevant to enhance the process. The main output of this process is the development and implementation of safeguards to ensure REDD+ success in reducing emissions and generating co-benefits. This shall aid the design of Environmental and Social Management Framework (ESMF) as operational instrument for REDD+. The TOR areprovided in Appendix 2d.

Table 22 Schedule for undertaking SESA

Activity	Responsibility	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Review the TOR for SESA and	UT-REDD+ in coordination with DNAIA	Maputo												
Undertake SESA – priority issues, consultation	UT-REDD+ in coordination with DNAIAand CDS	REDD+ landscape-level corridors and national level												
Design ESMF	UT-REDD+ in coordination with DNAIAand CDS	Maputo												
Develop safeguards	UT-REDD	Maputo												

Table 23 Summary of Social and Environmental Impact Activities and Budget						
Main Activity	**Sub-Activity**	**Estimated Cost (US$ in thousands)**				
		2011	**2012**	**2013**	**2014**	**Total**
Preparation of SESA and ESMF	Review literature, consultation reports and identify issues Develop inception report outlining the process		100.0	100.0		**200.0**
	SESA Report and ESMF					
Consultation	Consult with consultative councils of ministries of environment, agriculture, tourism, development, finance at national and sub-national level		25.0	25.0		**50.0**
	Consult with private sector, NGOs and communities in pilot (landscape)					
Capacity building on SESA and safeguards				25.0	25.0	**50.0**
Total			**125.0**	**150.0**	**25.0**	**300.0**
Government						
FCPF			**125.0**	**150.0**	**25.0**	**300.0**

Component 3: Develop a Reference Level

Standard 3 the R-PP text needs to meet for this component: Reference Level:

Present work plan for how the reference level for deforestation, forest degradation (if desired), conservation, sustainable management of forest, and enhancement of carbon stocks will be developed. Include early ideas on a process for determining which approach and methods to use (e.g., forest cover change and GHG emissions based on historical trends, and/or projections into the future of historical trend data; combination of inventory and/or remote sensing, and/or GIS or modeling), major data requirements, and current capacity and capacity requirements. Assess linkages to components 2a (assessment of deforestation drivers), 2b (REDD-plus strategy activities), and 4 (MRV system design).

(FCPF and UN-REDD recognize that key international policy decisions may affect this component, so a stepwise approach may be useful. This component states what early activities are proposed.)

Objectives

In this Component, Work Plan for how the Reference Level(s)/Reference Emission Level(s)(hereinafter RL) will be developed is explained, including methodologies. Also its linkages of the Component 2a, 2b and 4 to the future projection of RL are described. Then introduce a subnational RL for a subnational pilot with possible implication of Subnational-Jurisdictional Approach. Necessary capacity development to pursue these tasks is also displayed.

Definition of RL/REL

RL is business-as-usual carbon balance scenario from forest related human activities on the national level and is based on historical data. In other words, RL is a combination of historical data on emission from deforestation and/or forest degradation and other relevant land uses, and estimated future emissions and removals, leading to a national scenario in the absence of additional incentives for REDD+ (Tanzania RPP 2010). The country assesses the performance of the REDD+ efforts by comparing the difference between the RL and the actual emissions and removals from deforestation, forestation and changes in remaining forest areas by monitoring (GOFC-GOLD (2011)). In COP17, it is more precisely defined in SBSTA as RL expressed in tonnes of carbon dioxide equivalent per year, are benchmarks for assessing each country's performance in implementing the activities. For the assessment and verification of the carbon stock change over the proposed needs an appropriate MRV system in the Party. Decision 1/CP.16 (Article 71) shows "Parties to develop a national RL in accordance with national circumstances". Modalities agreed in COP 17 states that Parties to submit information and rationale on the development of their forest RL including details of national circumstances and if adjusted include details on how the national circumstances were considered. The technical guidelines on how to assess the proposed forest RL will be discussed and agreed by SBSTA in COP18.Mozambique will develop the RL reflecting its national circumstances and at the same time be in a manner ensuring its accountability. Also, Mozambique will keep tracking the additional requirements and methodologies to be discussed and decided by on-going international negotiations and adjust the development plan.

n of national RL development (See Figure: Developing a RL/REL in Mozambique)

As indicated in Component 1a, this process to develop national RL will be led by the National Directorate of Lands and Forests (DNTF),the Ministry of Agriculture in MRV/RL Working Group (Component 4a. Figure 31) in cooperation with JICA as designated under National Forest Plan (NFP)(draft) of Mozambique. Mozambique develops national RL as a national REDD+ baseline which will be a base of a National Carbon Accounting System. The National Carbon Accounting System is prepared under the Forest Resource Information Platform which is developed under the National REDD+ Information Platform (Component 2c). National RL is a base to assess and track additionality and leakages and eventually to estimate how much the net carbon stock changes as a result of REDD+ implementation by a MRV system (Component 4).

Mozambique will take following steps to develop national RL;(Step 1) Analyze forest cover change using a time series of satellite image archives at a national scale (1994, 2000, 2005 and 2010);(Step 2) Quantify historic emissions/removals by using the biomass/carbon estimation data (Tier 2 of IPCC); and(Step 3) Developfuture trajectories of emissions/removals by modeling scenarios based on national circumstances (GDP growth, demographic change, zoning etc.).

(Step 1) Analyze forest cover change using a time series of satellite image archives at a national scale (1994, 2000, 2005 and 2010)

In this Step, following

(1) Agree on Forest Definition and Forest Classification

For the forest resource assessment (FRA) of 2010, FAO defined forest as the forest area that has a minimum cover of 10%, height of 5m and area of 0.5ha stating also that forest use should be the predominant use. On the other hand, Kyoto Protocol allows Parties to select a single value of crown area; tree height and area within following range with the understanding of young forest may not reach these standard criteria.

- Minimum forest area: 0.05 to 1 ha
- Potential to reach a minimum height at maturity in situ of 2-5 m
- Minimum tree crown cover (or equivalent stocking level): 10 to 30 %

Under the Kyoto Protocol, it is responsibility of each Party's Designated National Authority (DNA) to define forest report it to UNFCCC (http://cdm.unfccc.int/DNA/); however, Mozambique is still under its process to discuss among all related stakeholders to agree on a single definition.

In the past National Forest Inventories(NFIs) conducted in 1994 and 2005, Mozambique took different forest definitionsfor their classification;the minimum tree crown cover in 1994 was 30% while 10% was taken for 2005.

In Mozambique, currently a nationwide Agro-Ecological Zoning (Zonamento-Agro-Ecologico; ZAE) project is on-going by MINAG(see Component 2a).to make the most sensible allocation of the national land and resources which receive at the moment tremendous pressures of various offers from international and national investors to use as plantation, farming, infrastructure development etc.. Consistency in forest classifications for such a land use zoning and REDD+ is critical to integrate all areas into a map. If we chose 30%as crown cover, forest cover in Mozambique is substantially reduced and more areas are regarded as other land use. It is important to make a decision after fully informed discussions by all related institutions to be held during the readiness period led by DNTF/MINAG.

In addition to NFIs, several sub national forest inventories and remote sensing analysis were conducted(Table 25).Classifications of the forest type (such as dense forest, open forest)in the past

NFIs also are not unified standard. Therefore, the historical trend cannot be analyzed by a simple comparison of these inventory/RS results, although some data can be referable for the analysis, Together with forest definition, forest type classification also is a subject of decision among stakeholders in Mozambique and to be agreed among relevant stakeholders and agreed definition of forest will be reported to UNFCCC for registration by DNA of Mozambique.

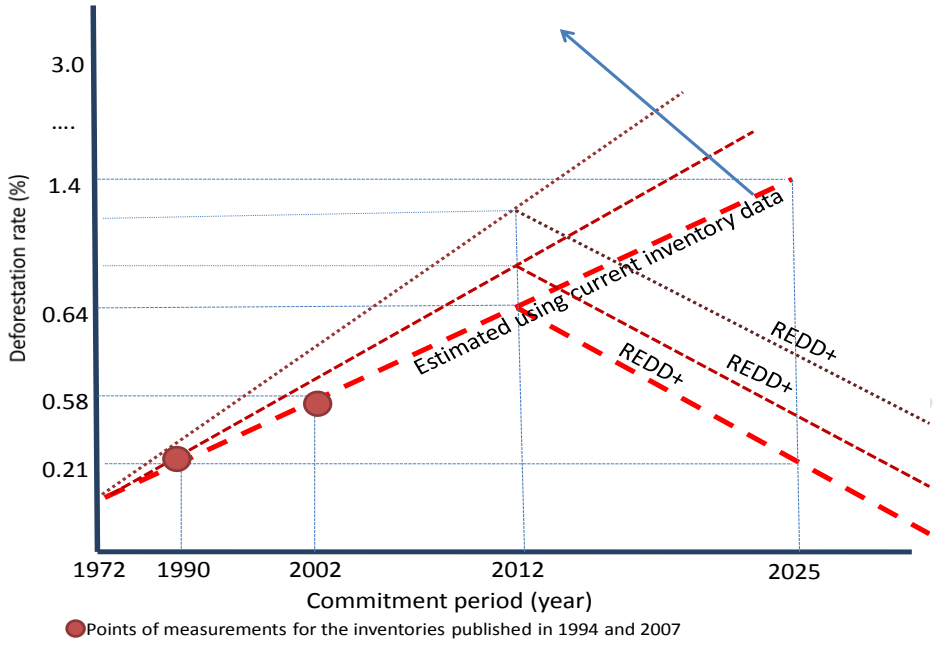
Table 24Previous (on-going) national forest inventory (NFI) and remote sensing/mapping related projects and initiatives in Mozambique

Type of map	Year	Scale	Coverage	Features
CENACARTA (French)	1990	1:250,000	Mozambique	Land Use and Land Cover Map
Saket (FAO)	1994	1:250,000	Mozambique	Forestry vegetation mapping Satellite images: Aerial photo, Landsat
Saket (FAO)	1994	1:1,000,000	Mozambique	Satellite images: Aerial photo, Landsat
(Finland)	2000	1:250,000	Zambezia, Inhambane	Satellite images: Aerial photo, Landsat
Marzoli (Italy)	2005	1:1,000,000	Mozambique	Satellite images: Aerial photo, Landsat
Marzoli (Italy)	2005	1:250,000	Manica, Maputo	Satellite images: Aerial photo, Landsat
MCA (the USA)		1:50,000	Selected 12 Districts & 8 municipalities in Cabo Delgado, Nampula, Zambezia, Niassa	DUAT LCLC map Satellite Images: SPOT4, SPOT5, Geoeyes, Worldview
Zonamento Agro-Ecologico	2008-2009	1:1,000,000	Mozambique	
Zonamento Agro-Ecologico	2011-2012	1:250,000	Mozambique	LULC Satellite Image: Landsat
Japan Grant Aid	2012	High resolution satellite image raster map	Mozambique	Satellite Image: ALOS PRISM, ALOS AVNIR2, SPOT to cover all country
DNTF-JICA-JAXA	2012-2017	Forest Classification, Deforestation detection	Gaza and Tete	Satellite Image: ALOS PRISM, ALOS AVNIR2, ALOS PALSAR (time series)
University of Edinburgh for the South-South REDD+ initiative	2011	Deforestation and Degradation of forests and association with drivers	Manica – Chimoio, Gondola, Sussundenga and Chibabava	ALOS PALSAR images 2007-2010

Figure 27 shows the two times points of national inventory, including the projections made on deforestation. The historic deforestation rates were 0.21% between 1970 and 1990 and an average annual loss of forest of 0.58% was calculated up to 2004 and a loss of 0.64% has been projected for 2012.Conversion of volume from the National Inventory report (2007) and use IPCC (2003) equations to provide initial estimate stocks of carbon in the different provinces. These vary between 212.5 million tCO2 and 851.8 million tCO2 . However, this historic inventory data have limitations. As mentioned above, the two nation-wide forest inventories (published 1995 and 2007), are not based

on the same forest definition and classification of forest categories, hence the results are not directly comparable at forest category level.

Figure 27 Challenge on evidence based construction of reference levels



(2) Historical change detection on satellite imagery over the reference time period

For analysis of historical change, Landsat is the most useful satellite image among all considering its long running period since 1982 at a middle resolution of about 30m. All data archived at USGS are available at free of charge. Considering the availability of forest inventory data in 1994 and 2005 and partial inventory in 2000 (Zambezia and Inhambane Provinces), Mozambique selected 1994, 2000, 2005 and 2010 for analyze historical forest cover changes using a standard approaches (Figure: Development of RL/REL in Mozambique) Referring to the past inventory data, Using available inventory data, RS of satellite image for forest cover classification will be carried out. Regarding the year of 2010, RS for forest classification on Landsat and on AVNIR2 and PRISM (10 m resolution and 2.5 m resolution respectively archive data of from 2006 to 2010) will be carried out. An appropriate method of ground truth survey will be developed and conducted. Ground truth survey and RS are initially to be conducted in Gaza and Tete. Accuracy of RS using Landsat will be assessed by RS using AVNIR2.Forest classification map using AVNIRs is to be expanded to other provinces by DNTF to be used as bench mark map for REDD+ RL and MRV.

A Jurisdictional and Nested Approach is under consideration in Mozambique. If any subnational jurisdictional data on historical trend data such as produced by Manica pilot project (see Box 1)is available, DNTF may combine data it as a part of the national historical trend data of a specific period.

(Step 2) Quantify historic emissions/removals by using the biomass/carbon estimation data (Tier 2 option of IPCC guideline)

(1) Carbon stock assessment

In IPCC Good Practice Guideline (2003), one of the three tiers for emission factors can be selected for C estimation.

- Tier 1: The use of IPCC default values such as aboveground biomass in six ecological zones per Africa, Asia and Latin America (IPCC Emission Factors Data Base-EFDB). This provides crude emission of ±70% of the mean.
- Tier 2: This is the improvement of Tier 1 where country specific data in each forest type stratum collected within the national boundary are used. More detailed strata may also be delineated to improve the precision of estimations.
- Tier 3: Uses actual inventory with repeated measurements from permanent sample plots for the directly determination of forest biomass changes. This is the most rigorous approach with highest level of efforts.

Mozambique will choose Tier 2 for C stock analysis. Stratification plan in accordance with forest classification will be carried out. Regarding the carbon pool, Mozambique will choose 5 pools (1) above ground biomass, (2) below ground biomass, (3) dead wood, (4) litter and (5) soil organic carbon(**Table 25**).The methodologies and protocols of sampling will be developed. Sampling locations and schedules will also be planned using high resolution satellite image map which cover all country. Collect C stock data of each pools and laboratory analysis will be conducted. With regression formula, carbon stock estimation factors will be found out to calculate C stock values using IPCC equations.

Carbon stock evaluation efforts byresearch institutions such as UEM will be integrated into the data for analysis. More data means better (precise) results. Studies conducted in miombo woodlands in Manica and Sofala indicate that carbon stocks are more significantly allocated in soil organic matter (45 per cent) than in the standing trees (39%). The roots store 11 per cent and the rest is found in dead trees and herbaceous species above ground.

The table below presents the options that the country may consider pending further analysis of viability of measurements and monitoring during R-PP implementation.

Table 25Measurement of carbon stocks: what pools will be included?

Options	**Carbon pools**					
	Live biomass			**Dead organic material**		**Organic soil**
	Trees *Above ground*	*Other plants* *Above ground*	*Roots*	*Litter*	*Dead wood*	
	Y1	M2	SY	M4	M4	M5
Deforestation and degradation (forest management) *	Y1	M2	Y3	M4	Y4	M5
Avoided forest degradation	Y1	M2	Y3	M4	Y4	M5
Carbon sequestration (reforestation, agroforestry systems etc.)	Y1	M2	SY	M4	M4	M5

Legend

Y= changes in this carbon pool are significant and should be monitored

M= measurement and monitoring of changes might be necessary depending on forest type and management regime

1= use above ground tree biomass assessment method

2= use methods for assessing above ground non-tree biomass

3= below ground biomass assessment method

4= method for monitoring carbon in *litter and dead wood*

5=use of methods for measuring soil carbon

Source: Adapted from IPCC (2003)

* This includes REDD+ initiatives in conservation areas such as forest reserves; timber concession; areas under community management, etc.

Box 1 indicates estimation of carbon stocks in Miombo/Mopane forests which are common forest ecosystem in Mozambique. The country has got two laboratories of soil analysis (UEM and IIAM) using the Walkley Black method. IPCC recommends the use of combustion of CO2. These institutions would have to create conditions to respond to demand of REDD+ in relation to methods for measuring carbon.

Box 1 Studies on carbon stocks in the miombo woodlands

- Study on carbon stocks in miombo woodlands of Manica showed that soil and herbaceous carbon stocks can be as much as 40 tCO_2 per ha; similar results were found in Gorongosa and in the Beira corridor.

- Carbon sequestration in fallow land in Gorongosa is about 0.7 tC/ha/year (range 0.43-0.87) and long fallows of over 25-30 years can store 19 tCO_2/ha and soil carbon (depth 0.3 m) is only 21-74 tCO_2/ha in the fallow land compared to 18-140 tCO_2/ha in undisturbed miombo. These studies indicate that deforestation has large impact on soil carbon storage capacity.

- 26 tCO_2 per ha on thickets, 29 ha of forests in agriculture land and in other forests there are stocks ranging from 45-56 tCO_2 per ha.

- 56.7 tCO_2 per ha in areas zoned for establishing forest plantations in Niassamiombo woodlands, while areas of graminae with native fruit trees or domesticated such as mangoes and figs stocking up 15.9 tCO_2 per ha.

- Envirotrade is implementing a Plan Vivo initiative since 2005 within the community of Nhambita, in Sofala. Household members engage in tree planting under different systems such as agroforestry including hedgerows, alley cropping and woodlots. These include edible and non edible fruits. By 2009 the planted trees were equivalent to 315,000 TCO_2, with potential to sequester 24,117 TCO_2 per annum in a total area of 30,000 ha. 1,500 producers are involved in this scheme with contract for 100 years and payments for the first 7 years. The payments were US$ 4.5/TCO_2, equivalent to US$ 433-808/ha.

(2) Combine forest classification data with emission factors to develop total historical emissions

C stock value of each historical forest classification map of 1994, 2000, 2005 and 2010 will be estimated using the equation. Historical C stock trend will be estimated.

Carbon stock evaluation efforts by other research institutions such as UEM will be integrated into the data.

(Step 3) Develop future trajectories of emissions/removals by modeling scenarios based on national circumstances (GDP growth, demographic change, zoning etc.)

(1) Develop future reference level based on national circumstances

After historical trend are estimated, modeling future reference emissions scenarios will be developed. In Component 2a.Mozambique's features of land use, forest law, policy and governance are displayed. Among these policies, the ones which already enacted/planned such as zonation plan as a result of ZAE (mentioned in (Step 1)) and recently approved agriculture sector strategy (PEDSA) and Forest and Wildlife Law (2011) may be relevant to be regarded as variables to be considered in the modeling. Also, it may be useful if we try to model both projections (1) successful enactment of the strategy options described in Component 2b and (2) not successful case or BAU to get an idea of how much greenhouse gas emissions can be reduced by the act of the strategy options for REDD+. Mozambique will consider broad concept of REDD+ should be undertaken (Table? REDD+ Intervention Options). In these intervention efforts, there are several challenges ahead:

1) Growth rate/carbon sequestration capacity of (especially young) forest stand over the period

Tree growth is the major source of removals. This, however, depends on soil, rainfall and planting system such as density etc.. There is scanty data available in the country regarding growth rate of the different forest types as well as limited information on spatial distribution of species of both native and planted exotic species, impact (relationship) of competition between species and between trees in a plantation or natural forest and, spatial distribution of different native species. Time series monitoring by setting or permanent plots analysis using PALSAR images and ground truth surveys in combination with National Forest Inventory (NFI) are planned in MRV system (Component 4). This is a key to study further on this for issuing parameters for future improvement of the projection part of national RL. At the stage of readiness phase, referable data and information will be corrected as much as possible. Also available growth data report of tree stand on similar environment in neighboring countries shall be referred.

2) Future Projection of degraded forest

Degraded forest is defined as "human-induced decrease in carbon socks, with measured canopy cover remaining above the threshold of definition of forest and no change in land use" (GOFC-GOLD Sourcebook). Except for those areas under zoning to other land use, there are some remaining areas where are unknown about their future; some degraded forest will be converted to subsistence farm land, the others will grow back to mature forests. Same as 1) above, time series monitoring by setting permanent plots observation and analysis using satellite images and on the ground surveys which are planned in national MRV system (Component 4)are key to study on this further and bring about improvement for future RL. At the readiness phase, future projections of degraded forests will be made based on the analysis through development of master plans, zoning policies, socio-economic factors (such as population and GDP growth) and statistics available from relevant authorities in Ministry of Planning and Development, Ministry of Agriculture and National Statistics Bureau.

A workshop should be planned by DNTF inviting national and international stakeholders and experts to discuss about relevant factors for modeling variables to draft RL with an enough consideration of national circumstances. After development of a draft RL, DNTF will publish it for public consultation and make final amendments.

(2) Submit information on rational of the development of RL

As decided in COP17 (2011), Parties are invited to submit a report on how RL is developed. Mozambique will develop national RL in a transparent and accountable manner.

Table26 REDD+ Intervention Options

REDD+ interventions	RED	REDD	REDD+
Avoid conversion of native forest areas to non-forest areas	X	X	X
Avoid conversion of dense forests to open forests		X	X
Promote sustainable forest management in production forest areas, i.e., for timber harvesting	X	X	X
Conversion of natural forests with low carbon stocks into planted areas into high carbon stock forests			X
Conversion of non-forest areas into plantations			X
Conservation of forests for biodiversity and carbon			X

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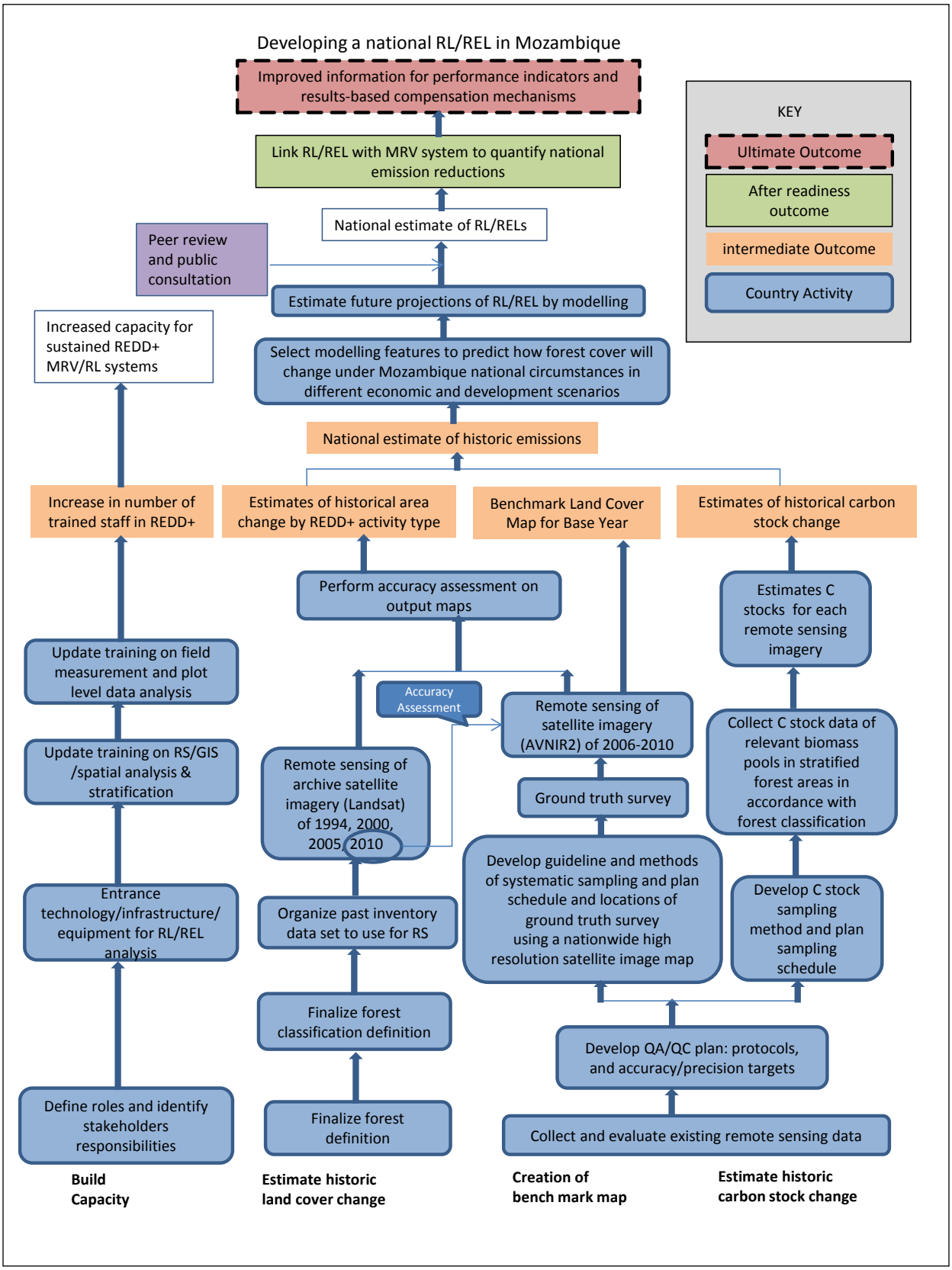
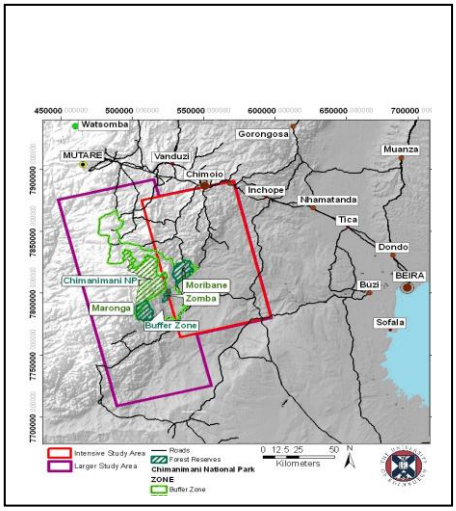
Figure28: Work Plan to develop national RL


Developing a national RL/REL in Mozambique
Improved information for performance indicators and results-based compensation mechanisms
KEY
Ultimate Outcome
After readiness outcome
intermediate Outcome
Country Activity
Link RL/REL with MRV system to quantify national emission reductions
National estimate of RL/RELs
Peer review and public consultation
Estimate future projections of RL/REL by modelling
Increased capacity for sustained REDD+ MRV/RL systems
Select modelling features to predict how forest cover will change under Mozambique national circumstances in different economic and development scenarios
National estimate of historic emissions
Increase in number of trained staff in REDD+
Estimates of historical area change by REDD+ activity type
Benchmark Land Cover Map for Base Year
Estimates of historical carbon stock change
Perform accuracy assessment on output maps
Estimates C stocks for each remote sensing imagery
Update training on field measurement and plot level data analysis
Accuracy Assessment
Remote sensing of satellite imagery (AVNIR2) of 2006-2010
Collect C stock data of relevant biomass pools in stratified forest areas in accordance with forest classification
Update training on RS/GIS /spatial analysis & stratification
Remote sensing of archive satellite imagery (Landsat) of 1994, 2000, 2005, 2010
Ground truth survey
Develop guideline and methods of systematic sampling and plan schedule and locations of ground truth survey using a nationwide high resolution satellite image map
Develop C stock sampling method and plan sampling schedule
Entrance technology/infrastructure/ equipment for RL/REL analysis
Organize past inventory data set to use for RS
Finalize forest classification definition
Develop QA/QC plan: protocols, and accuracy/precision targets
Define roles and identify stakeholders responsibilities
Finalize forest definition
Collect and evaluate existing remote sensing data
Build Capacity
Estimate historic land cover change
Creation of bench mark map
Estimate historic carbon stock change

Introduction of a Sub-national Pilot Project

A study[7] was conducted to improve understanding of interaction between drivers of deforestation and degradation and data requirements for establishing biomass and assessment of losses as well as give an indication on setting project reference levels. A case study from Manica pilot area, one of the pilots identified during consultation process (Component 1b) provides an example of application of a combination of methods to determine deforestation and forest degradation (Box 2).

Box 2 Application of ALOS PALSAR for determining carbon loss - Study area around the buffer zone of Chimanimani Nature Reserve



The study utilized followed the following approach:

1. Images of radar backscatter from the PALSAR instrument aboard the ALOS satellite were acquired for June and September 2007 and May and July 2010 and processed into 25 m resolution estimates of aboveground biomass. This was done using a method developed in Nhambita - Sofala Province (Ryan *et al.*, 2011) to determine the relationship between backscatter and biomass C density.
Although this introduces additional uncertainty, the biomass-backscatter relationship has been shown to be reasonably consistent across many different African landscapes (Mitchard*et al.*, 2009).
2. Resulting C maps were used to delineate areas of forest lossbetween 2007 and 2010.
3. Areas of forest biomass loss (i.e. land cover change (LCC)) were classified into deforestation and degradation events, based on the fraction of biomass lost.
4. LCC events further classified according to the area of the event and the distance to the closest road.
5. To quantify the extent of the different land use activities that lead to LCC events, and thus C loss, LCC events were visited in October 2011. A random sample of 60 events allowed assessment of the land use change (LUC) activities recorded, by on site investigation and interviews with local land managers. Many of the land use activities were found to be closely associated with particular categories of LCC events.
6. The categories of LCC events were used to scale up estimates of C loss from the 60 sites in the study area. This allowed estimates of C losses attributable to large-scale agriculture, small-scale agriculture, logging, charcoal and other activities to be estimated.
7. C losses from LUC were then projected for the period 2010-2020 under three different Reference Levels (RLs):
a) Simple linear extrapolation of historic C losses (RLext);
b) RL which accounts for unplanned deforestation and degradation (RLunpl) resulting primarily from population growth;
c) RL which accounts for both the planned expansion of large scale agriculture and unplanned deforestation and degradation (RLpl);
d) An Investment Scenario was described (IS) which is based on substantial investments in the sustainability of timber and fuel production, and improvement in the intensity of small scale agriculture.

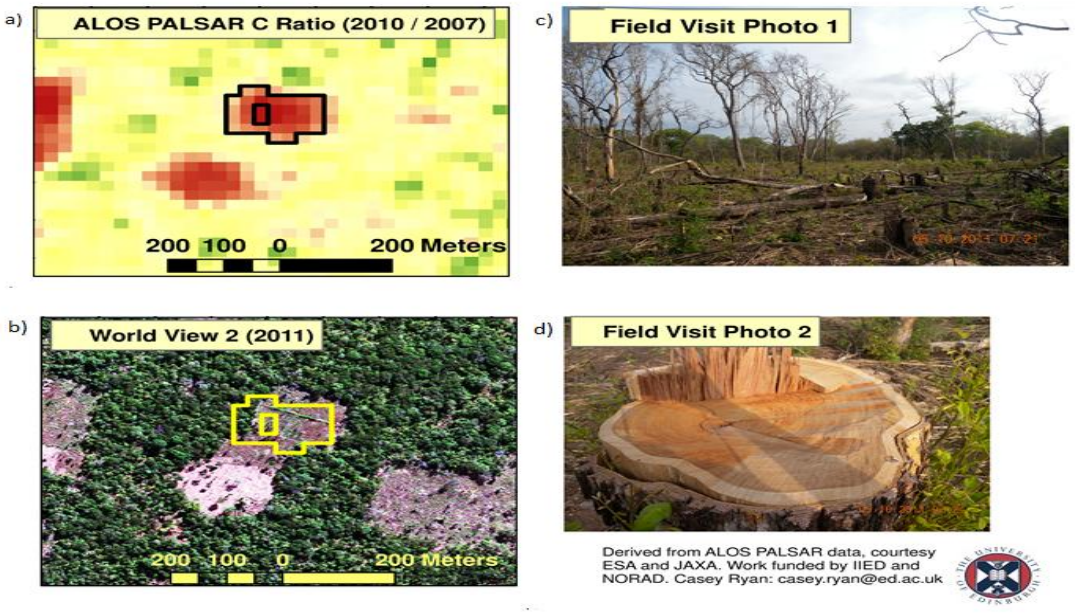
The land change activities considered include small and large scale agriculture, charcoal production, construction (poles) material harvesting, logging, infrastructure, honey harvesting, abandoned farm as well as accounting false detection of any of the above.

The results of this study suggest a very dramatic scenario in terms of the rapid loss of carbon stocks (3.1%) in a business as usual scenario (BAU) and complete transformation of the landscape by 2016. Extending the area of study to the landscape-level corridor of Manica and Sofala would depict a better picture on interaction between major drivers along the Beira Corridor, hence providing more objective

[7]In the context of South-South REDD+ initiative to feed into the drafting of the national REDD+ strategy

information on sub-national level reference levels. **Figure 29** illustrates the combined observation of events.

Figure 29 Satellite images and field assessment of deforestation and degradation in Manica



Field work for gathering information for development of RL/REL can only be undertaken in a relatively limited area, therefore the use of other existing information will be crucial for the pilot project.

National and sub-national scale

In Mozambique, national RL will be developed during the readiness phase led by DNTF in coordination with UT-REDD members.

There is a discussion whether to take Nested-Jurisdictional Approach or not as a matter of discussion during the readiness phase. In case if we take the N-J Approach, we need to consider following conditions:

(1) National RL should be an aggregation of all Subnational RL (Subnational RL cannot exceed National RL)

(2) Within Subnational boundaries, if any leakages found, all projects in the Subnational area have to divide the risk equally (or need to pre-arrange contract among projects).

(3) National government earn carbon credit in accordance with its performance (NFP implementation)

(4) Subnational project earn carbon credit in accordance with its performance

(5) If any problems happen on Subnational as a consequence of negligence of national government, national government has to compensate to the Subnational projects.

(6) To hedge risk, insurance is recommended

Under the J-N Approach, to conduct Sub-national analysis and landscape-level corridor pilot programs at provincial level and beyond, have the merit of integrating specific socio-economic contexts and drivers of deforestation and degradation to determine contextually accurate baselines and consequently facilitate the monitoring of additionality, permanence and leakages. Although leakages might be predominantly internal, cross border trade with neighboring countries can provide insights on displacement of agriculture and forest activities to other areas.

Costs of preparation, management and monitoring of REDD+ initiatives and complexity of carbon accounting will determine the scale of REDD+. Small projects are likely to have a higher cost-benefit ratio and more risk of leakages. For example, there is high probability of leakage in the case of biomass energy, unless large investments are concomitantly made in improving efficiency of production and ensure availability of affordable improved stoves for the urban poor population to equally improve efficiency in consumption.

Leakage has its origins on population deprived of subsistence from cash-income forest products due to REDD+; or based on reduced availability of those products. This can contribute to increase of emissions elsewhere either because those populations have to procure these forest products from elsewhere, or because they are forced to migrate to pursue their subsistence or cash-income livelihoods elsewhere. Therefore, during the readiness period detailed assessment of the leakage will be conducted and discussed with relevant stakeholders. Leakage accounting needs to consider spatial changes and transfer of activities causing emissions. As suggested in Component 2c, a landscape-level corridor approach will be undertaken for REDD+ project implementation, especially as the corridors identified will allow relatively easy assessment of migration of major economic activities or drivers of deforestation. Box 3 shows specific interventions at sub-national level, grouped by region, which will guide assessment of displacement of activities. Under J-N Approach, leakages are to be dealt within the Jurisdiction.

The Leakages beyond the boundary of a Jurisdiction shall be dealt by at the national level MRV. Further discussion is in Component 4a.

Box 3 Sub-national interventions under consideration of Nested-Jurisdictional Approach determining the establishment of reference levels and monitoring (4a) within each jurisdiction

North (Niassa, Nampula, Cabo Delgado)

- Reforestation and industrial plantations: net carbon and biodiversity conservation
- Agroforestry systems in community areas
- Rehabilitation and restoration of degraded areas (mangroves, mining areas)
- Avoided Deforestation:
  - Niassa Game Reserve, Mecuburi Forest Reserve, Matibane Forest Reserve, Gilé Reserve, Forest Concessions
  - Community forests (capitalize on concept 'One pupil, one tree and one leader one community forest)
  – Presidential Campaign to incentivize tree planting.

Centre (Zambézia, Manica, Sofala, Tete)

- Reforestation and industrial plantations and net carbon balance
- Agroforestry systems in community areas
- Rehabilitation and restoration of degraded areas such as mangroves, coastal areas in general and erosion prone areas

- Community forests (capitalize on concept 'One pupil, one tree and one leader one community forest) – Presidential Campaign to incentivize tree planting.
- Avoided deforestation:

  - Moribane Forest Reserve, Derre Forest Reserve, Zomba Forest Reserve, Maronga Forest Reserve, Mucheve Forest Reserve, Inhamitanga Forest Reserve, Hunting areas, Forest concessions, Protected wetlands (Marromeu Ramsar site)

South (Maputo, Gaza, Inhambane)

- Agroforestry systems in community areas
- Rehabilitation and restoration of degraded areas such as mangroves, coastal areas in general and erosion prone areas
- Community forests for energy and conservation
- Community forests (capitalize on concept 'One pupil, one tree and one leader one community forest) – Presidential Campaign to incentivize tree planting.
- Avoided deforestation:

  - Maputo Reserve, Licuáti Forest Reserve, Forest concessions

However, the national level boundary on REDD+ implementation unit, embeds the notion of 'outside the project area' being 'another country'. This is equally important for Mozambique,as neighboring countries such as Malawi import wood products including commercial timber and biomass energy from Zambézia and Niassa. Equally, cross border trade of food products affects land use. In the frontier with Tanzania, harvesting high value timber that crosses the borders before re-exported to Asia and migration in search of minerals will affect REDD+ effectiveness and will need to be evaluated.It is also important to assess the extent to which certain types of investments might be made in Mozambique specifically as result of implementation of mitigation actions and strengthened governance elsewhere.

Building capacity

As indicated above Work Plan, national RL/REL will be created in Mozambique during the readiness phase. Figure: Work Plan to develop national RL shows that firstly roles and responsibilities of each institution shall be defined. Then, necessary technologies, infrastructures, equipment to develop RL shall be listed. Among all, capacity of Remote Sensing (RS)/ Geographic Information System (GIS), spatial analysis, inventory and field measurement, plot survey techniques will be necessary to be improved by training,

Considering about the responsibility, the National Directorate of Lands and Forests (DNTF) houses two important information hubs: (i) the centre of cartography which develops land cover and land use maps, digitize land occupation and registered rights; (ii)the Department of Natural Resources Inventory (DNRI) which is dedicated to mapping and quantifying forest cover (including forest types, species, areas and volume) and use. Information gathering and initial spatial mapping is done by staff in the Provincial Services of Geography and Cadastre (SPGC) and Forestry and Wildlife (SPFFB) present in all 10 provinces. These manage information on land allocation for various economic activities and forest licensing regimes. An analysis of information collection and management systems particularly in Maputo, Gaza and Zambezia provinces as part of REDD+ process, showed the need for building capacity at local level for collection and compilation of information. For example basic errors[8] in data collection and

[8]Wrong registration of coordinates with GPS marking the boundaries of land allocated resulting in overlapping rights

mapping were detected. While national level staff is qualified in the area, the field activities in the provinces are undertaken by technicians without adequate training in use of new information technologies.

JICA is supporting DNTF to build capacity of the national, provincial and district level officers for effective use of satellite images, computers, software, field survey equipment and others. Five people have been trained in Brazil and one in Japan on MRV who are expected to work also trainers. At least one/two training sessions for 20 people each per year are planned. On the job training will also be provided to officers working at the District Services of Economic Activities (SDAE) in the 20 pilot districts to develop a on the ground monitoring system (Component 4a). For example, officers will be trained in use of GPS to collect data on forest cover change including registration of forest fires, logging, sifting cultivation and other uses and report to SPFBB. In the context of the South-South REDD+, Brazil-Mozambique initiative technical staff of UEM, DNTF and MICOA visited Brazil to learn about tools for monitoring deforestation and degradation. In addition, mapping land use and carbon stocks is in Manica pilot area was done in collaboration with the University of Edinburgh and Eduardo Mondlane University as well as DNTF.

The Mozambique Institute for Agrarian Research (IIAM) at the Ministry of Agriculture conducts research on land, water, forests, crops, livestock and soils and it is key party in the ongoing national zoning process.

The Catholic University and University of Zambézia based in Sofala, the University of Lúrio in Nampula, the University of Cuamba in Niassa and other schools including diploma level (e.g. Agrarian Institute of Chimoio- IAC) also have equipment and expertise that should be used in the work at sub-national level..

Together these institutions have human capacity that can be drawn to undertake the work and some also have GIS and other equipment and technical expertise for assessing resources to define credible and verifiable reference scenarios. Specific training might need to be provided to ensure understanding of the internationally established methodologies and adjustments to the national and sub-national contexts.

There are also initiatives by private sector companies such as the Mozambique Carbon Initiative with British Capital and partnership with Foundation Eduardo Mondlane. The company has undertaken assessing carbon stocks and some socio-economic studies. Other agencies such as French Forest Agency, Fauna and Flora International, WWF may produce information that will inform the process.

A full needs assessment for capacity building will be conducted to assess both the technical knowledge requirements and quantity of staff requiring training to avoid future shortcomings. Potential for providing training to local community members should be explored in order to create

Main interventions:

- National RL/REL will be created with a leadershipof DNTF in consultation with UT REDD step-wisely in the Work Plan.
- Incorporate Subnational study on project base RL may be incorporated into National RL/REL when relevant.
- Consideration of taking Jurisdictional-Nested Approach. If relevant, jurisdictional boarder will be determined considering geographic cohesiveness such as riparian zones and road network in order to observe and control leakageswithin the jurisdiction easier (Nature Conservancy 2010)and develop RL(s)/REL(s) for and MRV system for each jurisdiction.

Table 27 Schedule of activities for the development of RL/REL

Activity	Responsibi-lity	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Develop TOR for sub-national assessment of carbon stocks	UT-REDD+ - DNTF	Maputo												
Prepare a dataset of biomass and carbon for the representing forest ecosystems such as miombo, mopane and mangrove	UT-REDD+ - DNTF	Nation-wide												
Undertake landscape-level corridor pilot program assessment of RL/REL (including parameters to adjust IPCC equations	UT-REDD+ - (DNTF)	All pilot areas												
Estimate historic land cover change using Landsat Images at national level	UT-REDD+ - DNTF													
Prepare and Revise multiple RL/REL scenarios with clear assumptions asBAU at the national level	UT-REDD+ (DNTF)	Maputo												
Create bench mark map	UT-REDD+ - DNTF													
Full capacity assessment of technical capacities and quantities conducted	UT-REDD+ (DNTF)	National-level-Maputo												
Capacity building	UT-REDD+ (DNTF)													

Table 28: Summary of Reference Level Activities and Budget						
Main Activity	Sub-Activity	Estimated Cost (in thousands)				
		2009-2011	2012	2013	2014….2017	Total
Prepare data sets to determine biomass and carbon stocks	Revision of past inventories and other studies undertaken by different institutions		15.0			**15.0**
	Clarification of concept of forest, design and implement survey to define default values for estimation of biomass		35.0	100.0	100.0	**235.0**
	Analysis of Land sat data 1994, 2000, 2005, 2010 to assess land use, land use change and association with carbon stocks and drivers		100.0	200.0	200.0	**500.0**
Development of RL/REL	Development of national RL		100.0	250.0	300.0	**650.0**
	Development of scenarios and modeling of future emissions at landscape-level corridor for sub-national RL/REL	97.5		50.0	50.0	**197.50**
Capacity building	Development of methodologies and Training		30.0	40.0	30.0	**100.0**
Total		**97.5**	**280.0**	**640.0**	**680.0**	**1,697.5**
Government						
FCPF				**50.0**	**50.0**	**100.0**
Government of Norway (Embassy in Maputo)		**97.5**				**97.5**
JICA			**280**	**590**	**630**	**1,500**

Component 4: Design a Monitoring System

4a. Emissions and Removals

Standard 4a the R-PP text needs to meet for this component:
Emissions and Removals

The R-PP provides a proposal and workplan for the initial design, on a stepwise basis, of an integrated monitoring system of measurement, reporting and verification of changes in deforestation and/or forest degradation, and forest enhancement activities. The system design should include early ideas on enhancing country capability (either within an integrated system, or in coordinated activities) to monitor emissions reductions and enhancement of forest carbon stocks, and to assess the impacts of the REDD strategy in the forest sector.

The R-PP should describe major data requirements, capacity requirements, how transparency of the monitoring system and data will be addressed, early ideas on which methods to use, and how the system would engage participatory approaches to monitoring by forest–dependent indigenous peoples and other forest dwellers. It should also address independent monitoring and review, involving civil society and other stakeholders, and how findings would be fed back to improve REDD-plus implementation. The proposal should present early ideas on how the system could evolve into a mature REDD-plus monitoring system with the full set of capabilities.

(FCPF and UN-REDD recognize that key international policy decisions may affect this component, so a staged approach may be useful. The R-PP states what early activities are proposed.)

Objective

In this Component, initial design of Work Plan for how the national Monitoring, Verification and Reporting (MRV) system will be developed is explained. It also describeabout data requirement, capacity requirement, how transparency of the system to be ensured, Engagement of participatory approaches on monitoring, How the system will be evolved to mature system.

Objectives of monitoring, reporting and verification

Funding for MRV preparedness for REDD+ is activity oriented in order to fill the necessary conditions as stated in CP16 “a robust and transparent national forest monitoring system for the monitoring is requested to prepare. With the reliable MRV systems, Mozambique can attract investment and hence, benefit our forest dependent population by the subsequent performance based payments. The government of Mozambique, since the late 1990’s, introduced legislations to promote sustainable forest management to be carried out by all actors. However, one of the challenges of the process is the lack of a monitoring system to measure the effectiveness of policy implementation. There is a hope that prospective income from the implementation of REDD+ may enable Mozambique government to conduct regular assessments and data collection of socio-economic, biophysical aspects in addition to carbon stock change by REDD+ implementation.

The objectives of developing a monitoring, reporting and verification system shall include:

1. Assess the net carbon stock changes as results of REDD+ implementations at national and sub-national level.

2. Track and record the permanence and leakages of carbon stock change in addition to additionality.

3. Assess both of positive and negative impacts of the REDD+ implementation on the society including effects social and environmental safeguards and status of the governance.

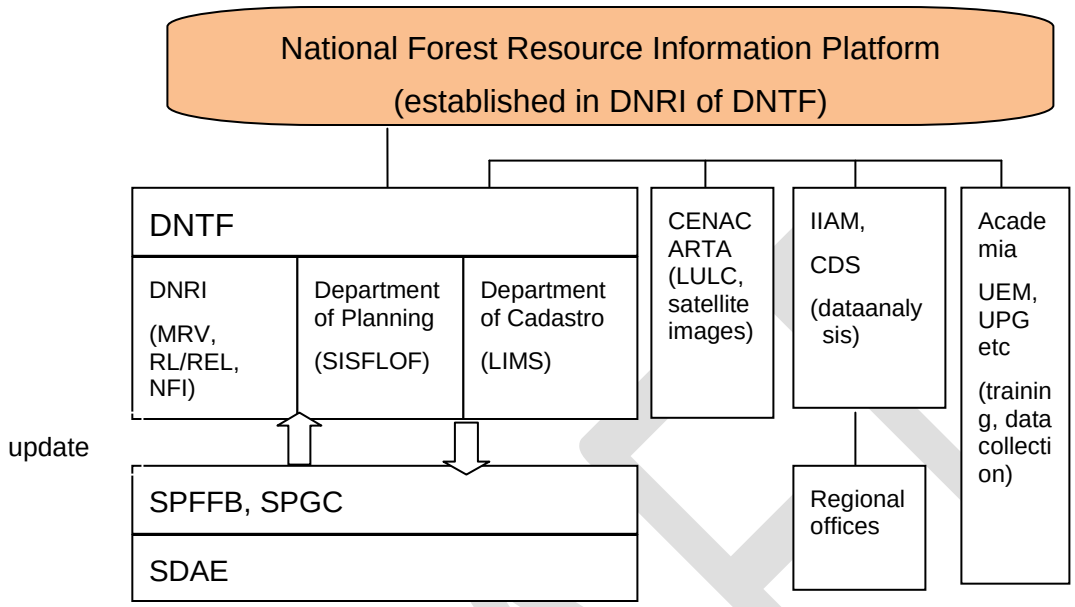
4. Create a transparent, accurate, participative and verifiable system of data collection and reporting system on emission reductions and removals, co-benefits generated (poverty, biodiversity and sustainable development) costs, risks, and how they are distributed.

There are four steps for the development of MRV on emission and removals (Component 4a.), and multiple benefits, other impacts and governance (Component 4b.): step one is the design of the REDD+ strategy and identification of data and capacity needs and methods for MRV; the second step comprises setting up the systems; the third step regards measurement and monitoring of REDD+ activities while step 4 is about reporting and verification of REDD+ activities. Hereinafter is a description of Component 4a

Initial design of Work Plan to develop a national MRV system to monitor emissions and removals

Mozambique will take following steps to initiate the development of a national MRV system; (1) Establish Forest Resource Information Platform, (2) Monitor carbon stock change, and (3) Develop on the ground monitoring system. Together with the development of national RL, the development of monitoring system on emissions and removals will be led by DNTF, MINAG in MRV/RL Working Group within the UT-REDD+ (Figure 33) in cooperation with JICA, as designated under National Forest Plan (NFP) (under drafting) of Mozambique. There are several institutions producing information that needs to be compiled and integrated into a database. This requires coordination between institutions that hold the information. The structure highlights further the need for horizontal and vertical coordination of the existing institutions to rationalize the use of resources, but also to strengthen the ability of addressing the challenges of REDD+. Figure 30 suggests key institutions at national and provincial level that should form part of a working group on MRV.

Figure 30 Institutional coordination and rationalization of existing capacities- MRV Working Group



Besides UEM, it is also important to explore the ways to cooperate with other public or private institutions such as Pedagogical University in Maputo, Catholic University in Sofala with GIS facilities and capacity, University of Lúrio in Zambezi, UCM and Polytechnic Institute of Manica (ISPM).The MRV/RL Unit within the UT-REDD+ should, among others, facilitate capacity building to update technical abilities for establishing and running a data base and a system of information sharing related to forest ecosystems and other wooded lands.

(Step 1) Establish Forest Resource Information Platform

As explained in Component 2c, Mozambique will develop a Forest Resource Information Platform as a basis of National Accounting System (Component 3). Net carbon change from national RL as a baseline will be tracked by national MRV system. With the national monitoring system, not only the additionality, but leakages caused by a subnational project to other subnational places shall be monitored, The Forest Resource Information Platform should be the one contains RL, NFI data, forest concession data and area map, land use map, C estimation data, high resolution satellite image map, Bench Mark Maps (Component3)with an update system of adding new information including deforestation, forest degradation as well as the information where REDD+ projects are located. In addition to this, the government policy and plan on land use and zoning such as ZAE and PEDSA also be clarified. Compiled data and information shall be published so that the developers/investors of REDD+ can see the availability/unavailability of the forest areas and avoid overlap the locations with other REDD+ and non-REDD+ projects before submitting the proposals (R-PIN/PDD) for approval to DNA.Other data sources will include DPA (SPFFB, and SPGC) of each province and in Maputo, Ministry of Tourism (DNAC), NGOs, donor agencies, commercial investment firms and others. The information will be compiled to construct reference maps for each District.

To design the database of Forest Resource Information Platform we will inventory on what data we have by the NF Iand other surveys and select what data and information to be included, how should be the data update protocol, who should be responsibility for data management and hardware maintenance etc should be speculated and agreed. Then create data base and insert necessary data and information. In GIS, ancillary spatial data should be compiled. Also it is important to develop a guideline to assess in what point the proposal from investors/project developers shall be checked, reviewed and approved. Transparency is important and the guideline should be published together with comprehensive geographic information.

(Step 2) Monitor carbon stock change

IREDD+ monitoring should be apart of the works of national forest inventory(NFI) which is one of the indispensable government (DNTF)'s efforts to ensure the sustainable forest management in Mozambique. It is efficient to set the permanent plots by a systematic sampling method for compatible purposes of NFI, REDD+ monitoring and ground truth survey for remote sensing by which we analyze satellite images to develop forest classification maps by supervised classifications. The survey method and the grid distance between sampling plots shall be integrated and developed by coordination for these purposes. During the readiness phase, appropriate monitoring guidelines including sampling methods should be developed by testing several options in the pilot area in Gaza and Tete provinces as well as 20 districts throughout Mozambique.

To detect forest cover change, Mozambique will develop capacity of RS technique using ALOS PALSAR images, Under the KC3 Programme, Japan Aerospace Exploration Agency (JAXA) will collaborate with DNTF, Mozambique government to provide archives of 25 m resolution products together with technical supports in exchange for ground truth data to be provided by Mozambique. PALSAR is a longer web lengths polarimetric L-band radar satellite image (Component 3, Box1).Different from optical satellite images, they can penetrate atmospheric particles (haze, smoke, cloud) and reach deep into forest canopies so that more useful for forest stand than X-band and C-band radars. PALSAR is more useful for the forests located in a topographic feature of not angulated, moderate slopes and low height forest stands. In this regard, Mozambique is one of the countries which have a higher potential for PALSAR to be appliedsuccessfully in detectionworks of forest cover changes. By interferometry processing of PALSAR images, examine the applicability to detect forest cover change. After a certain period of examination and training on RS of PALSAR using archives from 2006 to 2010, Mozambique hopes to renew the contract with JAXA in 2014 for continuous and periodical reception of PALSAR2 images which is planned to be launched by that time and receive technical supports to apply for actual REDD+ monitoring implementation. Other than this, high resolution satellite image raster map, optical images (PRISM, AVNIR etc), PC, GIS facility, GPS and other field survey equipment are to be provided in 2012 by Japan grant aid for forest preservation programme.

Initially forest classification map creation as the Bench Mark Map of REDD+ monitoring using the high resolution optical satellite images (ALOS PRISM and AVNIR2) with ground truth survey for RS by systematic sampling method will be conducted in 2 pilot provinces: Gaza and Tete in addition to inventory for on the ground monitoring in 20 Districts (2 districts in each of 10 Provinces) (Table30). These provinces and districts are selected by the provincial officers of DNTF based on their perspectives on the impacts of pressures on forests. It also is important to cover forest classification types and forest stand age variation to be considered. The carbon stock, emission and removal values will be estimated using equations developed for RL analysis (Component 3 (Step 2)).The ground truth survey data collected in systematic sampling plots to be set both ways of permanent sampling plots and temporary sampling plots for Bench Mark Map will be used for RS of PALSAR for REDD+ monitoring as well as for NFI.A

compatible ground survey guideline including frequency and analyzing methods should be prepared by in accordance with international protocols such as decisions of UNFCCC under negotiation in SBSTA and IPCC guidelines as well as in referring to GOFC-GOLD guidelines. On the ground, participatory monitoring methods in the communities under the districts also shall be a subject of consideration.

Table28 Selected Districts to pilot for assessing biomass change

Province	District 1	District 2
Maputo	Matutuine	Magude
Gaza	Bilene	Mabalane
Inhambane	Mabote	Vilanculo
Manica	Gondola	Macossa
Zambezia	Morrumbala	Gile
Tete	Moatize	Tsangano
Sofala	Gorongoza	Cheringoma
Nampula	Mecuburi	Mossuril
Niassa	Nuembe	Majune
Cabo Delgado	Ancuabe	Montepuez

(Step 3) Develop on the ground monitoring system

In Mozambique, by its laws and policy, sustainable forest management has been tried to be ensured by controlling the volume of wood production by concessionaires and simple logging license holders. For the 50 years' concession right for natural forest exploitation, the concessionaires have to submit a plan with an indication of the locations of logging on the map. Simple logging licenses used to be managed only by controlling the volume of the woods and wooden materials such as charcoal and poles to issue approval from SPFFB in each province, The new law to be enacted in 2012will change the system as the license holders are requested to submit on the ground forest use plan for 5 years to apply of the license. On the ground forest monitoring is a policy of Mozambique to increase control over the logging and use of the forest resources in a sustainable manner.

Firstly we shall clarify the roles and responsibilities of each responsible institution for the on the ground monitoring system. Which institutions are supposed to take what duties and how should be implemented and when. A high resolution satellite image map product shall be used in accordance with needs. Bench Mark Map will be created by ground truth survey and RS of optical satellite images (ALOS AVNIR2, PRISM, SPOT) and stored in the database. On the ground monitoring system will be speculated and piloted in 20 Districts (2 Districts in each of 10 Province (Table 16)). Forest fire is also one of the important causes of deforestation in Mozambique. Using MODIS whose images of the day before are downloadable at free, DNTF also will develop a monitoring system. For example, DNTF will download the MODIS image daily and inform Provinces about the location of the fire to ask for on the ground check, and/or the report of on the ground monitoring of fire will be cross-checked with the MODIS data. When District officer detect forest loss and record the location on the spot by GPS including the act of logging and forest fires which are not compliance with a laws, and the officers will inform it to Provincial office for check and then the information will be passed to DNTF. May forest dwelling Participatory REDD+

monitoring involving villagers also will be tried. Details of the Protocols such as information flow from DNTF to Province to District shall be designed and tried to develop..

Existing capacity and needs for strengthening

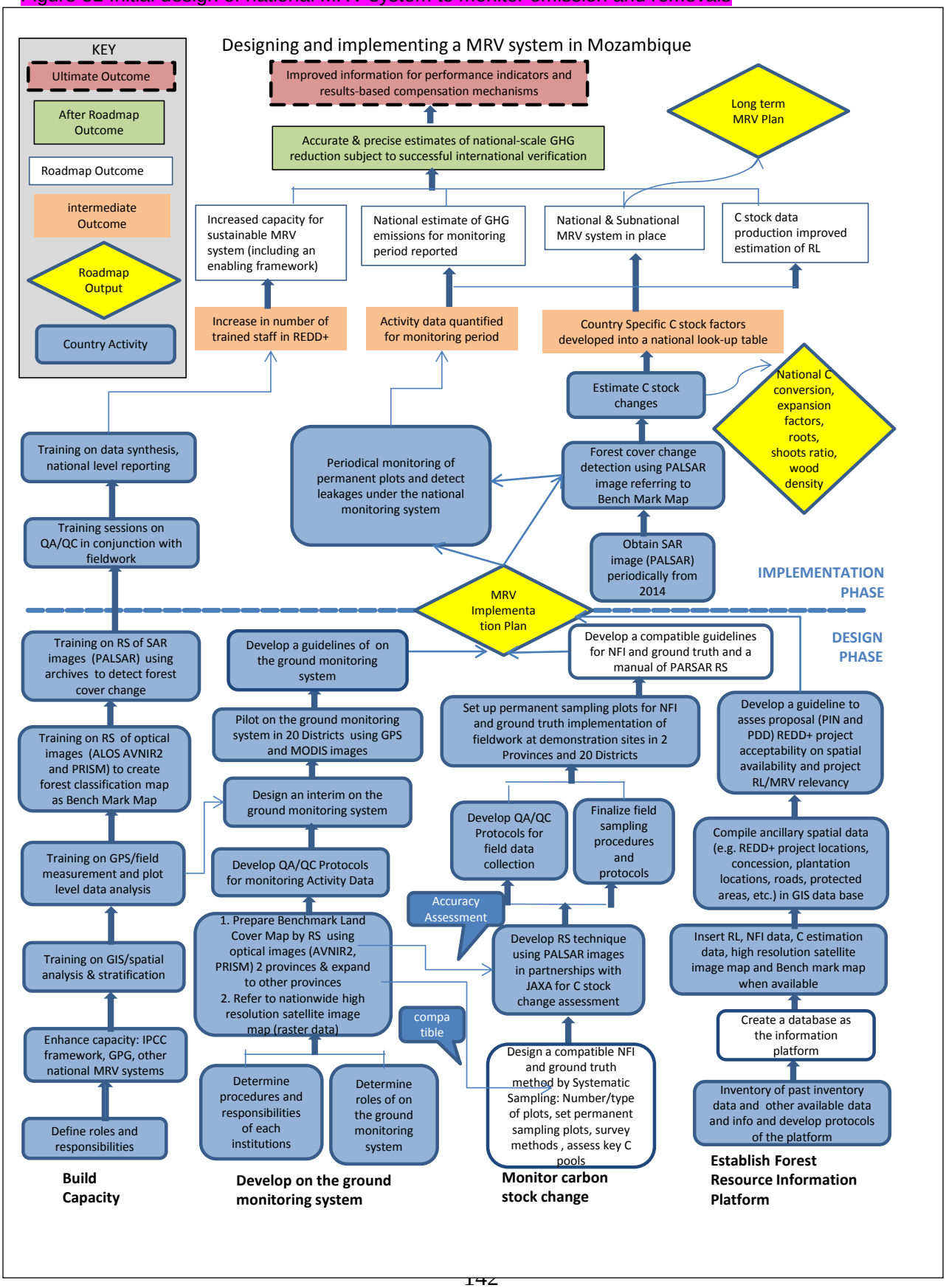
DNTF, The Ministry of Agriculture at national, provincial and district level plays a key role in information management related to crop production, livestock, forests and lands. The sub-national (SPFFB, SPGC and SDAE) levels are responsible for data collection while the capacity for processing and analyzing information is at national level. There is a need to build capacity at the central level and then improve sub-national level capacities in a step by step basis to decentralize data analysis, monitoring and reporting on impacts of REDD+. The capacity assessment prepared in Component 3 will form the core for capacity development in this section.

To carry out above tasks, Mozambique will develop the capacities of GIS/RS, on ground truth surveys, GPS, inventory and sustainable forest management plan on the ground.

Table 29Existing capacity for MRV

Institution	Technical capacity
MINAG- DNTF	The Department of Resources Assessment (DNRI) is reponsible for conducting national inventories at national scale as well as provincial and regional level; processing and analysis of satellite imagery on forest cover, definition of forest use categories and production of forest maps. This unit is equipped with human resources to assess changes in forest cover and use.
MINAG-CENACARTA	Satelite images, cartopgraphy, teledetection. High capacity to process and distribute the images, produce land cover and land use maps, including changes.
MINAG-DINAGECA	National registry of land ocupation. Management of land information system; maintains databases of land use certificates (DUAT) and other recignized forms of land use rights. Operations at provincial level are undertaken by the Services of Geography and Cadastre (SPGC) which collects georeferenced data in the field and registers land occupation. Initial draft maps are produced, however most information is yet to be digitized. While the certificate is issued to a certain use, in reality the use at time is different.
MINAG-IIAM	The National Institute for Agriculture Research has a Department of Land and Water, equipped with human capacity and materials for soil analysis. This capacity can be used to assess change of carbon stocks as result of current uses and adoption of REDD+ activities. IIAM also plays an important role in identifying viable technologies and best practices in agriculture, livestoc and forest activities.
UEM-FAEF-DEF – Department of Forestry of Edurado Mondlane University	Research on various forest issues including remote sensing and aerial photography to assess vegetation, changes in forest cover, forest degradation, change of species composition, assessment of forest biomass and stocks of carbon in the forest ecosystems, simulation of land use change and carbon and other aspects. DEF has the capacity to develop national parameters to apply in tier2 and tier3. UEM also offers training to institutions at national and local level including communities on MRV including formulation of methodological guidelines for assessing carbon and related activities.
MICOA-CDS-ZC	Applied research on integrated management of coastal resources including costal forests and mangroves. High capacity of analysis and processing of satelite images and production of land use maps and changes that ocuur along the cost.
Private universities in Sofala (Catholic University), Nampula and other provinces	Equipped with GIS facilities and human capacity. Experttise on biodiversity assessment, especially related to flora.
INE	Very well equipped and resourced to conduct national surveys.
NGOs	Socio-economic information; impacts of their activities on community livelihoods, environmental analysis

Figure 31 Initial design of national MRV system to monitor emission and removals



Sampling

As so decided in UNFCCC COP15 (FCCC/SBSTA/2009/L.19.Add1), Mozambique will establish MRV system by the combination of remote sensing technology and ground truth surveys. It is also stressed by Pearson at. al. (2005), and Segura & Kanninen (2002) as sampling is in particular critical to obtaining credible and verifiable results, and the methodologies and guidance are referable at IPCC (2003, 2006) and GOFC-GOLD (2011). Samplings can be made by setting up temporary and/or permanent plots. The decision on the form of these plots is as important and should be adequate for the carbon pool(s) being assessed. For instance, to conduct sampling for monitoring landscape-level corridor project, it is important to conduct geo-referencing of REDD+ landscape-level corridor boundaries, description of biophysical conditions, socio-economic conditions including past and current land uses will be important to understanding the dynamics and the risks of change in carbon stocks.

Permanent plot samplings can be conducted in a way statistically significant and verifiable, thus lowering the cost of verification. Permanent sampling plots will be set up in all provinces. There is, however, need to ensure that stakeholders such as community leaders, District administrators and neighboring forest dwellers should be involved in setting-up and monitoring activities under the jurisdiction of SPFFB and SDAE officers in order to reduce the risk of interference, with potential distortion of the natural dynamics and anthropogenic factors. DNTF has set permanent sampling plots in several provinces and need to develop a national network to monitor growth and other forest ecosystems dynamics in a way achieving statistical significance. The Eduardo Mondlane University used to set up plots to monitor the effects of fire in growth of miombo woodlands in the central part of the country but they were destroyed due to limited capacity for maintaining them. By a pilot project in Manica province, monitoring of above ground biomass of other vegetation will also be done in temporary plots representative of the region, eco-region or ecosystem that define the landscape-level corridors. During the readiness phase, guidelines of sampling methods will be developed as described in (Step 2) Monitor carbon stock change of this Component. Also any collaborations with relevant institutions both in national and sub-national for example, analysis of soil carbon to be conducted in cooperation with IIAM and IIAM's out-posted research centers, sustainable development centers (Gaza and Manica) and provincial directorates of agriculture and environment of Maputo, Gaza, Manica, Sofala, Tete, Zambezia, Niassa and Nampula.

There are several sampling methods to evaluate forest carbon stocks such as random, systematic or stratified samplings. Among them, systematic sampling is recommended to analyze statistical significance referring to GOFC-GOLD guidebook. The country will adopt systematic sampling methodbased first on the three main categories of forest use:

- dry and humid miombo, mopane and wooded vegetation;
- the former should be categorized according to formal forest type classification that determine uses and likely users productive (high value timber), protected (national parks, game reserves, forest reserves and hunting areas) and multiple use areas (competing uses and users);
- within these: incidence of the different drivers identified in component 2a in the areas will determine location and number of plots.

There are two levels of data necessary for monitoring performance of REDD+ initiatives. One requires that measurement sare undertaken by highly qualified personnel at regular intervals in order to establish comparability of changes as well as of costs associated (see Step 2 above). The second is continuous monitoring of relatively simple variables such as new land clearing for farming, illegal activities, etc. This does not require qualifications and communities can collect and record such information (see Step 3

above). Therefore, decision on periodicity of assessments has to be made based on further analysis of existing information and requirements of the REDD+ MRV system.

The reference level

The reference level that will be derived from Component 3 represents the emissions and removals that could be observed without REDD+. This will be used therefore to establish the targets for reduction of emissions and increase of removals based on REDD+ stimulated interventions. As indicated in component 3, historic data will be analyzed. However, because the country is promoting rapid exploration of its natural resources particularly forests and minerals, but also aiming at increasing investments in the agriculture for producing export crops, a projected reference level by modeling BAU cases will offer insights on how these will change their shapes by the commitment of REDD+.

During the readiness process, the establishment of level of reference, preparation of bench mark maps, and monitoring system need to be synchronized under the Forest Resource Information Platform so that future measurement on performance reflect verifiable crediting levels.

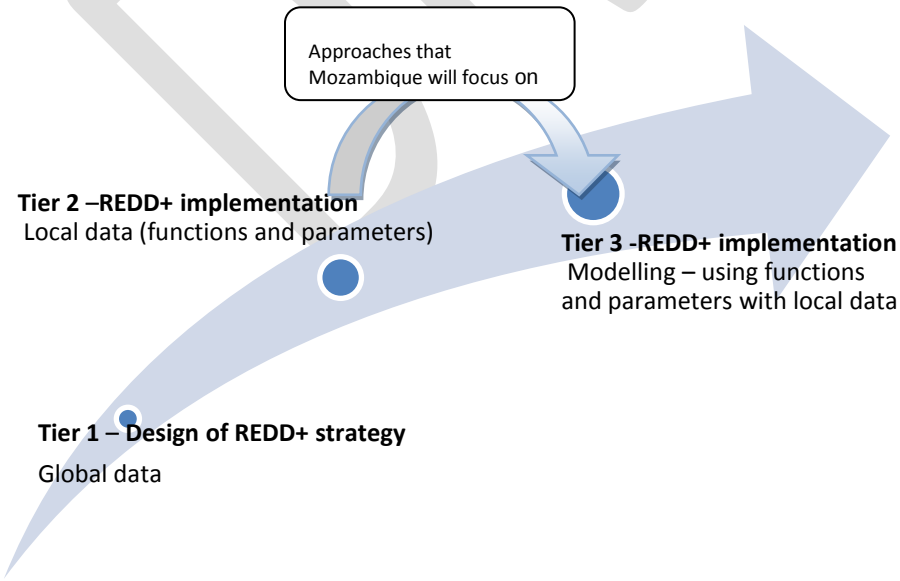
REDD+ monitoring approaches

a) Emissions and removals

As explained in Component 3, (Step2), *Tier*1, *Tier*2and *Tier*3 are the UNFCCC approaches for assessing carbon stocks and changes as result of change in land use. These approaches have different levels of complexity, data collection and analysis, robustness of results and costs.

The analysis of approaches indicated that there are discrepancies between IPCC parameters based on average characteristics of tropical forests and characteristics of miombo and mopane forest that dominate the vegetation in Mozambique. Therefore, Mozambique will endeavor to define national parameters (*Tier* 2) and eventually use modeling (*Tier* 3) to forecast impacts of REDD+ activities (Figure 30).

Figure 32 Measurement approaches that Mozambique will adopt



Assessment of carbon stocks can be done using direct methods in sample plots which requires felling trees and other types of vegetation to determine biomass above and below ground. Either individual trees or plots of different forest types can be used to assess the biomass. Measurement of biomass below ground will depend on species root system. For example, the typical miombo species of *Julbernardia globiflora, Brachystegialongifolia, B.spiciformis, Julbernardiapaniculata,* the root system can be as deep as 5 m and stretch for 15-27 m (Campbell, 1996). This method is only suitable for research and it can also be undertaken in areas were harvesting for other purposes is taking place.

Remote sensing, aerial photography and conventional forest inventory are indirect methods requiring conversion of observed variables into biomass using equations and factors of biomass expansion. A factor of 0.5 is then used to estimate carbon stocks.

In order to have a credible MRV systems Mozambique needs to address a few challenges dispersion of technical information in several ministries; frequency of measurements and establishment of additionality as well as ensuring that leakage is not generated elsewhere.

b) *Assessing effectiveness of social safeguards*

Important variables to consider are: the change in land use rights as result of REDD+, management structures and transparency of management systems; benefits of investments for reduction of emissions and of carbon payments; demographic information before the project and changes as a result of REDD+ (e.g. potential displacement of people by private companies involved in REDD+); land uses, income, employment with and without REDD+. In all cases it is the measurements 'with' and 'without' that will generate information on net gains or losses.

The evaluation of these and other pertinent information can be undertaken using qualitative methods such as rapid/participatory rural appraisal with focus groups representing all strata within the community. Quantitative methods including surveys are important to define the baseline and for monitoring change in indicators as result of REDD+. Again, the involvement of the community members can contribute to ownership and more frequent recording of information than the formal processes can allow.

c) Establishing a system for tracking additionality, permanence and leakage

Registration of REDD+ pilots and initiatives, mentioned in Component 2, needs to be combined with a robust system of monitoring leakages by the REDD+ activities from a project site to other parts of the country by a national MRV system. Also monitoring cross border interaction with neighboring countries shall be arranged as is a growing international issue. Timber harvesting, biomass energy and agriculture activities are likely to have 'mobility' that needs to be monitored.

d) Creating a transparent, accurate, participatory and verifiable system of data collection and reporting

This is a key component of REDD+ implementation. Transparency will be determinant to demonstrate performance regarding achievement of the goals of REDD+ including emissions, reduction and other co-benefits. Similarly to monitoring, this requires qualified personnel to analyze, interpret and document changes at sub-national and/or national. This should include coordination with relevant climate change adaptation authorities in order to produce national reports on net emissions of various GHG including CO_2. The potential performance based payments for communities and all other beneficiaries will be influenced by quality and objective reporting.

The data collected will be managed and published by the National Accounting System authority (Figure 24) described in Component 2c.

e) Verification and validation of performance

As indicated before, methodologies for estimating reference levels and for monitoring the different REDD+ variable are complex. Therefore, in the case of Mozambique, verification by independent and national institutions (this may include independent research institutions, consultancy companies among others) will certainly contribute to improve understanding on the dynamics of carbon of different ecosystems, the improvement of systems of data collection and analysis, and stimulate critical reflection on information management system. Besides, independent verification should analyze emissions and removals as well as the environmental and social impacts, investment to effect change in practices and payments for carbon and benefit sharing.

Ongoing monitoring activities

Recently, the department also started national agro-ecological zoning first at a scale of 1:1,000,000 in 2008-2009. Currently this activity is being undertaken at a scale of 1:250,000 with the following schedule:

2010 – Zambezia – zoning conducted and report to be released soon.

2011 - Sofala, Cabo Delgado and Nampula

2012 – Niassa, Tete and Manica

2013 – Inhambane, Gaza and Maputo

In Mozambique, not only at a national level MRV system (see Step 2 above), but also at a subnational level takes a ALOS PALSAR remote sensing analysis of forest cover change in combination with ground truth survey by a pilot project in Manica. There are also site-specific data gathering for example on biodiversity conducted by the Department of Biology at UEM and IIAM, various NGOs supporting community initiatives as well as conservation throughout the country conduct zoning, resources assessment that should be analyzed to establish the extent to which they can be used in the context of REDD+ readiness process. The REDD+ Project in Gile National Park by AFD also try to develop RL and MRV system by data collection and remote sensing. DNTF will facilitate a cooperation among all of these institutions to avail more data and produce a better result for mutual benefits for all projects and institutions.

4b. Multiple Benefits, Other Impacts, and Governance

Existing systems of collection of data on socio-economic indicators

Multiple benefits are critical to ensuring that the right people get the right incentives to implement REDD+ initiatives. Socio-economic benefits include diversification of livelihoods; increased productivity; employment, increased income, food security and reduction of poverty are important tangible incentives. However, REDD+ can also help secure benefits such as ownership of land resources and services, participation in decision making, improvement of governance in the forest sector, cross-sector coordination to address emissions resulting from land use change.

Mozambique has a system of national accounts for which information on performance of the economy (production, services, market, etc.) provides key indicators of how the economy is progressing. GDP total and per capita, population growth and distribution, poverty (%) levels are used for that purpose. The population census not only covers demographics but also provides information about major activities undertaken by households as well as dependence on natural resources, in particular for energy and informal employment. The National Bureau of Statistics (INE) produces these annual statistics based in data collection through surveys at household level and information provided by the private sector.

Since 2003 there has been discussion on the need to include the use of natural capital to generate this wealth, that is, the sustainability of the economy. Methodologies for constructing a parallel system of national accounts were experimentally applied in forests, lands, fisheries, agriculture, tourism, wildlife and water. This was a collaborative effort of academia, international NGOs and INE. In 2009, a more encompassing study was undertaken to assess the sustainability of the economy.

MINAG through DNEA conducts periodical agriculture sector censuses and policy analyses. This indicates trends in land allocation, cultivation, production of subsistence and export crops, assessment of prices of inputs and outputs, value of production, coverage of extension services, etc.

Various academic and research institutions along with NGOs undertake studies (often site-specific) in agriculture, forests, various economic aspects, socio-cultural and governance. There are institutions such as Centre for Public Integrity (CIP), Amigos da Floresta (Friends of Forests), CTV (an environmental advocacy NGO, Forum Terra, ORAM, CBNRM Forum, etc. dedicated to analyzing for example the environmental impact of different sectors and transparency of allocation of concessions and contribution of extractive industries to the country's economy, creation of platforms for discussion on rights and benefit sharing mechanisms and other aspects. The Institute for Economic and Environmental Studies (IESE) produces comprehensive reports of the state of the national economy and has engaged all stakeholders in discussions about the performance of the economy and the extent to which poverty is being addressed.

As regards governance, the Government also has a Technical Unit for Public Sector Reform (UTRESP) responsible for monitoring implementation of the anti-corruption legislation and reporting on progress in addressing malpractices.

At provincial level, governments produce provincial investment profiles while at local level District Development Plans are formulated based on defined profiles and priorities. These constitute sources of socio-economic information as well as indicating development ambitions and current investments that can impact on effective implementation of REDD+.

Assessment of REDD+ impacts on livelihoods and governance

The previous chapters highlighted that indicators of REDD+ performance will be defined and subject to consultation. The latter will also identify indicators that different stakeholders including community members can record.

While REDD+ presents opportunities for improving land use and management as well as people's wellbeing, there are also risks of negative environmental and social impacts. In the case of Mozambique, there are already companies requesting licenses 'to explore carbon and state that they do not need to have certificate of use rights'. This can disenfranchise communities from one of the potential benefits from their resources.

Therefore, *Environmental Assessment* (OP 4.01) sets the frame for evaluating 'environmental and social soundness and sustainability of investment projects and support integration of environmental and social aspects of projects into the decision making processes'.

In Mozambique living in rural or peri-urban areas there is a significant division between those who have access to services and the ones excluded. The excluded communities are vulnerable in many respects. This includes access to education which shapes ability to diversify livelihoods away from land and forests-dependence along the value chain.

The *Indigenous Peoples (forest dependent communities)* (OP 4.10) is aligned with community rights to be consulted prior to allocation of resources to third parties including to the state (e.g. conservation). In this context, the process of free, prior, and informed consultation goes a step further in highlighting that effective consultation can only happen if all parties understand the issues at stake.

Communities are often resettled to pave way to private or public investment (plantations or conservation) and can be simply pushed away to marginal lands in terms of productivity. There are conflicts in Niassa and Nampula between communities and commercial plantation companies. Mozambique's legislation is not clear regarding minimizing the need to resettle communities or compensation levels for the displaced people. Adoption of the policy on Involuntary Resettlement (OP 4.12) will contribute to address losses of livelihoods and standards of living. Combination of these instruments with the UN-REDD and Care International safeguards will facilitate discussions and identification of key principles and indicators relevant for the national and sub-national contexts.

SESA as well as principles of safeguards defined by UN-REDD and those of CARE International and Partners should also inform the variables that should be assessed.

UN-REDD Safeguards

Principle 1 – Democratic governance: the program complies with standards of democratic governance (participation, transparency, accountability, rule of law, etc.)

Principle 2 – Stakeholder livelihoods: the program carefully assesses potential adverse impacts on stakeholders' long-term livelihoods and mitigates effects where appropriate

Principle 3 – Policy coherence: the program contributes to a low-carbon, climate-resilient and environmentally sound development policy, consistent with commitments under international conventions and agreements.

Principle 4 – Protect and conserve natural forest: the program protects natural forests from degradation or conversion to other land uses, including plantation forest

Principle 5 – Maintain and enhance multiple functions of forest: the program increases benefits delivered through ecosystem services and biodiversity conservation

Principle 6 – Minimize indirect adverse impacts on ecosystem services and biodiversity

REDD+ SES

Principle 1 - Rights to lands, territories, and resources are recognized and respected by the REDD+ program.
Principle 2 - The benefits of the REDD+ program are shared equitably among all relevant rights holders and stakeholders.
Principle 3 - The REDD+ program improves long-term livelihood security and well-being of Indigenous Peoples and local communities with special attention to the most vulnerable people.
Principle 4 - The REDD+ program contributes to broader sustainable development, respect, and protection of human rights and good governance objectives.
Principle 5 - The REDD+ program maintains and enhances biodiversity and ecosystem services.
Principle 6 - All relevant rights holders and stakeholders participate fully and effectively in the REDD+ program.
Principle 7 - All rights holders and stakeholders have timely access to appropriate and accurate information to enable informed decision making and good governance of the REDD+ program.
Principle 8 - The REDD+ program complies with applicable local and national laws and international treaties, conventions and other instruments.

Table 30 illustrates some of the indicators that need measuring to evaluate the impact of REDD+.

Table 30 Preliminary indicators that can be measured to assess REDD+ multiple benefits

Areas that require monitoring	Type of indicators
Policy and governance	Development of relevant policies, laws and procedures for REDD+ Transparency, accountability and equity in their application Information in the public domain Rights holding trends linked Internal and cross-border migration of activities that can be attributed to REDD+ Number of conflicts over use of resources
Alignment of development plans	Area of forests under sustainable management and FSC certified Sustainable large scale agriculture practices Area and number of people engaged in agriculture conservation, agroforestry systems Area planted and species Taxes, royalties: levels and distribution of revenue Enforcement of EIA and management plans (fines, good practices) REDD+ in district development plans Impact on investment portfolio and GDP
Biodiversity	Endemic species – lost or gained Degraded areas rehabilitated including mangrove vegetation Identify key species (flora and fauna) that characterize the health of different ecosystems, particularly in miombo, mopane and assess change Protected areas established and encroachment of the existing
Poverty	Food security Employment: creation or loss due to REDD+ Income: gains or losses Enterprises: diversification and migration

	Technologies made available and accessibility Access to education and health
	Gender equity
Environmental	Number and incidence of fire Area burnt per year
Social	Impact of change in practices, customs and norms Conflict Gender and change of decision making as result of REDD+ Local level institutions and decision making
Private sector awareness	Certification CSR linked to promoting REDD+

Main interventions

- Preparation of national forest information platform
    - Assess biomass and carbon stocks to establish RL/REL. Detailed forest cover and land use maps as base map of the National Forest Resource Information Platform will be produced for all the areas identified for sub-national level (landscape-level corridor). Base maps for all provinces will be produced after the developing technical guidelines.
    - Analyze existing data collection and compilation platforms and establish a mechanism for complementarities of processes and information sharing.
    - Establish a platform for regular updates of information and responsibilities.
    - Establish a database system functioning as the National Forest Resource Information Platform which shall be used for the National Accounting System. This platform will be a home-base of MRV system.
- Development of methodologies for designing forest cover map at 1:50,000 based on remote sensing and for ground survey to detect DD (Component 2a)
    - Design survey methods and training
    - Establish the mechanisms at sub-national (landscape-level corridors including the 20 districts that will be subject of detailed data collection) and national level.
- Development of methodologies and setting up systems for assessing performance related to REDD+ co-benefits
    - Refine indicators and establish mechanisms of assessing REDD+ performance as regards.
    - Establish baselines
    - Participatory monitoring process in place and training of land users.

Table 31Schedule for monitoring system preparation for readiness REDD+

Activity	Responsibility	Location	2012				2013				2014			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Preparation of national REDD+information platform														
Collect and compile information on previous studies and assessments of biophysical characteristics relevant to assessing emissions and removals as well as effectiveness of policies.	UT-REDD+	All provinces Maputo, Sofala, Zambezia and Nam pula,												
Acquire data sets and analyse	UT-REDD+	Maputo												
Development of methodologies for designing forest cover map at 1:50,000 based on remote sensing and for ground survey to detect DD (Component 2a)														
Establish a national Forest Resource Information Platform (under national REDD+ Information Platform)	UT-REDD+ - DNTF													
Methodology for carbon stocks measurement, sampling, frequency	UT-REDD+ - DNTF	Maputo												
Establish a monitoring system for tracking additionality, permanence and leakage at a national and on the ground	UT-REDD+ - DNTF													
Design procedures of	UT-REDD+ - DNTF													

reporting and verification of emissions and removals					
Capacity building – remote sensing and other approaches to assessment of carbon stocks and credits	UT-REDD+- DNTF in coordination with UEM	Maputo			
Development of methodologies and setting up systems for assessing performance related to REDD+ co-benefits					
Socio-economic variables and measurement approaches defined	UT-REDD+ in coordination with INE/DNEA	Maputo, landscape-level corridors and the 20 selected districts for detailed assessment			
Establish a system for monitoring multiple benefits of REDD+ and governance	UT-REDD+	Maputo, landscape-level corridors			
Monitor implementation of safeguards	UT-REDD+	Landscape-level corridors (sub-national) and national-level			
Training local stakeholders for participatory monitoring of safeguards	UT-REDD+	Landscape-level corridors (sub-national)			

Table 32Summary of Monitoring Activities and Budget						
Table 4-1: Summary of Monitoring Activities and Budget Main Activity	Sub-Activity	Estimated Cost (in thousands)				
		Estimated Cost (in thousands)	2012	2013	2014…2017	Total
		2011	2012	2013	2014…2017	Total
Preparation of National Forest Information Platform	Equip satellite images and necessary goods for survey and analysis		7,000.0			7,000.0
	Development of methodologies and training		100.0	100	300	500.0
Development of MRV systems	Establish a forest inventory system in 2 provinces and 20 districts and develop Bench Mark Maps and REDD+ monitoring by RS		100.0	100.0	300.0	500.0
	Monitoring removals and emissions – remote sensing (forest cover) using PALSAR in pilot 2 provinces		100.0	100.0	300.0	500.0
Assessment of REDD+ co-benefits	Monitoring drivers of DD in 20 districts d on the ground survey		100.0	100.0	300.0	500.0
	Establish indicators and institutions for measuring socio-economic and biodiversity information at landscape-level corridor and develop baselines		200.0	150.0	50.0	400.0
Publication	Training of local land users		60.0	60.0	60.0	180.0
	Technical information		20.0	20.0	20.0	60.0
	Briefings for Policy makers, land users and other key target groups		20.0	20.0	20.0	60.0
Total			7,700.0	650.0	1,350.0	9,700.0
Government						
FCPF			300.0	250.0	150.0	700.0
Government of Japan			7,000.0			7,000
Japan International Cooperation Agency			400.0	400.0	1,200.0	2,000.0

Component 5: Schedule and Budget

Standard 5 the R-PP text needs to meet for this component:
Completeness of information and resource requirements

The R-PP proposes a full suite of activities to achieve REDD-plus readiness, and identifies capacity building and financial resources needed to accomplish these activities. A budget and schedule for funding and technical support requested from the FCPF and/or UN-REDD, as well as from other international sources (e.g., bilateral assistance), are summarized by year and by potential donor. The information presented reflects the priorities in the R-PP, and is sufficient to meet the costs associated with REDD-plus readiness activities identified in the R-PP. Any gaps in funding.

Table 31 Schedule and Budget

Schedule and Budget						
		Estimated Cost in thousand US				
		(~2011)	2012	2013	2014	Total
Component1 Organize & Consult	1a. National Readiness Management Arrangements	(297)	511.5	496.5	465.5	1,352 (297)
	1b. Information Sharing and Early Dialogue with Key Stakeholder Groups	(698)	85			85 (698)
	1c. Consultation and Participation Process		160	160	130	450
Component 2 Prepare the REDD+ Strategy	2a. Assessment of Land Use, Forest Law, Policy and Governance	(45)	195	130	10	335 (45)
	2b. REDD+ Strategy Options	(330)	553	908	620	2081 (330)
	2c. Social and Environmental Impacts during Readiness Preparation		170	200	200	570
	2d. Social and Environmental Impacts during Readiness Preparation and REDD+ Implementation		125	150	25	300
Component 3 Develop a Reference Level		(97.5)	280	640	680	1600 (97.5)
Component 4 Design a Monitoring System	4a. Emissions and Removals		7700	650	1350	9700
	4b. Multiple Benefits, Other Impacts and Governance					
Component 6			23	43	34	100
TOTAL		(1,467.5)	9,802.5	3,377.5	3,495.5	16,675.5 (1,467.5)
Government of Mozambique			18	18	18	54
FCPF			1,701.5	758.0	600.0	1,761.0
G of Japan			7,000			7,000
JICA			680	990	1,830	3,500
G of Norway		(1,467.5)				
TBI			403.0	758.0	600.0	1,761.0

Table 32 Schedule for implementation of the RPP

Activities	2012				2013				2014	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Component 1 Institutional arrangement and consultations										
C1a institutions										
National and sub-national institutions										
Cross-sector engagement										
Capacity building for personnel in REDD+ units										
C1b Information sharing										
Capacity needs assessment										
Design capacity building programme										
Training delivery to different actors including communities										
Documentation and dissemination of lessons										
C1c Consultations										
Institutional arrangements at sub-national level										
Carbon rights, benefit sharing and conflict management										
Role of private sector in REDD+										
Free, priori and informed consent										
Governance of forest and environmental sectors										
Delivery models, tradeoffs, transaction and implementation costs										
Performance indicators										
Strategic Environmental and Social Assessment										
C2 REDD+ Strategy										
C2a Drivers of deforestation and degradation										
Mapping land use and rights holding										
Land use trends and practices										
Viable technologies for improving productivity and management										
Implement the identified pilot initiatives										
C2b Strategy to address drivers										
Definition of delivery models and viability										
Definition of performance indicators										
Legal instruments on carbon credits and benefit sharing										
C2c Implementation framework										
Analysis of carbon rights in REDD+ and CDM										
Explore partnerships (FCCC, CCD, CBD) and building on existing interventions to deliver REDD+										
Beneficiaries of REDD+: who, why and how										
Define carbon accounting units and assessment of leakages										
C2d Environmental and Social assessment										
Conduct strategic environmental and social assessment of REDD+										
Design environmental management framework programme										

C3 Reference level										
Conduct sub-national studies on land use, carbon assessment and definition of national parameters TIER 2 and 3										
Definition of reference level scenarios										
C4 Measurement, Reporting and Verification										
Define sampling and periodicity of measurement of carbon stocks										
Definition of socio-economic variables to assess and approaches (qualitative and quantitative)										
Capacity building programme										
Define safeguards										
C5 Operations and management of R-PP										
Establish procedures andprocesses, accountability and reporting										
C6 Monitoring and evaluation										
Define indicators and periodicity of assessment of progress										

Table 33Detailed schedule, budget and allocation across donors

Mozambique Readiness proposal		**Source**			
Component	**Total (US$000)**	**Norway (~2011)**	**FCPF&TBI**	**MOZ**	**JICA+ Government of Japan**
Component 1. Organize and consult					
Component 1a. National Readiness Management Arrangements					
UT-REDD+ (to be established)	**831.5**		**831.5**		
Operations	**351.0**		**299.0**	**54.0**	
Working Group (that conducted process of design R-PP and draft REDD strategy)	**297**	**297**			
Component 1b Information sharing and early dialogue					
Background information and facilitation	**74.0**	**74.0**			
Information sharing and consultation	**401.0**	**316.0**	**85.0**		
South-South learning (Brazil-Moz)	**162.0**	**162.0**			
Component 1c. Consultation and Participation Process					
Consultations	**450.0**		**450.0**		
Component 2. Prepare the REDD+ Strategy					
Component 2a. Assessment of land use, forest law, policy and governance					
Mapping land use	**130.0**	**45.0**	**85.0**		
Policy analysis	**70.0**		**70.0**		

(gaps, conflicts)					
Baselines (studies)	180.0		180.0		
Component 2b. REDD+ strategy options (Viable REDD+ options and investment packages)					
Policy development and REDD+ models	320.0		320.0		
Cost of REDD+ delivery	60				
Studies to inform establishment of pilots	1856	330.0	300.0		
Studies to inform options	175.0		175.0		
Component 2c. REDD+ implementation Framework					
REDD+ delivery at sub-national level	350.0		350.0		
Studies on leakage (internal and cross-border)	60.0		60.0		
Land use management systems	1,160.0		160.0		(1,000.0)
Component 2d. Social and Environmental Impacts during readiness and implementation of REDD+					
Prepare SESA and ESMF	200.0		200.0		
Consultation	50.0		50.0		
Capacity Building	50.0		50.0		
Component 3. Reference Level					
Data sets	5,800.0				500
Develop RL/REL	197.5	97.5			500
Capacity Building	100.0				500
Component 4. Design Monitoring, Reporting and Verification					
National forest information platform	6,600.0				7500
MRV system	3,000.0				500
Monitoring co-benefits	680.0		400.0		500
Publications (technical and policy briefs)	120.0				500
Component 6. Monitoring and evaluation					
	60.0		60		
Total	16,675.5	(1,467.5)	6,121.5	54.0	10,500.0

Component 6: Design a Program Monitoring and Evaluation Framework

Standard 6 the R-PP text needs to meet for this component:
Design a Program Monitoring and Evaluation Framework

The R-PP adequately describes the indicators that will be used to monitor program performance of the Readiness process and R-PP activities, and to identify in a timely manner any shortfalls in performance timing or quality. The R-PP demonstrates that the framework will assist in transparent management of financial and other resources, to meet the activity schedule.

Objectives of designing a framework of the Programme Monitoring and Evaluation (M&E) are to clarify indicators and means of evaluation for each sub-Component in order to ensure efficient and transparent management of the programmes and use of the resources. With the framework, we can track our progress and identify any problems, shortages, delays and any activities which need more input or vise versa. In order to achieve the target toward readiness REDD+ within in accordance with the schedule, annual joint monitoring shall be implemented. The framework includes and means of check as well as risks and assumptions which will help us to analyze the cause of the issues. The planned schedule of readiness implementation of each Component is displayed in the Table 32 on Component 5.

Transparency is important factor for monitoring financial management. FUNAB and DNTF Finance and Administration Department shall be responsible for fund administration and review. The periodical reporting and audit designated under the contracts between donor agencies should be well responded, Also, clarification requests by any stakeholders including participants of pilot project in Provinces shall be responded seriously.

UT-REDD will develop a detailed M&E design plan firstly. In order to enhance understandings on the programmes and plans of the REDD+ readiness phase, UT-REDD shall produce information pamphlet for distribution. Monitoring and evaluation reports as well as plan, progress and final reports should be prepared accordingly and publish when necessary.

Table 34 Draft design of programme Monitoring Framework for readiness phase work progress evaluation

Overall Programme Goal: Enable Mozambique to be ready for REDD+ implementation including development of necessary institutions, policies and capacities

Expected results	Indicators	Means of evaluation	Risks and Assumptions
Component 1. Organize and consult			
National Readiness Management Arrangements established and functional	UT-REDD+ established during the beginning of the second quarter of 2012	TOR and staff recruited Contracts Letter of appointment of coordinators MOU MINAG_MICOA on responsibilities on MRV and RL Norms and procedures established	Resources will made available on time by FCPF MICOA/MINAG prepare the process for appointment of new staff
	Review Committee formally	Note Published in the	

	established	**government gazette**	
	CONDES Technical as REDD coordinator	**Minutes of CONDES meeting**	
Key stakeholder at national and sub-national level aware of REDD+	**Workshops held and location** **Type of audience and gender** **Participation in the meeting** **Ownership**	**Work plan** **Progress Report** **Workshop reports** **Change in practices**	
Necessary frameworks for REDD+ implementation is ready	**Implementation framework for implementation phase to be discussed and agreed.**	**To be stated in NFP, National REDD+ Strategy**	
	Details of National Accounting System to be agreedand established		
	National REDD+ Information Platform to be established (subunit: legal, finance & MRV/RL).		
	Policy and governance structures in place		
Component 2. Prepare the REDD+ Strategy			
National REDD+ Strategy shall be preparedand approved	**In compliance with RPP, NFP, UNFCCC negotiation results**		
Drivers of deforestation and degradation mapped	**Viable REDD+ interventions identified in at least one of the landscape-level corridorspilot project**	**Number of technical options available to**	
Clarification on what legal conditions should be checked to approve REDD+ project shall be completed.	Cost of delivery of REDD determined and investment sought	**Legal instruments approved**	
Necessary legal frameworks shall be decided and published: rights to carbon, benefit sharing; taxation and incentives for large scale investments	Clear rights to land, forests and carbon Approved procedure for engagement in REDD+ Benefit sharing mechanism adopted		
Land use information management system and other necessary data and information are collected and database is created under the National Forest Resource Information Platformto be established.	Reduced land conflicts Land allocation according to potential Improved decision making	**Operational equipment** **Time necessary for decision-making**	
Framework for prevention and mitigation of environmental impacts in place	**SESA undertaken** **Safeguards developed**	**TOR, issues and report** **Safeguards adopted**	
Understanding of 'mobility' of activities susceptible of leakage assessed and process for tracking such changes developed	**Leakage control activities identified and cost of implementation assessed**		
Component 3 and 4 Reference level and MRV			

Biomass and carbon stocks and relationship with land use in miombo and mopane forests established	Information on stocks of carbon of major forest types available	Maps Reports on assessment of biomass and carbon in 20 districts	Necessary equipment and satellite images are available on time
Reference level and/or reference emissions levels established at landscape-level corridor and national level	Commitment to reducing emissions made available to land users and consumers of products that drive DD		
National forest resource information platform and carbon accounting system established	**Easy access to information on land use**	**Publications**	
Land use/forest cover change detection Remote Sensing technique (SAR images) shall be established			
On the ground monitoring system will be developed.			
Trained staff to provide continuous assessment of resources use	**Number of staff trained**	**Quality of service**	
REDD+ co-benefits assessed	**Impact of REDD+ on biodiversity and people's livelihoods regularly assessed**		

Table 35Summary of Program M&E Activities and Budget

Main Activity	Sub-Activity	Estimated Cost (in thousands)				
		2011	2012	2013	2014	Total
Design detailed M&E	Develop indicators and complete assumptions		3.0	3.0	3.0	**9.0**
	Consult pilot areas		10.0	10.0	10.0	**30.0**
Implement M&E			10.0	30.0	21.0	**61.0**
Total			**23.0**	**43.0**	**34.0**	**100.0**
Government						
FCPF			**23.0**	**43.0**	**34.0**	**100.0**

[end]