

**Forest Carbon Partnership Facility
(FCPF)**

READINESS PREPARATION PROPOSAL (R-PP)

MADAGASCAR

Version of June 9, 2014

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This version of the R-PP will be finalized in June 2014 following inclusion of all final comments, in particular those from the FCFP assessment and financing process.

TABLE OF CONTENTS

TABLE OF CONTENTS	2
TABLES, FIGURES AND BOXES	4
ABBREVIATIONS AND ACRONYMS	7
GENERAL INFORMATION	10
EXECUTIVE SUMMARY	13
COMPONENT 1 : ORGANIZE AND CONSULT.....	17
1a. National Readiness Management Arrangements	17
1b. Information Sharing and Early Dialogue with Key Stakeholder Groups	23
1c. Consultation and participation process	30
COMPONENT 2: PREPARE THE REDD+ STRATEGY.....	37
2a. Assessment of Land Use, Land Use Change Drivers, Forest Law, Policy and Governance	37
1 A. RATIONALE AND CONTEXT.....	37
2. LAND USE AND DRIVERS OF DEFORESTATION AND FOREST DEGRADATION	38
2.1 Land use and tenure	38
2.2 Deforestation and forest degradation	40
2.3 Crosscutting causes of deforestation and forest degradation	48
2.4 Analysis of the drivers of deforestation and degradation by biome	48
2.5 Spatial analysis of the drivers of deforestation and degradation	48
3 SECTOR POLICIES AND MEASURES TO COMBAT DEFORESTATION AND FOREST DEGRADATION 51	
3.1 The Environmental Charter	51
3.2 The environment policy	51
3.3 The forest policy	51
3.4 Protected Areas Legislation	53
3.5 Rural Development Programs	53
3.6 Other REDD+ - related Policies	55
3.7 Coastal and Maritime Areas Sustainable Development Policy	57
3.8 Mining Legislation	57
4 GOVERNANCE	58
4.1 Introduction	58
4.2 Definition of Forest Governance	58
4.3 Status of Forest Governance	58
4.4 Outlook	60
4.5 Institutional Framework	61
4.6 Management Instruments	61
5 ANALYSIS OF EARLIER FOREST SECTOR EFFORTS.....	62
6 POTENTIAL OPPORTUNITIES AND BARRIERS FOR REDD+	67
7 ADDITIONAL STUDIES TO STRENGTHEN THE CRITICAL ANALYSIS	74

2b. Strategic Options for REDD+	76
1. FROM PROJECT APPROACH TO NATIONAL APPROACH	76
2. STRATEGIC OPTIONS FOR THE REDD+ NATIONAL STRATEGY	76
3. SUMMARY OF REDD+ STRATEGIC OPTIONS	77
4. REDD+ STRATEGY DEVELOPMENT PROCESS	89
4.1 Stage 1: Assessment and detailed analysis of each strategic sub-option	90
4.2 Stage 2: Selection of effective and sustainable strategies	90
4.3. Stage 3: Specific studies	91
4.4 Stage 4: Finalization of the REDD+ strategy	91
4.5 Stage 5: Establishment of favorable operational conditions for REDD+ strategy implementation	92
4. SCHEDULE AND SYNOPSIS FOR DEVELOPING THE REDD+ STRATEGY	92
2c. Framework for implementing REDD plus	95
2d. Social and environmental impacts	105
COMPONENT 3: DEVELOPING A NATIONAL REFERENCE EMISSION LEVEL (REL) FOR FORESTS AND/OR A NATIONAL REFERENCE FOR FORESTS (RL)	121
COMPONENT 4 : DESIGN SYSTEMS FOR NATIONAL FOREST MONITORING AND INFORMATION ON SAFEGUARDS	139
4a: National Forest Monitoring System	140
4b: Designing an information system for multiple benefits, other impacts, governance and safeguards	148
COMPONENT 5: SCHEDULE AND BUDGET	153
COMPONENT 6: DESIGN A MONITORING AND EVALUATION FRAMEWORK	171

TABLES, FIGURES AND BOXES

TABLES

- Table 0: Summary of budget by component of the R-PP
- Table 1a-1: Summary of existing entities in the environmental sector in Madagascar
- Table 1a-2: Summary of national readiness management arrangements activities and budget
- Table 1b-1: Spontaneous telephone calls in 2012(1734 of a total of 1973 calls)
- Table 1b-2: Representativity in regional consultations carried out in 2010
- Table 1c-1: Crosswalk of criteria for selecting regions for consultation
- Table 1c-2: Range of actors to be included in the consultations
- Table 1c-3: Summary of stakeholder consultation and participation activities and budget
- Table 2a-1: The drivers of deforestation and degradation by type of forest
- Table 2a-2: Analysis of the drivers of deforestation by region
- Table 2a-3: Lessons learned from different approaches to the management of forest resources
- Table 2a-4: Synoptic analysis of different approaches
- Table 2a-5: Summary of success and risk factors for REDD+
- Table 2a-6: Summary of activities and budget for assessing land use, forest policy, and governance
- Table 2b-1: Preliminary assessment of Strategic Option 1: Improve the overall forest sector policy framework
- Table 2b-2: Preliminary assessment of Strategic Option 2: Create incentives for sustainable management and efficient use of forest resources
- Table 2b-3: Preliminary assessment of Strategic Option 3: Reinforce forest control and law enforcement
- Table 2b-4: Preliminary assessment of Strategic Option 4: Develop alternatives to deforestation and the degradation of forest resources
- Table 2b: Summary of strategy activities and budget
- Table 2c-1: Stages until completion of the implementation framework
- Table 2c-2: Summary of framework implementation activities and budget
- Table 2d-1: Characteristics of the different types of assessment processes
- Table 2d-2: Mandate and roles of stakeholders in the SESA
- Table 2d-3: Summary of activities and budget on social and environmental impacts
- Table 3-1: Studies on historical national deforestation conducted by national institutions
- Table 3-2: Studies of historical deforestation by project

- Table 3-3: Carbon stocks of above-ground biomass by type of forest formation (Inventory analysis IEFN-0 by ONE and DGF, 2012)
- Table 3-4: Compartments taken into account by projects, and average corresponding carbon stocks (tC/ha)
- Table 3-5: Forest area over three periods according to definition adopted
- Table 3-6: Definitions of “forest” adopted by various REDD+ projects
- Table 3-7: Tools and factor selected by REDD+ projects to model future deforestation
- Table 3-8 : Summary of REL/RL activities and budget
- Table 4a-1: Available tools and relevant information
- Table 4a-2: Choice of precision level by category for the short and medium term
- Table 4b-1: Summary of MRV activities and budget
- Table 5-1: Total budget for R-PP implementation
- Table 5-2: Detailed schedule and budget for national readiness managements arrangements
- Table 5-3: Detailed schedule and budget for stakeholder consultation and participation
- Table 5-4: Detailed schedule and budget for land use evaluation, forest policy and governance
- Table 5-5: Detailed schedule and budget of activities related to strategy options
- Table 5-6 : Detailed schedule and budget for the implementation framework
- Table 5-7 : Detailed schedule and budget for the SESA
- Table 5-8: Detailed schedule and budget for development of the reference scenario
- Table 5-9: Detailed schedule and budget for the development of the monitoring system
- Table 5-10: Detailed schedule and budget for monitoring and evaluation
- Table 6-1: Monitoring and evaluation indicators
- Table 6-2: Summary of activities and budget for monitoring and evaluation

FIGURES

- Figure 1a-1 : REDD+ readiness management arrangements
- Figure 1b- : Percentage of participants in two national consultation workshops in 2010 and 2012
- Figure 1b-2: Percentage of participants in seven regional R-PP consultations in 2010
- Figure 1c-1: Interaction between stakeholder consultation and SESA development
- Figure 1c-2: Consultation areas for development of the REDD+ strategy on the basis of biomes and administrative regions
- Figure 2a-1: Main types of forest ecosystems in Madagascar
- Figure 2a-2: Land registry offices in 2011
- Figure 2a-3: Map of deforestation in Madagascar between 1990 and 2000, and 2005 and 2010
- Figure 2a-4 : Previous studies on historical deforestation
- Figure 2a-5. Summary of the drivers of deforestation and forest degradation in Madagascar
- Figure 2a-6: Prioritization of the location of Protected Areas and sustainable forest management areas

- Figure 2a-7: Map of REDD+ pilot projects and initiatives underway in Madagascar
- Figure 2b-1: Stages in formulating the strategic options
- Figure 2c-1: Plan for the implementation and governance framework of REDD+ in Madagascar
- Figure 2c-2: The levels of public consultation
- Figure 2c-3: Development of the SESA
- Figure 3-1: Projections of CO₂ emissions by compartment – Fort-Dauphin region
- Figures 3-2: Mapping and elevation variations of carbon stocks (tC/ha) of the COMATSA
- Figure 3-3: Possible approaches for establishing interconnected REL/RL (Pedroni 2011)
- Figure 3-4: Process for establishing and using the REL/RL
- Figure 4-1 : Overview of MRV system to be implemented in Madagascar
- Figure 4b-1: Environmental, social, and governance benefits
- Figure 5: Synopsis of REDD+ strategy preparation in Madagascar
- Figure 6 : Outline of monitoring framework

BOXES

- Box 1b-1: Principles of public consultation and participation
- Box 2a-1: The COGESFOR project in Didy
- Box 2a-2: The delegation of forest management in Madagascar
- Box 2a-3: Makira REDD pilot projects
- Box 2a-4: CAZ and PHCF REDD pilot projects
- Box 2a-5: FORECA and MRV AFD-ONE REDD pilot projects
- Box 2a-6 : Eco-regional REDD initiative with additional financing (FAPE3 REDD)
- Box 2b-1: Principal stages of REDD+ strategy development
- Box 2c-1: Carbon property

ABBREVIATIONS AND ACRONYMS

AFD	<i>Agence Française pour le Développement</i>
AFR	REDD+ Trust Agency
ANDEA	National Water and Sanitation Authority
AVG	Alliance Voahary Gasy
BDSN	National Statistics Database
BNC-REDD+	National REDD+ Coordination Office
C3EDM	Madagascar Center for Economics and Ethics for the Environment and Development [<i>Centre d'Etude Economique et d'Ethique pour le Développement Madagascar</i>]
CAZ	Ankeniheny – Zahamena Corridor
CBD	Convention on Biological Diversity
CI	Conservation International
CIME	Interministerial Committee on the Environment
CIMF	Interministerial Committee on Mines and Forests
COBA/VOI	Local Grassroots Communities/Vondron'Olona Ifotony
COS	Wood for construction and services
CPGU	Emergency Prevention and Management Unit
CSA	Center for Agricultural Services
CTE	Technical Committee on the Environment
DEAP	Entrance fee to protected areas
DGF	General Directorate of Forests
DNA	Designated National Authority
EIA	Environmental Impact Assessment
ESSA-Forests	College of Agricultural Sciences - Department of Forests [<i>Ecole Supérieure des Sciences Agronomiques - Département Forêts</i>]
FAO	Food and Agriculture Organization
FAPBM	Foundation for the Protected Areas and Biodiversity of Madagascar [<i>Fondation pour les Aires Protégées et la Biodiversité de Madagascar</i>]
FCPF	Forest Carbon Partnership Facility
FOFIFA	Agricultural Research Center
FORECA	Project to commit forests as carbon reservoirs [Projet Forêts Engagées comme Réservoirs de Carbone]
FTM	Mapping Institute of Madagascar
GCF	Contract Management of Forests
GELOSE	Secure Local Management
GHG	Greenhouse Gas
GIRE	Integrated Management of Water Resources
GIZC	Integrated Management of Coastal Areas
TWG-REL/MRV/SIS	Technical Working Group for the RELs/RLs, MRV, and SIS
IEFN	National Forest Ecological Inventory
INSTAT	National Statistics Institute

IOGA	Geophysical Institute and Observatory of Antananarivo [<i>Institut et Observatoire de Géophysique d'Antananarivo</i>]
IPCC	Intergovernmental Panel on Climate Change
KOLOALA	Sites for sustainable forest resource management
KOLOHARENA	Platform for community associations and organizations
LRI/IRD	Radioisotopes Laboratory/Development Research Institute
MAP	Madagascar Action Plan
MARP	Participatory Rural Approach
MECIE	Decree to make investments compatible with the environment
MEEF	Ministry of Environment, Ecology, and Forests
MEM	Ministry of Energy and Mines (now the Ministry of Mines, Oil, and Gas)
MNP	Madagascar National Parks
MRV	Measurement - Reporting - Verification
NGO	Non-governmental organization
ONE	National Office for the Environment
ONESF	National Observatory for the Environment and the Forest Sector
PADR	Rural Development Action Plan
PAE	Environmental Action Plan
PAG	Development and Management Plan
PASR	Populations Affected by the REDD+ Strategy
PGM-E	German-Malagasy Environment Program
PE3	Environmental Program - Phase 3
PERR-FH	Eco-regional REDD Initiative on Eastern Rainforests
PHCF	Holistic Program on Forest Conservation
PLOF	Local Land Tenure Plan
PNAT	National Land Planning Program
PNEBE	National Energy and Firewood Program
PRPSE	Regional Platform for Planning and Monitoring and Evaluation
RBG	Royal Botanical Garden, Kew
REDD	Reduction of Emissions from Deforestation and Forest Degradation
REDD+	REDD including conservation, the sustainable management of forests and the enhancement of forest carbon stocks
REL	Reference Emission Level
RL	Reference Level
ROR	Rural Observatories Network
R-PIN	Readiness Project Idea Note
R-PP	Readiness Preparation Proposal
SAPM	Madagascar Protected Area System
SAVA	Sambava, Andapa, Vohémar, and Ambilobe region
SEAS-OI	Satellite Surveillance of the Environment – Indian Ocean
SESA	Strategic Environmental and Social Assessment
SIF	Platform for Tenure Security
SIRSA	Rural Information System for Food Security
SIS	Safeguard Information System
SNGDB	National Biodiversity Management Strategy
SRAT	Regional Land-Use Plan
SSEMP	Strategic Social and Environmental Management Plan
SWAp	Sector Wide Approach

TBE	environmental dashboard
TBS	social dashboard
TOR	Terms of reference
USAID	United States Agency for International Development

GENERAL INFORMATION

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EXECUTIVE SUMMARY

The R-PP and the R-PP preparation process

The readiness preparation proposal (R-PP) is Madagascar's roadmap for REDD+ readiness. The R-PP is a national document in that it is fully endorsed by the Government of Madagascar, which is aware that it commits the country for a period of several years. The proposal will be submitted to the FCPF Participants Committee in July 2014 at its seventeenth meeting in Lima, Peru.

The R-PP presents readiness approaches, procedures, and stages for the next two years. It does not lay out the country's REDD+ strategy, but does outline the process for finalizing it. The strategy options and areas of intervention presented provide a basis for further analysis, broad consultation, and genuine negotiation with all stakeholders affected by, involved in, or concerned with REDD+.

The preparation of this document was entrusted to the REDD Technical Committee (CT-REDD) by the Ministry of Environment, Ecology, and Forests. The process was grounded in a participatory approach and benefited from contributions by various stakeholders at the national and regional levels and from all sectors concerned with land use (agriculture, livestock, energy, mining, transportation, land management, etc.). Regional consultations were carried out in eight regions exhibiting high rates of deforestation and representing all the ecosystem types in Madagascar. Grassroots communities, natural resource managers, and populations living near forests accounted for the majority of the 350 participants in the regional consultations. Representatives of civil society and the private sector, academics, researchers, and technical and financial partners were also consulted and invited to express their views and concerns about REDD+ and to propose solutions to deforestation and forest degradation.

The content of this document was thoroughly revised in response to comments and suggestions by the Technical Advisory Panel (TAP) and the FCPF Participants Committee at their meetings in March 2010, January 2013, and April 2014.

The proposals set out in the current version of the R-PP – i.e., the activities, approaches and methodologies; overarching principles; strategy options; and institutional arrangements for readiness management – were approved by stakeholders at two national consultation workshops, held in 2010 and 2012. These workshops were attended by more than a hundred participants from the capital city and the regions. They represented all stakeholders previously consulted: government authorities; civil society, including local communities; the private sector; and partners. The final version has been reviewed by the General Forestry Directorate of the Ministry of Environment, Ecology, and Forests, which is responsible for its submission to the FCPF.

The importance of forests to Madagascar

Madagascar is known as a “nature sanctuary.” With its biological diversity and high percentage (80 percent) of endemic species, the island is home to more than 9,700 plants and 770 vertebrates, the majority of which are found in its forests. Unfortunately, more than half of these forests were lost during the second part of the twentieth century as a result of population growth and land-clearing for agriculture, in addition to the fact that forests were and remain the main energy source for households.

Since the 1990s, following the United Nations Conference on Sustainable Development, Madagascar has demonstrated its political will by taking the initiative to place the environment and forests at the center of its development strategy. The island is considered one of the world's 25 biodiversity hotspots. Its environmental program, which seeks to conserve natural resources for sustainable economic growth, has been supported by technical and financial partners with contributions totaling upwards of US\$ 400 million over 20 years. One of the program's main achievements is the designation of 2.65 million hectares of protected areas. With the designation of an additional 3.25 million hectares soon to be finalized, a total of 10 percent of the country's surface area will be protected. The program has also helped to reduce deforestation from 2 percent to 0.5 percent per year.

The role of REDD+ in the conservation of natural resources

Madagascar is currently taking steps to ensure the sustainability and strengthen the conservation of its national resources

and exploring economic incentive approaches. The REDD+ mechanism is viewed as a foundation for future efforts, as is the creation of the Biodiversity Foundation, which will mobilize over US\$ 50 million. Since 2001 Madagascar has implemented five REDD+ pilot and methodology development projects covering its various ecosystems. Test sales of carbon on the voluntary market began in 2006, demonstrating the country's drive and willingness to prepare for this mechanism. Lessons learned from the pilot projects have been incorporated into the development of this R-PP.

Drivers of deforestation and forest degradation

Madagascar is striving to further reduce deforestation and also wishes to curb forest degradation, which heretofore had not been accorded the attention it deserves. Twenty years of experience with the Environmental Program have revealed that the loss of 50,000 hectares of forest per year is attributable mainly to: (i) forest conversion for agriculture, (ii) harvesting of firewood, and (iii) expansion of legal and illegal small-scale mining. Several factors have contributed to deforestation: unsustainable agricultural practices, the precarious livelihoods of households, unevenly distributed population growth and concentration, and lack of incentives for sustainable resource use. Madagascar aims to take radical action against the following potential drivers: unsustainable logging, harvesting of firewood coupled with inefficient carbonization techniques, and livestock grazing on forest land. Drawing on lessons learned from the current illegal logging of precious woods, special emphasis will be placed on addressing shortcomings in forest governance, which is a prerequisite for the implementation of REDD+ strategies.

Strategy options for REDD+

Four strategy options will be explored with a view to implementing REDD+, three of which have to do with governance, as a detailed analysis of the causes of deforestation has shown that it is closely linked to governance. That analysis has been complemented by capitalization of experience acquired from REDD+ initiatives and public consultations conducted in the course of preparing this document. The four strategy options are:

- Improving forest sector governance;
- Creating incentives for sustainable management and efficient use of forest resources;
- Strengthening forest monitoring, control, and law enforcement;
- Developing alternatives to prevent deforestation and forest degradation.

The proposed areas of intervention for each option set out courses of action that will be explored and tested as part of the readiness process. In order to address the direct and underlying causes of deforestation and degradation, sub-options are proposed, incorporating a multisectoral approach. The REDD+ strategy will prioritize actions to be financed directly by REDD+ funds from FCPF and actions to be carried out in partnership with other sectors and sources of financing. The options will be validated and refined, or new ones formulated and specific short- and long-term courses of action designed, on the basis of the results of the analyses.

Ongoing improvement in reference emission levels (REL) and monitoring, reporting, and verification (MRV)

Components 3 and 4 have been extensively revised in this version of the R-PP to reflect (i) the many advances made under various REDD+ initiatives in the country, (ii) the experience and skills gained in that respect by national institutions, and (iii) significant methodological developments at the international level.

The country has opted for the jurisdictional and nested (JNR) REDD+ approach supported by Verified Carbon Standard (VCS) and has elected to begin the process by establishing eco-regional RELs, which initially will be related solely to deforestation and the forest types with the greatest REDD+ potential. These RELs will then evolve towards reference levels (RLs) covering all major forest types in the country. The MRV system will follow the same pattern, building on existing capacities and benefiting from financial support from the French Agency for Development (*Agence Française de Développement* AFD), with additional funding from the Third Environmental Program Support Project (World Bank).

The RELs/RLs and the MRV system will be implemented in stages through “no regrets” activities that will pave the way towards high-precision systems that are sufficiently flexible to accommodate national and regional circumstances as well as REDD+ developments at the international level.

A safeguards information system will also be set up to organize the collection and dissemination of information, with

the full involvement of local grassroots communities.

Stages of REDD+ readiness

National planning calls for Madagascar to be ready for the REDD+ mechanism by the end of 2015, by which time strategies will have been formulated and the necessary technical tools will be in place

Strategies will be formulated over a period of three years through a process comprising five major stages:

- Following an extensive information dissemination process, an in-depth spatial analysis of the root causes of deforestation will be undertaken in a representative sample of 15 regions within the seven ecosystems. This stage will take place over the first six months.
- The initial strategy options will then be refined through six broad assessments. In coordination with all stakeholders and, especially, all relevant sectors that will be involved in decision-making, the best combination of areas of intervention will be examined in order to formulate several scenarios. These scenarios will be the subject of negotiations and consultations at all levels. Selection criteria will be defined with emphasis on effectiveness, efficiency, and equity and on maximizing impacts on deforestation and the preservation of biodiversity.

In this R-PP, the country has chosen a national REDD+ approach that is firmly anchored at the local level through a spatialized approach. It will be implemented gradually so that the various structures and reforms planned can be put in place without detriment to the commitments and outcomes of the pilot projects. At the end of the second year, a national policy and regulation strategy, broken down into interregional spatialized strategies, will be developed with the aim of implementation in the short to medium term.

- Strategic environmental and social assessments will be designed and conducted in a participatory manner. The approach followed will be consistent with national commitments in respect of international agreements and resolutions of the Conference of the Parties on social and environmental principles and criteria in relation to safeguards.
- While these strategies are being developed, the overall implementation framework will be assessed through five studies. This framework, to be negotiated with all stakeholders, will enhance policy alignment of policies and ensure strategy implementation. It will address the following main areas: (i) intersectoral coordination, (ii) the spatialized approach and monitoring thereof, (iii) forest carbon ownership, (iv) allocation of funding to implement REDD+, and (v) management and sharing of carbon revenues.

Technical tools to support the REDD+ mechanism will be developed over a period of two years, plus an additional year to enhance their precision:

- For the development of the national reference scenario, it appears that analysis of current historical trends will not be sufficient. Madagascar will therefore work towards a projected reference scenario that takes all future threats into account.
- For the establishment of the MRV system, Madagascar will improve its standards for forest cover monitoring and its knowledge of the carbon storage capacities of various types of carbon pools. Studies will be carried out during the first year, and national capacities and expertise will be strengthened. The system will be developed during the second year.

Alongside this process, the country will carry out pilot experiences in order to extract lessons learned and provide input for discussions at the national level.

Management and cost of the readiness process

The REDD+ readiness process has multiple dimensions and involves various sectors and levels. The program management structure will therefore comprise three levels:

- A decision-making level, led by the Office of the Prime Minister through the Interministerial Committee on the Environment, which has intersectoral mediation powers.
- A strategic steering level in the form of a platform composed of representatives of the Administration, civil society, grassroots communities, the private sector, regions, and NGOs. Its role will be to discuss and then carry out technical validation of recommendations and proposals arising from activities associated with the process. This structure will be represented at the regional and local levels by the forestry commission, whose members will be called upon to facilitate stakeholder consultations.

- A technical coordination and operational implementation level consisting of a National Coordination Office and an organization engaged to serve as a trust agency.

Implementation of the R-PP in Madagascar will require US\$ 7,047,331.

Table 0: Summary of budget by component of the R-PP

Component	Estimated cost (US \$)				Sources of financing		
	Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
1a National Readiness Management Arrangements	815 196	475 906	407 732	1 698 834	377 150	918 307	403 377
1b Stakeholder Consultation and Participation	449 389	376 865	137 127	963 381		633 281	330 100
2a Assessment of Land Use, Forest Policy, and Governance	188 129			188 129		188 129	
2b REDD+ Strategy Options	58 826	141 787	6 000	206 613		172 232	34 381
2c Implementation Framework	101 467	60 694	19 199	181 360		181 360	
2d Social and Environmental Impacts	120 644	67 749		188 392		188 392	
3 Reference Scenario	970 300	940 175	160 000	2 070 475	952 300	610 400	507 775
4 MRV: Monitoring, Reporting, and Verification	862 914	385 016	24 000	1 271 930	349 867	629 682	292 281
6 Monitoring and Evaluation of Readiness Implementation	71 308	101 172	99 072	271 552		271 552	
R-PP TOTAL COST	2 781 924	2 549 364	853 130	7 047 331	1 679 317	3 800 000	1 568 014

Madagascar will not be able to develop its strategy with only the funds provided by FCPF. Accordingly, other sources of funding will be explored. Identification of these sources will depend on the activities to be carried out and the objectives pursued by the potential sources.

Madagascar intends to mobilize available funding from sources such as the Third Environmental Program Support Project, under which the Government of Madagascar received a loan from the World Bank, as well as UN-REDD, Government of Madagascar funds, bilateral funds, and others.

COMPONENT 1 : ORGANIZE AND CONSULT

1a. National Readiness Management Arrangements

A. Context and Requirements for Readiness Management

The overall objective of REDD+ readiness management arrangements is to manage and coordinate REDD+ activities in the short term and to ensure their integration into various national strategies for reducing carbon emissions and national development plans.

To achieve this objective, the REDD+ readiness process must be overseen by an efficient and consistent management arrangement. The elements of this arrangement should (i) have the capacity for multidimensional action, (ii) have proven experience with REDD+, (iii) demonstrate responsiveness, (iv) have direct ties to decision-makers concerned with policies and strategies, and (v) be able to play a pivotal role in ensuring the continuity of activities throughout the process, from the preparation phase to implementation and monitoring.

The REDD+ readiness management arrangement is divided into several levels to meet these capacity needs. In order to maintain a dynamic and effective system, it is necessary to draw on current experience and make the best use of available institutional capacity and of the skills of resource people and those who have contributed to the REDD+ process in Madagascar. Therefore, it has been decided:

- (i) to take maximum advantage of the resource people who initiated the process, i.e., the members of CT-REDD;¹
- (ii) to utilize existing structures to the extent possible in order to accelerate implementation.

B. National REDD+ Readiness Management Arrangements

To meet its objectives, the national REDD+ readiness management arrangement, which will to be officially established through an interministerial decree, will have three main responsibilities: (i) to ensure the integration of REDD+ strategies into sectoral policies and strategies, (ii) to implement REDD+ strategies in general, and (iii) to manage the process and coordinate REDD+—related activities in Madagascar.

To accomplish its multidimensional objectives, the readiness management arrangement will be divided into three distinct levels: (i) a decision-making level, headed by the Office of the Prime Minister through the Interministerial Committee on the Environment (*Comité Interministériel de l'Environnement CIME*); (ii) a steering level, overseen by the REDD+ Readiness Steering Platform (REDD+ Platform); and (iii) an operational level, with a REDD+ National Coordination Office (*Bureau de Coordination National REDD+ BNC-REDD+*) managed by a National Coordinator who will ensure that activities are implemented according to the agreed work plan and prepare technical reports on REDD+ readiness.

To implement the REDD+ process, the Ministry of Environment, Ecology, and Forests, through its General Directorate of Forests, has taken the action necessary to demonstrate its commitment and leadership by establishing BNC-REDD+. In addition to its role of operational coordination in REDD+ readiness, BNC-REDD+ will ensure sound management of activities and serve as a liaison with REDD+ technical and financial partners. The Office, which will be attached to the General Directorate of Forests, will play an important role in steering and ensuring the success of the REDD+ readiness process, monitoring the implementation of activities under the various components of the R-PP so as to ensure effective action

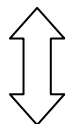
¹ CT-REDD: REDD Technical Committee, composed of technical experts with multidimensional capacities and a thorough understanding of the REDD+ process. Several members represent partners and stakeholders involved in REDD+.

against deforestation and forest degradation and promote sustainable management of forest resources as a tool in the battle against climate change.

Decision-making Level

- . Makes policy and strategy decisions
- . Manages intersectoral conflicts

**OFFICE OF THE
PRIME MINISTER
(CIME)**



Steering Level

- . Formulates the REDD+ strategy and policy
- . Oversees the participation of all sectors and stakeholders

**REDD+ Readiness Steering
Platform**



Operational Level

- . Ensures operational coordination and management of the REDD+ readiness process

**BNC-REDD+
National REDD+
Coordination Office**



**AFR
REDD+ Readiness
Trust Agency**

Figure 1a-1. REDD+ Readiness Management Arrangements

C. Roles and Responsibilities of Existing Entities in REDD+ Readiness

Since 1990, the year the Environmental Charter was adopted, several entities at the national and decentralized levels have been involved in steering strategic processes. Several of the following entities may potentially play a role in the development of REDD+:

Table 1a-1: Summary of existing entities in the environmental sector in Madagascar²

Entity	Current functions	Future REDD+-related functions
Interministerial Committee on the Environment (CIME)	Ensures the incorporation of environmental requirements in sectoral development plans.	<p>(i) Will make decisions concerning strategic elements to be incorporated into sectoral policies in order to achieve the REDD+ objectives in Madagascar.</p> <p>(ii) Will mediate any conflicts that may arise between development objectives and forest conservation strategies. Such conflicts will be mediated on the basis of a detailed report prepared by the REDD+ Platform analyzing the various potential scenarios.</p> <p>(iii) Will provide policy advice on key aspects of REDD+, including regulations, financial sustainability,</p>

² Details on the existing entities are presented in Annex 1a-1.

		<p>State commitment and funding, institutional arrangements, and the implementation framework.</p> <p>Operational and capacity-building schemes are planned. An operating budget for the Committee will be drawn up BNC-REDD+ and approved by the PCP-REDD+.</p>
Ministry of Ecology, Environment and Forests	Ensures protection of the Madagascar's unique environment and natural resources for the benefit of the Malagasy people and the country's sustainable development.	Lead and ensure implementation of the REDD+ process in Madagascar.
Forestry Commission at the regional level	Determines actions to be taken with regard to forest resource management in each region. Other sectors and persons whose participation is deemed useful may be invited to take part in the Forestry Commission's deliberations. It serves as either an advisory or a decision-making body on forest resource management, depending on the issue to be addressed.	Will ensure liaison with the REDD+ Readiness Steering Platform at the regional level.
REDD Technical Committee (CT-REDD)	Oversees the process of developing the R-PIN and the R-PP. Coordinates all REDD+–related activities. Architect of the REDD+ process in the country.	Will become the REDD+ Readiness Steering Platform at the national level.
REDD+ Readiness Steering Platform (REDD+ Platform)		<p>The REDD+ Platform will ensure that the REDD+ readiness process informs all discussions occurring under key initiatives in the environmental and forestry sector (policy-making, strategy document, sectoral programs, etc.).</p> <p>The REDD+ Platform will be the technical steering body for the formulation of the REDD+ strategy and the development of technical components. It will ensure the resolution of intersectoral conflicts and, if needed, refer them to the CIME. Its functions will be to (a) approve work plans and activity reports of BNC-REDD+; (b) ensure the participation of all relevant sectors; (c) prepare for the implementation of REDD+ areas of intervention; (d) oversee the formulation of reforms needed to implement REDD+.</p>

D. Roles and Responsibilities of New Readiness Bodies

At the outset of the R-PP implementation process, a manual of procedures detailing the roles and responsibilities of all REDD+ management bodies will be drawn up by BNC-REDD+, validated by the PCP-REDD+, and distributed to all stakeholders.

D.1. REDD+ Readiness Steering Platform (REDD+ Platform)

The REDD+ Platform is the steering body for formulation of the REDD+ strategy and development of the technical components during the REDD+ readiness process. It ensures that the readiness process informs

all discussions occurring in the framework of key initiatives in the environmental and forestry sectors (policy-making, strategy documents, sectoral programs, etc.).

Its role includes receiving complaints related to sectoral conflicts that may arise and, if necessary, referring them to the CIME for resolution. Its functions will be to (a) approve work plans and activity reports of BNC-REDD+; (b) ensure the participation of all relevant sectors; (c) prepare for the implementation of REDD+ areas of intervention; (d) oversee the formulation of reforms needed to implement REDD+.

In order for the REDD+ Readiness Platform (REDD+ Platform) to fully perform its functions, the sectoral representatives on the Platform must have proven knowledge and be authorized to make technical decisions relating to their respective sectors/areas. The technical experts on the current REDD Technical Committee can continue to play their technical and institutional roles, assisting their supervisors who are ex officio members of the Platform. In the nomination of REDD+ Platform members due regard must be given to the purely technical skills of the resource people who will be participating and it should also be ensured that their involvement and respective contributions will not be jeopardized by institutional changes.

The participation of other sectors and stakeholders in the REDD+ Platform should also be ensured so that it can fulfill its essential roles and functions. Representation of civil society and the private sector will be improved through the involvement of other environmental associations and/or organizations, especially those in direct contact with grassroots communities living near forest resources.

Similarly, for better involvement of regional actors, regional forestry commissions chaired by regional authorities with the participation of the devolved technical services concerned with deforestation and forest degradation will ensure liaison with the Platform at the regional level. To that end, the forestry commissions will become not only a forum for dialogue among the various technical sectors concerned, but will also become a platform where all stakeholders can take part in the process of decision-making and development of REDD+ at the regional level. The functions of the forestry commissions will be adjusted to incorporate their mandate in relation to the implementation of REDD+ activities. The representative of the agricultural sector, a key sector with regard to deforestation in Madagascar, will chair one of the subcommittees.

The REDD+ Platform will be created by interministerial decree and will ensure implementation of the REDD+ strategy in Madagascar; however, its mandate will evolve over time.

The REDD+ Platform will have 32 members, distributed as follows:

- 12 representatives of the government (forests, environment, water, agriculture, livestock, fisheries, energy, mining, oil, land management, finance, planning)
- 3 representatives of Malagasy civil society
- 2 representatives of community-based federations
- 3 representatives of the private sector
- 5 representatives of technical and financial partners
- 5 representatives of national environmental associations
- 2 representatives of regions
- 2 representatives of universities and research institutions

Madagascar National Parks (MNP), as the entity with primary responsibility for managing protected areas in Madagascar, has long worked in the field of conservation and is involved in the REDD+ process through its active participation on the CT-REDD. Madagascar National Parks is also prepared to work actively within the Platform as a national environmental organization.

D.2. National REDD+ Readiness Coordination Office (BNC-REDD+)

BNC-REDD+, an official entity already established by decree of the Ministry responsible for forests, is the body that ensures technical and operational coordination of the REDD+ process in Madagascar. The establishment of this Office is further evidence of the commitment and strong involvement of the State,

through the Forestry Administration, in the REDD+ process. Maintaining the stability of this entity is vital in order to ensure the progress and continuity of strategy-related actions at all levels of REDD+.

BNC-REDD+, which is attached to the General Directorate of Forests, is the official liaison between the Ministry responsible for forests and the national and international entities involved in REDD+, both generally and in relation to technical and financial matters. Its mission is to ensure that activities and studies comply with applicable standards. It is also responsible for committing funds. Its main tasks are to: (i) manage the process and plan and implement all operational activities, (ii) contribute to the development of REDD+ strategies and ensure their subsequent implementation, (iii) ensure good communication with stakeholders, and (iv) ensure effective collaboration with the REDD+ Platform, which can provide the Office with the necessary technical support in relation to REDD+, together with national and international experts on whom the Office may call. In addition, the Platform has the support of a network of REDD+ contacts which include all the organizations and institutions working on REDD+.

The Office is under the technical supervision of a National REDD+ Coordinator, who is a senior official from the Forestry Administration with proven knowledge of and experience with the FCPF process. He is appointed by the Director General of Forests, subject to the non-objection of the FCPF representative for Madagascar.

The Office comprises four units, which are responsible for the methodological components (MRV, reference scenario, SIS); strategic components (strategy, SESA); legal matters; and planning, monitoring, evaluation, and communication.

Each unit is headed by a unit manager and each will be supported by an expert in the unit's area of responsibility. The mission of the units is to provide technical coordination and liaise with institutions and organizations supporting the implementation of technical activities, which together will form a thematic group for the component concerned. An annual activity report (technical and financial), with an outlook analysis, will be prepared by BNC-REDD+ and submitted to the REDD+ Platform and the Office of the Prime Minister/CIME.

To ensure the transfer of authority to the Forestry Administration and the sustainability of the REDD+ process in Madagascar, the General Directorate of Forests should be represented in each unit of BNC-REDD+.

In addition, BNC-REDD+ will have support staff who will carry out day-to-day administrative, accounting, and organizational tasks.

Members of the National REDD+ Readiness Coordination Office will fulfill their functions on a full-time basis. Those functions are set out in Ministerial Decree 8090/2014 of February 3, 2014, which established BNC-REDD+ (see Annex 1a-3). Staff of the Office will receive the compensation package (salary/salary supplement/benefits) provided for this category of staff under the applicable legal provisions.

The terms of reference for staff of BNC-REDD+ and annual report content guidelines are included in Annex 1a-1 and the relationship between BNC-REDD+ and the REDD+ Platform is outlined in Annex 1a-2.

D.3. REDD+ Readiness Trust Agency

The role of the REDD+ Readiness Trust Agency can be played by an existing independent financial institution working in the environmental sector. The Trust Agency will make available to BNC-REDD+, which authorizes expenditures, the funds required to implement the activities planned and approved by the PCP-REDD+ Platform. It manages the funding allocated to activities within budget limits and in accordance with donor rules and procedures. It also ensures the production of financial reports and compliance with standard financial procedures.

In light of the functions of the Trust Agency and the relevant experience of the Tany Meva Foundation (see Appendix 1a-4), pursuant to a proposal by the REDD Technical Committee the Foundation has been designated as the REDD+ Trust Agency in Madagascar. It will be responsible only for the management of readiness-related funds.

Table 1a-2: Summary of national readiness management arrangements activities and budget

Main activities	Sub-activities	Estimated costs (thousands of US\$)			
		Year 1	Year 2	Year 3	TOTAL
Launch the program	Launching of the program with donor support	0			0
	Installation of office equipment and furnishings	45 000			45 000
	Acquisition of vehicles and computer, copying, and communication equipment	271 815	7 100	7 100	286 815
Develop management tools and hire staff	Recruitment of staff	29 900	19 600		49 500
	Development of management tools for BNC-REDD+	42 859			42 859
	Program start-up trainings	19 459			19 459
Operationalize BNC-REDD+	Office operations: salaries and benefits	89 400	89 400	89 400	268 200
	Office operations: utilities and services	46 800	46 800	49 200	142 800
	Operation of vehicles (excluding missions outside of Tana)	37 000	54 000	54 000	145 000
Support BNC-REDD+ in its activities	Management of BNC-REDD+ operations	85 000	85 000	85 000	255 000
	Finalize management tools	23 800	41 377		65 177
	Communication and strengthening of ties with stakeholders and sectors	95 632	95 632	95 632	286 896
	PCPR and CIME costs	11 197	12 997	3 400	27 594
Program management costs	Financial management and accounting costs	24 000	24 000	24 000	72 000
	Other costs				
	Total 1A	821 861	475 906	407 732	1 705 499
	Government	125 350	125 900	125 900	377 150
	FCPF	696 511	145 629	82 832	924 972
	Other sources		204 377	199 000	403 377

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

A. Rationale and context

The readiness process should be inclusive and transparent. The fact that an organization or platform takes the lead and steers the process should facilitate and support consultation participation of other stakeholders. This applies from the initial phase of developing the R-PP through to the final analytical phase.

Public participation in environmental management is provided for both under the Malagasy Constitution and the Environmental Charter of Madagascar³. The REDD+ process also espouses the principle of participation, consistent with the practice of the forestry and environment sector.

Policies, programs,⁴ and management tools⁵ in the forestry and environment sector are developed through a process of consultation and participation. The consultation process includes (i) presentation of an overview of the subject; (ii) discussions in a question-and-answer format; (iii) gathering of views, observations, and concerns; (iv) consensus-building on points of contention; (v) resolution of any disagreements; (vi) synthesis of the work undertaken; and (vii) dissemination of the consultation outcomes to the relevant entity for validation and decision-making. The consultation and participation processes are carried out through meetings, seminars and workshops at the local, regional, and national levels; direct discussions with communities on the ground; and debates broadcast on radio and/or television. The process is supported by various tools and methods, including maps, field visits, and the MARP/PRA/PLA approach.

The Administration has formalized this process through:

- The development of guidelines and regulations relating to consultations with stakeholders in certain areas (public consultation under the MECIE decree⁶; awareness-raising when management changes hands; public and community consultation on the establishment of new protected areas⁷, public consultation on the development of safeguards for protected areas, etc.)
- The implementation of mechanisms to facilitate consultations, such as forestry commissions; planning, monitoring, and evaluation platforms; multi-local planning committees, etc. These formal mechanisms function as platforms for participation, dialogue, joint decision making, and joint management. In some cases, they also serve as mechanisms for the resolution of disputes among stakeholders – for example, the Interministerial Committee on Mines and Forests (*Comité Interministériel Mines – Forêts CIMF*) and the “dina”⁸ at the local community level, a body created to ensure sound management of forest resources and resolution of potential conflicts.

The various consultation and participation processes in Madagascar have contributed to greater harmonization of sectoral policies and strategies, resolution of conflicts (e.g. between mining and forestry), the production of tools and strategies for sound resource management (e.g. forest zoning, local land tenure plans, land tenure offices, regional and national land use plans [*schéma régional d'aménagement du territoire/schéma national d'aménagement du territoire* SRAT/SNAT], Madagascar Protected Area System [*Système des Aires Protégées de Madagascar* SAPM], KoloAla), and the participation and empowerment of local communities in forest resources management (management transfer, community protected area, park co-management, etc.).

³ *Environmental Charter, Act 90 033 of December 21, 1990 and amendments.*

⁴ *National and Regional Forest Master Plan.*

⁵ *Zoning, land management plans.*

⁶ *Act 99-954 of December 15, 1999 amended by Decree 2004-167 of February 2004 concerning the compatibility of investments with the environment (Mise en Compatibilité des Investissements avec l'Environnement MECIE).*

⁷ *SAPM manual of procedures for the establishment of protected land areas*

⁸ A “dina” is a type of social contract or pact established by a general assembly within a community. It dictates rules and behaviors towards something (forest resources in this case) and defines sanctions in case of violation or infringement of the agreement. Dina is a unanimously recognized regulatory instrument in the Malagasy rural milieu.

The development of Madagascar's PP took five years owing to political constraints. This period saw a significant change in the caliber and number of the members of the REDD Technical Committee that oversaw the stakeholder consultation process for the development of the R-PP. Co-chaired by the Ministry of Environment and Forests and the National Office for the Environment, the Committee was originally set up by all stakeholders involved in the implementation of REDD in Madagascar, including pilot project operators in the country, technical partners, research and university institutions, and was composed of ten members who were mobilized to produce Madagascar's R-PIN in 2008. Thereafter, the Committee was enriched through the addition of other members for the drafting of the R-PP submitted informally in 2009. These new members included representatives of the ministries responsible for agriculture, livestock, fisheries, land management, transportation, health, and education; the National Land Program; the organization responsible for managing protected areas;⁹ the Foundation for Protected Areas and Biodiversity in Madagascar; the National Observatory of the Environment and Forestry Sector; and the United Nations Development Programme (UNDP). Several institutions were mobilized in 2012 to support the initiation of technical assistance to strengthen the powers of the National Office for the Environment [*Office National pour l'Environnement* ONE] and the work of updating the deforestation map in Madagascar for the period 2005–2010, including the General Directorate of Forestry; the National Cartography Institute (*Foibe Taosarintanin'i Madagasikara*); the National Platform for Remote Sensing; the Radioisotope Laboratory, which specializes in soil carbon; and the civil society environmental platform (*Alliance Voahary Gasy*).

During the R-PP implementation phase, CT-REDD will become the REDD+ Platform and will oversee the consultation plan. This multisectoral platform has a field presence through the Forestry Commission, which will make it easier to reach people at the local level and will transform the consultation process into a true negotiation among stakeholders.

B. Consultations held during development of the R-PP

Consultation and participation for the development of the R-PP was a two-stage process: at the central level (national, political) and at the decentralized level (local, commune, and region). The objective was to ensure, through a representative sample, that stakeholders affected by deforestation and forest degradation:

- Were informed about the R-PP development process;
- Had the opportunity to voice their opinions on matters being considered and analyzed with regard to a future REDD+ strategy, including drivers of deforestation and forest degradation and forest governance, a particularly sensitive issue in the current context of illegal logging of rosewood;

Box 1: Principles of public consultation and participation

It is strongly recommended that a consultation process be undertaken with stakeholders so that their interests, values, and concerns can be taken into account and their opinions can have a real impact on the development of a national strategy. A communicative approach should be adopted from the outset of the process in order to maximize social acceptance. The criteria applied should follow best practices for participation:

- Stakeholders should be able to express their opinions on decisions that might affect them
- Their contributions should have real impact on decisions
- Their interests should be clearly understood
- Potentially affected parties should be clearly identified and involved in the process
- Stakeholders should have a say in establishing how they will participate in the process
- Information required to participate in the process should be provided to stakeholders
- Stakeholders should be assured that their contributions are useful for the decision-making process

⁹ Madagascar National Parks, formerly the National Association for the Management of Protected Areas [*Association Nationale pour la Gestion des Aires Protégées* ANGAP].

- Could recommend solutions and actions that they deemed relevant for reducing deforestation and forest degradation, improving governance, and enhancing the involvement of local communities in the discussions and decision-making; and
- Began the process of taking ownership and responsibility for efforts to reduce greenhouse gas emissions from deforestation and forest degradation.

Consultations at the central level

Consultations at the national level took place in four stages:

First, in 2010 a national workshop was held with the participation of the ministries responsible for the environment and forests, agriculture and livestock, land management, and transportation and their subsidiary agencies, national and international NGOs and the Koloharena confederation of producers;

Managers of services, departments, and projects with direct or indirect links to deforestation and forest degradation issues and managers of environmental units took part in the workshop. The consultations began with presentations on (i) REDD+, the readiness process, the causes of deforestation and degradation, and strategy options for addressing them, and (ii) the frame of reference and actions taken by the consulted party to curb deforestation and forest degradation. The causes of deforestation and degradation and the strategy options related to the sector of the consulted party were then identified on the basis of consensus. The issues raised during this series of consultations are summarized in Annex1b-1.

Second, a series of consultations was conducted in 2010 dealing specifically with methodological and institutional matters.

This series of consultations identified (i) existing data from forest cover assessments and deforestation analysis (stakeholders, results, methods, limits), (ii) studies conducted under REDD pilot projects, with specific reference to methodology (results and problems encountered), (iii) data still needed for the development of the reference scenario and the implementation of the MRV system, (iv) ongoing and/or planned studies and research, and (v) existing national capacities that might be utilized in the readiness phase and subsequent implementation of REDD+. The Forest Administration and ONE were able to capitalize the experience gained through the five REDD pilot projects in the area of governance, including on carbon ownership rights, methodology options for baseline definition, and elements for MRV involving local communities. To achieve their deforestation reduction goals, most of these projects relied on the transfer of forest resource management to local communities.

Several actors at the national and strategic level were consulted and provided the following recommendations:

- The land tenure platform SIF (*Sehatra Iombonan'ny Fananan-tany*), a group of about thirty farmer organizations concerned with land tenure issues, highlighted the need for balanced representation in REDD+ decision-making bodies and processes of stakeholders involved in sustainable management of natural resources and stakeholders working on rural development.¹⁰
- The civil society environmental platform at the national level, *Alliance Voahary Gasy* (AVG), consisting of about thirty organizations concerned with good governance of natural resources, emphasized the need for balance between and respect for the rights and responsibilities of the private sector, the State, and civil society. These organizations, being permanent structures, can ensure continuity in the implementation of the strategy in the country in the event of political instability. Under the principle of subsidiarity, the platform recommends greater local accountability (among grassroots communities and civil society at the local level) and action to stop all forms of illegal logging.
- The SI MIRALENTA gender observatory helped to incorporate a gender perspective in components 1, 2, and 4 of the R-PP.

¹⁰ Rural development stakeholders include actors in the agriculture (including hydro-agricultural development), livestock, water and sanitation, education, and health sectors.

- The National Land Tenure Program¹¹ recommended pursuing and enhancing decentralization of land management as a means of improving the management of forest lands and addressing the issue of land clearing.
- The main private mining and oil operators expressed their interests in relation to deforestation and forest resource degradation and their commitment to comply with applicable environmental impact standards.
- Members of the scientific and academic communities recommended that they form a network to facilitate their contributions to the production of data needed for the strategy, the development of implementation methodologies, and capacity building. They also suggested considering the commune as a reference entity for the consultations and the implementation of the strategy.

Third, the period from 2010 to 2013 saw active stakeholder participation in finalizing National Land Use Plan (SNAT) at the request of the Deputy Prime Minister responsible for decentralization and land management and several presentations to the forum for dialogue among technical and financial partners in the environmental sector (*Cercle de Concertation des Partenaires Techniques et Financiers du Secteur de l'Environnement*),¹² the Malagasy Academy, the AVG environmental platform (for the workshop on forest governance), Conservation International (for a workshop on the nested approach), Good Planet (for capitalization of the Holistic Conservation Program for Forests [*Programme Holistique de Conservation des Forêts PHCF*] pilot project, and various donors (for coordination meetings); and a national consultation workshop in 2012.

Other comments, observations, and suggestions were gathered through:

- Two national consultation workshops in 2010 and 2012, which brought together more than 120 participants distributed as shown in Figure 1-1b below. A summary of the conclusions of these workshops appears in Annex1b-2.
- Online consultations in 2010, 2012, and 2013 to collect opinions, comments, and suggestions for improvement from national and international stakeholders, including Madagascar's technical and financial partners, the member institutions of the civil society environmental platform *Alliance Voahary Gasy*, the member institutions of the thematic group on climate change, academics, and others.

An intermediate version of the R-PP was submitted to a review committee composed of ten people selected in 2010 on the basis of their diverse experiences and skills. This committee expressed different views on the document, while at the same time maintaining a certain thematic and strategic consistency. A summary of their remarks is contained in Annex1b-3.

Lastly, a validation workshop was held in March 2014.

¹¹The National Land Reform Program was responsible for implementing land reform prior to the political crisis of 2009.

¹²An informal body for coordination among donors, international NGOs, and national organizations and a mechanism for monitoring and consultation among some fifteen international partners and donors since the onset of the 2009 political crisis in Madagascar.

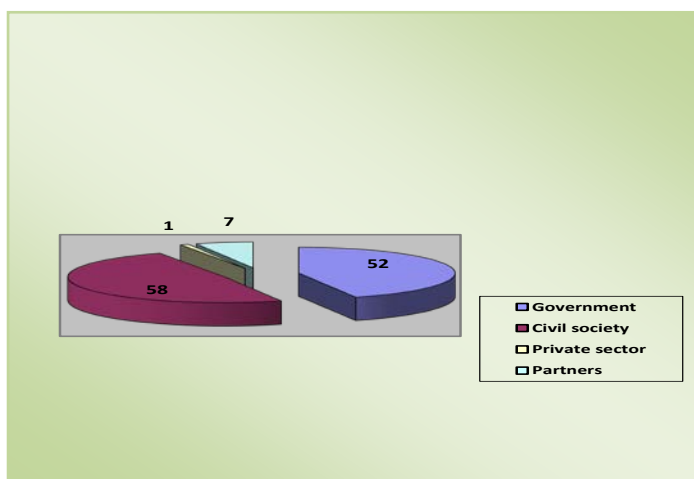


Figure 1b-1: Percentage of participants in two national consultation workshops in 2010 and 2012

Consultations at the decentralized level

In 2010, consultations were conducted in seven regions selected on the basis of criteria related to their ecosystems. CT-REDD developed a methodological guide based on a participatory methodological approach, with tools tailored to the capabilities of the stakeholders to be consulted and consistent with the FCPF technical guidance on public consultation and participation for REDD, which includes tools in local languages. Films, maps, drawings, and diagrams helped to provide a visual and schematic approach to the issues discussed. Local project staff facilitated the consultations, which allowed discussion in both the official and local languages, encouraging the expression of views. A summary report on these consultations appears in Annex 1b-5.

The consultations were organized so as to ensure representativity:

- The regions in which consultations were held¹³ are the regions that show (i) a marked trend toward deforestation from various causes (land use changes, illegal logging, governance issues, etc.), (ii) significant forest area, and (iii) a combination of REDD+ project areas and non-REDD areas.
- Participants came from various areas in each region. The seven maps showing the distribution of the 350 participants contained in Annex 1b-4 illustrate the representativity of the consultations in terms of ecosystems, zoning, land tenure regime, natural resource management regime, exposure to environmental pressures, etc.
- Representatives of local communities made up the majority of participants (Figure 1b-2) and included a variety of actors, including local communities managing natural resources, farmer organizations, water users associations, parents associations, traditional chiefs, and religious leaders.

¹³ Regions of Amoron'i Mania (Central-South), Boeny (North-West), Analanjirifo (East), Atsimo andrefana (South-West), Menabe (West), Alaotra Mangoro (Central-East) and SAVA (North-East).

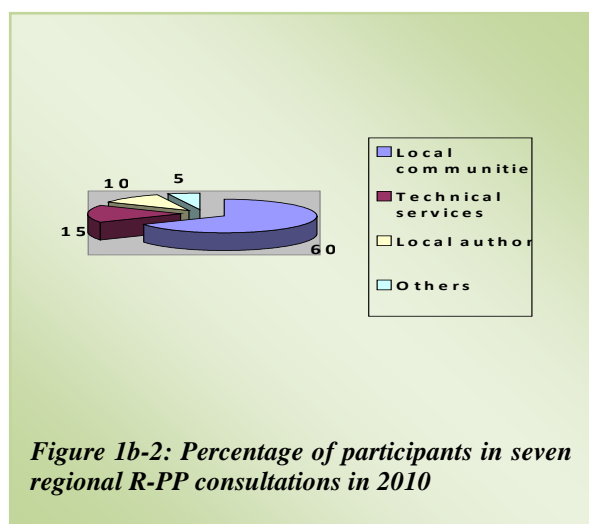


Figure 1b-2: Percentage of participants in seven regional R-PP consultations in 2010

The low level of participation by women in the regional consultations (20 percent of all participants) is explained by their second-class status in rural communities and the long distances between their homes and the regional capitals where the consultations were held. The problem of distance was exacerbated by the rugged terrain of forest areas, which often made travel time longer than the duration of the workshop. This problem will be addressed in the future by holding

consultations at the district level. In 2011 and 2012, several dozen sessions were offered by the Ministry of Environment and Forests and the REDD+ projects and initiatives to raise awareness, provide information, and build capacity at the local and regional levels, including a workshop on capitalization of the experiences of grassroots communities involved in the transfer of management. Tools on the subject of climate change and REDD+ were developed and updated, in particular documentaries and a manual in the local language, capitalization documents presenting local stakeholder accounts regarding climate change, etc.

Since 2012, the civil society platform *Alliance Voahary Gasy* has operated a hotline to encourage national stakeholders to report harmful practices, abuses of power, and other instances of poor governance in relation to sustainable management of natural resources. This tool has helped to foster participation by women and should be used more regularly in the readiness phase (Table 1b-1).

Table 1b-1: Spontaneous telephone calls in 2012 (1734 of a total of 1973 calls)

Subject of the call	Number of calls	Percent		
		% of total	Women	Men
Protected areas and forests	253	15	30	70
Water and ecosystem services	21	1	38	62
Environment	1	0.06	100	0
Governance and civic responsibility	1326	76	53	47
Mining and other extractive industries	95	5.5	29	71
Illegal trafficking of animals	38	2	18	82
Totals	1 734	100	47	53

Table 1b-2: Representativity in regional consultations carried out in 2010

	Number	%
Regions (The Analanjirofo consultation involved 2 regions)	8 out of 22	36
Communes	421 out of 1546	27
Forest area	5.54 million ha out of 9.5 million ha	58
Ecosystem	5 out of 6	83
Regions affected by illegal logging of rosewood since 2009	2 out of 2	100
REDD demonstration projects	5 out of 5	100

Outcomes of regional consultations

The main conclusions of the regional consultations are summarized below:

- ✓ Local grassroots communities suggested improving awareness of their roles in sustainable forest management. They should be involved both in awareness-raising and in support for forest law enforcement and monitoring of local governance. Local entities should be

consulted as a matter of priority on all decisions relating to local forest management (any type of logging, secondary products, and allocation of mining permits). The legitimacy of local communities will be enhanced through mechanisms fostering their empowerment, such as management transfers, co-management of protected areas, and allocation of a portion of the revenues from ecosystem services.

- ✓ The stakeholders consulted noted the urgent need for capacity building and better communication among parties involved in sustainable forest resource management. Priority attention should be given to putting in place an information and education system at various levels on the issues, medium- and long-term challenges, and prevention of poor forest governance. Participants recommended strict enforcement of laws and regulations and compliance with relevant procedures in order to restore sound forest governance, an important factor in order for REDD+ to be effective.
- ✓ Participants repeatedly underscored their dependence on forests and suggested socioeconomic alternatives to improve community livelihoods while also promoting conservation. To mitigate reductions in access to forest resources associated with REDD+, it was recommended that a compensation plan be developed, with provision for small income-generating projects. This approach can be enhanced through capitalization of experiences from similar plans at the national level: ensuring initial financial support, enhancing the financial and technical capacities of stakeholders, supporting the process of transition to a market economy, and working with support and liaison entities such as agricultural service centers [*centres de services agricoles CSAs*].¹⁴ Collaboration with micro-finance institutions and NGOs should also be enhanced.
- ✓ Cases of illegal logging of precious woods have shown that few people have a full understanding or knowledge of the wealth of applicable legal provisions. The interpretation of those provisions also varies widely. Local grassroots communities have seen a number of instances of confirmed offenses in which the offender was acquitted when the case was brought to trial because of failure to follow the proper legal procedures. Another problem is the limited number of forest officers and the lack of coordination among forest law enforcement entities. Participants concluded that the control of illegal logging will require strengthening of law enforcement and regulatory activities and coordination of activities on the ground by all stakeholders (the ministry responsible for forests, law enforcement forces, the Ministry of Justice, decentralized territorial authorities, forest managers, and local grassroots communities). Widespread application of the procedures for awarding of logging permits through competitive bidding might also help to solve this problem. Participants also emphasized the need for monitoring and enforcement of regulations on the transfer of management, management of protected areas, and mining operations in forests, in collaboration with local communities.

It is worth noting that there is now a Steering Committee at the national level chaired by the Ministry of Environment, Ecology, and Forests which includes all institutions and stakeholders concerned with the problem of illegal logging of rosewood, including law enforcement agencies, the Ministry of Justice, forest managers, civil society, and various technical and financial partners. An action plan has been developed for this purpose and is being implemented.

¹⁴ CSAs are permanent that serve as a liaison between suppliers and consumers of agricultural services in all districts of Madagascar.

1c. Consultation and participation process

Consultation plan for REDD+

Consultations for REDD+ readiness will be led by the REDD+ Platform and carried out by the REDD+ National Readiness Coordination Office. They will follow on from and broaden previous consultations with a view to engaging stockholders, gaining their acceptance, and empowering them to participate in REDD+ strategies and activities.

The consultations will focus on the following key elements: management arrangements, causes of deforestation and forest degradation, strategy options, the institutional framework and strategic measures for REDD+ implementation, the strategic environmental and social assessment (SESA) process and safeguards, the reference scenario, MRV, and monitoring and evaluation.

In order for communities to participate in the SESA process, they must be given the opportunity to express their views and be involved in decision making about matters that may have an impact on their environment.

Stakeholder engagement will take place through participation in various organized activities (consultation, negotiation, consensus-building, delegation) and through self-initiated activities (lobbying, lodging of complaints, media campaigns, etc.) To ensure participation by vulnerable and marginalized groups (women, indigenous populations, groups in situations of infringement with respect to the use of resources, etc.), capitalization of existing thoughts and actions will be ensured, taking into account gender considerations and identifying barriers to the participation of these groups, with a view to improving methods, approaches, and tools for ensuring meaningful participation by vulnerable groups.

Particular attention will be paid to these groups during the consultations that will be carried throughout the period to ensure that activities, decision-making processes, and opportunities for participation are sensitive to gender and social equity. To that end, opinion leaders will be sought out, particularly women's groups involved in awareness raising. Planning of all activities during the stages of consultation and implementation should take due account of the ability of women and marginalized and vulnerable groups to participate.

Tools to be used for awareness-raising campaigns aimed at informing, eliciting reactions, and gaining acceptance and validation include local radio stations, community market days, traveling traditional theater and singing groups, posters, community contests, and other local and traditional vehicles for communication. Collaboration with legal and traditional authorities and community leaders will be consistently pursued as a means of identifying information channels and local resource people and developing appropriate methods. It is important to ensure the formal and informal participation and the effective contribution of local stakeholders in local consultation meetings. To that end, such meetings should be held in the villages where stakeholders reside and at least one third of the participants should be women and members of other marginalized and vulnerable groups.

The principles of the Aarhus Convention on public participation in decisions on specific activities (Article 6) will be integrated into the consultation methodologies to ensure community involvement:

- Ensure public participation in decisions on activities “which may have a significant effect on the environment”
- Inform the public “in an adequate, timely, and effective manner”
- Set reasonable timeframes for public participation procedures
- Provide for “early public participation”
- Encourage exchanges among the public and between the project/program and the public with a view to obtaining the support of the latter before making decisions
- Ensure that the public has access free of charge to all relevant information for decision making

- Allow the public to submit, in writing or at a public hearing or inquiry, any comments, information, analyses, or opinions
- Ensure that due account is taken of public views expressed through these procedures, which should not be a mere formality
- Inform the public promptly of decisions, which should be communicated to the public, along with the reasons and considerations on which it is based
- Ensure that the above participation procedures and provisions are applied

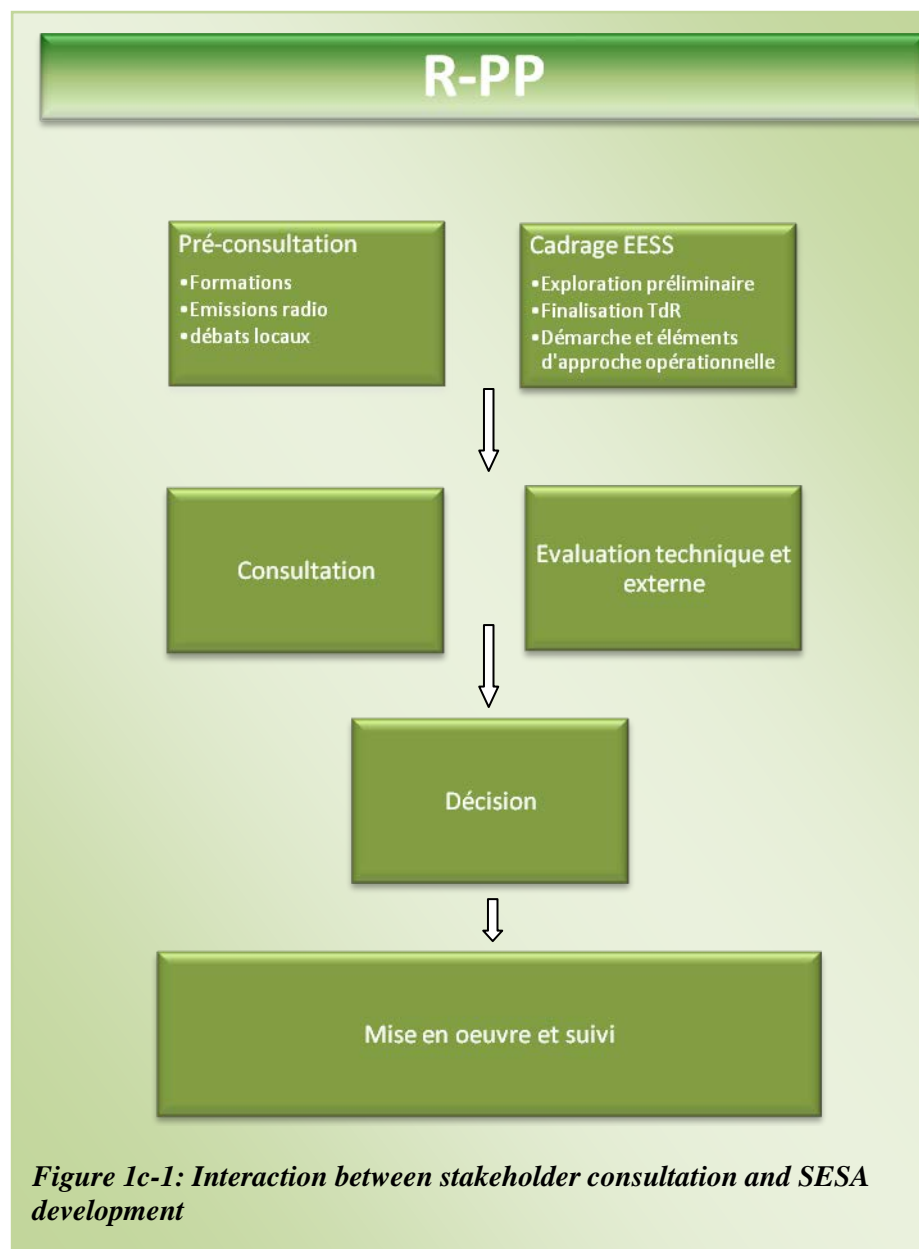
In addition to the criteria for selection of areas for consultations during the R-PP preparation process, there is an opportunity to begin establishing the REL/RL in the eastern rainforest ecoregion (see Component 3). Two to three additional regions will be taken into account based on their potential for reducing deforestation and forest degradation and also their high biodiversity value, bringing to 15 the estimated number of regions for consultations. The final number will be adjusted based on the results of the study on delimitation of the eastern rainforest ecoregion, to be carried out with the additional financing provided for REDD+ under the Third Environmental Program Support Project. Half of the districts and a fifth of their communes will be included in the consultations (Table 1c-1), which will focus on drivers of deforestation and degradation, strategy options, reference scenarios, and MRV in partnership with members of the REDD+ Platform.

Table 1c-1: Crosswalk of criteria for selecting regions for consultation

Nature of areas for consultation	Local (community & commune)	District	Regions and interregional areas
Leakage areas Potential REDD+ areas High biodiversity areas Size of the affected population Areas with high deforestation potential	25% of communes	50% of districts	<ul style="list-style-type: none"> - Dense wet forest: SAVA, Analanjirofo, Alaotra Mangoro, Vatovavy Fitovinany - Dense dry forest, thorn forest and mangrove: Menabe, Atsimo andrefana, Boeny, Melaky, Androy - Tapia : Amoron'Imania - Artificial pine and eucalyptus reforestation: Analamanga, Haute Matsiatra

The process of stakeholder consultation will provide the elements needed for the Strategic Environmental and Social Assessment (SESA). The diagram below shows the interaction between the stages in the stakeholder consultation process and SESA development, beginning with an information and capacity-building phase (which will coincide with determination of the frame of reference for the SESA), the actual consultation phase (SESA external evaluation phase), and dissemination of the REDD+ strategy incorporating the SESA (Figure 1c-1). The levels of consultation, the members of the public to be consulted, and the rules for each stage are set out in accordance with the regulations on public consultations in force, as established under Decree 6830/2001.¹⁵

¹⁵ Decree 6830/2001 of June 28, 2001 establishing modalities and procedures for public participation in environmental assessments, pursuant to the MECIE decree and the Environment Charter



Target groups

Based on past experiences, four types of groups will be consulted: the **general public**, which will be informed about the general aims of REDD+, **stakeholders**, whose feedback is needed in order to balance the interests of the various parties, the **concerned public**, whose engagement is sought, and the **affected public** (shareholders) for the final negotiation aimed at achieving consensus and partnership.

The word “public” is used in its generic sense and may include opinion leaders, private-sector operators, institutions, decision-makers, and communities. Each consultation should seek to include a sizeable proportion of women and vulnerable and marginalized groups. At local level, populations affected by the REDD+ strategy, including those whose activities are a source of land-use conflicts, should be included in all consultations (Table 1c-2).

Members of the REDD+ Platform will be asked to disseminate information; assist in the selection of representatives for the consultations at district, interregional, and regional levels; and facilitate reporting of

important decisions. This grassroots support will improve the participation of representatives of local communities in the negotiations by facilitating a true discussion at the local level.

Stages of consultation

(1) Information, awareness raising, and communication

The aim of disseminating information is to increase public awareness and concern about the issue. Information on the R-PP, the readiness process, and available means and their use will be shared. The reference situation, strategy options, and implementation arrangements proposed in the R-PP will be presented to enhance knowledge and acceptance of and participation in REDD+. A communication campaign will be conducted by means of the media and events at the national, regional, and local levels, including newspapers, radio, TV, fairs, conferences, exhibits, etc. Informational materials on the process in the local language will be produced and made available to the general public. Journalists and information specialists will be trained and their support enlisted.

In addition to members of the REDD+ Platform, support for the awareness-raising and consultation activities will be sought from forums for dialogue such as regional forestry commissions, regional planning, monitoring, and evaluation platforms, periodic meetings of communal teams, projects, NGOs and associations working in the field. For better time and resource management in general, consultations targeting the same groups will be conducted in sets, in collaboration with local actors.

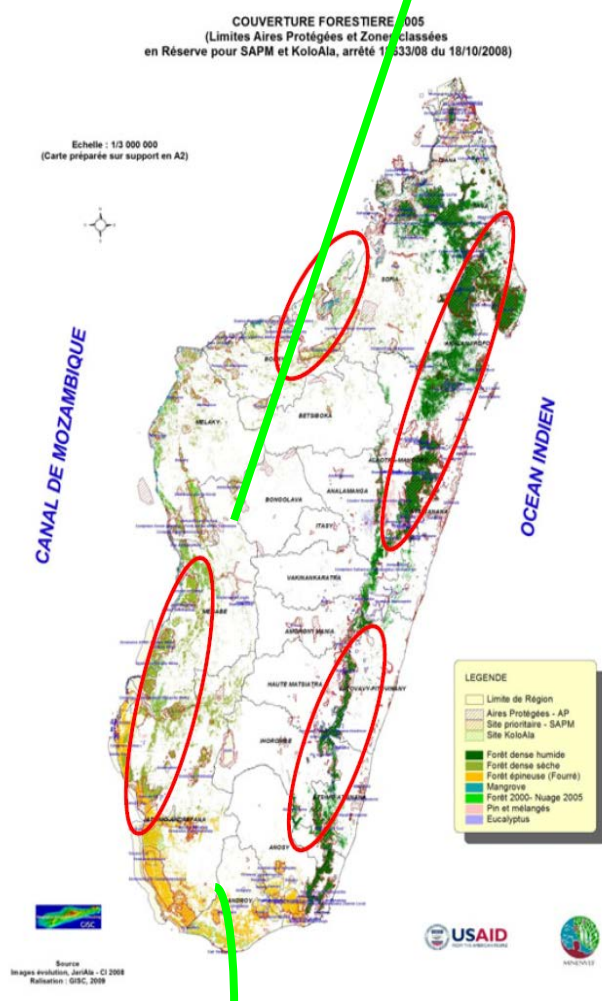


Figure 1c-2 . Consultation areas for development of the REDD+ strategy on the basis of biomes and administrative regions (red

indicates areas identified by R-PP v12 and green the contour of the wet forest ecoregion under a nested approach)

The SESA will focus on grassroots communities, including traditional authorities; communities that may or may not be located near forests; loggers in both the informal and formal sectors; and vulnerable groups, including minorities, women, young people, and indigenous peoples who might be affected by the strategies developed under the R-PP. The aim will be to identify environmental and social concerns and challenges associated with REDD+, together with mitigation measures that might offset the effects and impacts. This type of consultation is consistent with current provisions and procedures on SESA development and evaluation. It will take place as part of the preliminary exploration phase and the process of determining the terms of reference for the SESA.¹⁶

To ensure a REDD+ strategy that is sensitive to gender and social equity issues, gender-sensitive consultations will be conducted with a view to enhancing the strategy's benefits for women and indigenous peoples and preventing any exacerbation of their vulnerability.

Ultimately, these consultations will enable the collection of detailed opinions and views on the effects and impacts of the framework for implementation of strategies, areas of

intervention, and safeguards. When the consultations have been completed, the detailed terms of reference for the SESA will have been adjusted and a detailed consultation plan for the SESA phase and a plan for SESA implementation will have been drawn up. The detailed preliminary SESA that has been developed will then be evaluated by ONE together with the Technical Evaluation Committee, composed of representatives of the ministries concerned, who will provide their technical opinions and advise on the integration of sectoral and social considerations falling within the purview of their respective sectors.

(2) Consultation

The MECIE decree requires that, for environmental assessments, in addition to the technical assessment by a committee including representatives of all concerned sectors, the public must be allowed to take part in the assessment through on-site review of relevant documents. The public's views can be sought through public surveys, public hearings, or both. ONE is responsible for determining what form public participation in evaluating an environmental impact assessment (EIA) or SESA will take and making the necessary arrangements, as well as for assessing the organization of various consultations at local, regional, and national levels.

The consultation process comprises four stages: feedback, consultation, dialogue, and negotiation. The groups targeted in these four stages will differ in terms of interest and level of involvement: the REDD+ National Coordination Office, in partnership with the REDD+ Platform, should ensure that all members of the public have access to the relevant information and feedback tools within a timeframe that is adequate to enable them to express their views. To ensure genuine, strong participation by the country's civil society, in collaboration with civil society environmental platform *Alliance Voahary Gasy*, systematic and regular consultation with members of environmental civil society at all levels will be included in all consultations already planned. A memorandum of collaboration between BNC-REDD+ and AVG can be established in order to clarify the role and contribution of AVG in consultation with civil society.

In its role as an advocate for civil society, this platform will ensure that the views and comments of civil society and indigenous peoples are taken into account in the REDD+ strategy through mechanisms such as the 512 hotline and the system for monitoring of forest governance indicators.

- (i) **Feedback:** Following each awareness-raising and capacity-building campaign, some members of the general public will express their views on the project. The National Coordination Office will be responsible for providing tools and mechanisms for collecting such feedback. It will also classify the comments received and assess the issues raised in order to better target and plan responses. Follow-up studies, polls, or surveys may be conducted to delve more deeply into some issues. Data will be cross-checked with relevant sectoral institutions with a view to identifying the information needed for the selection of strategy options (economic costs and benefits, technical and institutional feasibility, risks of leakage, etc.).
- (ii) **Consultation:** This stage will focus on facilitating input from people who might be affected by the project by enabling them to participate in exchanges of views and discussions and put forward proposals that have real influence on decision-making and the identification of consensus-based solutions. This participation may take place through technical sessions, workshops for discussion and formulation of recommendations, and sessions for reporting the outcomes of technical and financial studies. These activities will take place at the regional and interregional levels, with the participation of sectoral, regional, and communal authorities.
- (iii) **Dialogue:** The aim in this stage is to engage important stakeholders and to support decision-making by sectoral decision-makers on matters related to REDD+, including policies, institutional and regulatory frameworks, and major strategy directions in relation to REDD+ needs. Revision of regulations for the forest sector, validation of institutional options for carbon management, and validation of policy measures are examples of the intended outcomes of this stage. This type of consultation will take place after the results of other types of consultations and studies have been disseminated to sectoral decision-makers for validation or in the course of aligning policy, institutional, and regulatory provisions with REDD+. Hence, this type of consultation will continue throughout the phase of finalizing the REDD+ strategy.

- (iv) **Negotiation:** This stage will seek to devise a solution that is satisfactory, or at least acceptable, for all stakeholders and will entail joint formulation of decisions and conditions for their implementation.

(3) Dissemination of the REDD+ strategy

This stage marks the start of REDD+ readiness in Madagascar. The key elements of the REDD+ strategy will be presented, including the reference scenario, the strategy implementation mechanism, the monitoring system, and the bio-physical and socioeconomic monitoring indicators.

Table 1c-3: Summary of stakeholder consultation and participation activities and budget

Main activities	Sub-activities	Partners	Estimated cost (in US\$)			
			Year 1	Year 2	Year 3	Total
Inform and raise awareness of the general public about REDD+, the R-PP, the strategy development process, and the key elements of the strategy, and disseminate the strategy	Initial information-sharing (REDD+, R-PP, readiness arrangement, etc.)	Civil society, GT-CC, Platform, forestry commissions	91 330	89 771	89 771	270 872
	Regular communication on the process: provide information on the main ideas regarding the baseline, strategy options, implementation arrangements, and carbon governance		54 135	49 564	44 957	148 655
	Collection and analysis of opinions on the information disseminated		4 500	1 900		6 400
	Support for communication		2 400	2 400	2 400	7 200
	Dissemination of the strategy		72 621			72 621
Consultation to collect and prioritize elements for each area of intervention	Collection of socioeconomic, political, and cultural information on each area of intervention and reference information at regional level	TBE network, INSTAT		45 943		45 943
	Collection of additional information from various institutions to complete and cross-check baseline information and data			13 577		13 577
Consultation to assess leakage risks to inform the combinations of areas of intervention	Collection of socioeconomic, political, and data and information on the displacement of emissions associated with deforestation in forest degradation in and around potential REDD+ sites	ONE, REDD+ project managers, relevant ministries	39 832			39 832
Dialogue on the preliminary version of the final strategy	Collection of views and observations from sectoral decision-makers on the preliminary version of the final strategy in terms of policies, legal reforms, institutional arrangements, planned programs, resources, etc.	Relevant ministries	43 793			43 793
Consultation on carbon revenue governance	Capitalization of experiences in forest revenue management to outline a general framework for governance and revenue-sharing	REDD+ project managers, MNP, forestry commissions	3 700			3 700
	Dialogue and negotiation on management and transparency in management of revenues (including accountability)	Civil society, grassroots communities, natural resource managers, forestry commissions	50 295	50 295		100 589
Implementation of detailed SESA	Collection of opinions and concerns on strategies and their environmental and social impacts	Civil society, local communities		47 188		47 188
	Validation of the detailed preliminary SESA	Technical evaluation		59 230		59 230

	committees				
	Evaluation of the detailed SESA document		17 000		17 000
	Total 1B	449 389	376 865	137 127	963 381

Main activities	Sub-activities	Estimated cost (in US\$)			
		Year 1	Year 2	Year 3	Total
Inform and raise awareness of the general public about REDD+, the R-PP, the strategy development process, and the key elements of the strategy, and disseminate the strategy	Initial information-sharing (REDD+, R-PP, readiness arrangement, etc.)	91 331	89 771	89 771	270 871
	Regular communication on the process: provide information on the main ideas regarding the baseline, strategy options, implementation arrangements, and carbon governance	54 135	49 564	44 957	148 655
	Collection and analysis of opinions on the information disseminated	4 500	1 900		6 400
	Support for communication	2 400	2 400	2 400	7 200
	Dissemination of the strategy	72 621			72 621
Consultation to collect and prioritize elements for each area of intervention	Collection of socioeconomic, political, and cultural information on each area of intervention and reference information at regional level		45 943		45 943
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	Dialogue and negotiation on management and transparency in management of revenues (including accountability)	50 295	50 295		100 589
Implementation of detailed SESA	Collection of opinions and concerns on strategies and their environmental and social impacts		47 188		47 188
	Validation of the detailed preliminary SESA		59 230		59 230
	Evaluation of the detailed SESA document		17 000		17 000
Establishment of reference scenarios	Identification of the variables that best explain deforestation and forest degradation	52 785			52 785
Implementation of MRV : monitoring, reporting, verification	Basic and thematic mapping at national level, Analysis of co-benefits	10 000			10 000
	Reference data for REDD+ projects	4 000			4 000
	Image classification methodology				
	Consultation on monitoring system	20 000			20 000
	Total 1B	449 389	376 865	137 127	963 381
	Government				

FCPF	396 604	217 777	18 900	633 281
Other sources	52 785	159 088	118 227	330 100

COMPONENT 2: PREPARE THE REDD+ STRATEGY

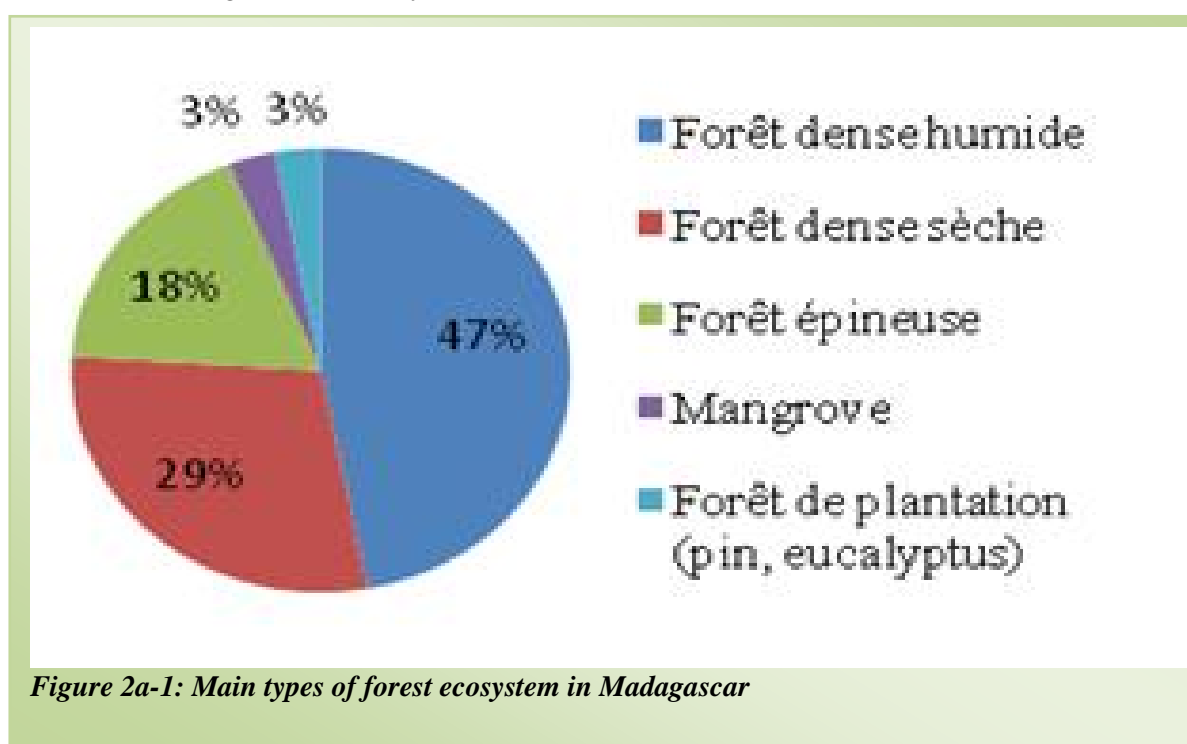
2a. Assessment of Land Use, Land Use Change Drivers, Forest Law, Policy and Governance

1 A. RATIONALE AND CONTEXT

The aim of assessing land use, forest policy, and governance is to help the country to identify the main drivers of deforestation and/or forest degradation and to examine past national experiences in reducing deforestation and forest degradation in order to identify promising approaches for the emerging REDD+ strategy. This assessment should provide data on land use and other trends and information on key elements of lessons learned, challenges, and opportunities. The REDD+ strategy can then be developed in a way that specifically addresses the drivers of deforestation and forest degradation identified in the assessment and the challenges and problems associated with previous under-performing programs.

Although the results of deforestation assessments vary, Madagascar can be considered a country with high deforestation rates. For lengthy periods of its recent history, the annual deforestation rate has been estimated at over 1 percent, and the natural forest cover was reduced from about 19 million hectares in the 1950s to less than 13 million hectares in the early 1990s.

The most recent study of change in the national forest cover was conducted in 2007 on the basis of Landsat satellite images.¹⁷ That study estimated forest cover at around 10.7 million hectares in 1990, around



¹⁷ Ministry of Environment and Forests, United States Agency for International Development, and Conservation International (2009): *Forest Cover and Change: Madagascar 1990-2000-2005*. Data on natural forests areas are from the forest cover assessment undertaken by USAID and Conservation International in 2007, while data on plantations are derived from the 1996 National Forest Ecological Inventory.

9,990,000 ha in 2000, and about 9,725,000 ha in 2005, which suggests a reduction in the annual deforestation rate from 0.83 percent over the period 1990–2000 to 0.53 percent in 2000–2005 (these findings are presented in greater detail in Section B.2.1). This deforestation trend points up the importance of establishing a REDD+ strategy as a means of mitigating emissions of greenhouse gases (GHGs) and the negative effects of deforestation and forest degradation on overall economic and social development.

About half of Madagascar's natural forests are located along the eastern ridge, forming a corridor of dense rain forests stretching from Fort-Dauphin in the south to Diego in the north. The other half, consisting mainly of dense dry forests (2,550,000 ha) and thorn forests (2,020,000 ha), is scattered across the northern, western, and southern parts of the country, with larger forest areas in the southwestern and southernmost parts of the island (Figure 6). Mangrove swamps (260,000 ha) are concentrated on the west coast, while the main artificial forests (300,000 ha in all) are located in the central highlands. The majority of the natural forests are owned by the State. Private ownership is limited, with some exceptions in the case of artificial forests.

The management of forest resources comprises four strategic areas of action: (i) protection through the System of Protected Areas of Madagascar (SAPM); (ii) community-based management; (iii) sustainable management in the KoloAla areas; and (iv) restoration of degraded forests and reforestation. These areas of action were formalized by Interministerial Decree 18,633 of October 17, 2008, which established the following spatial distribution: almost half of all natural forests, or about 5.27 million ha, are located in existing protected areas and priority areas identified for designation as new protected areas, while the remaining 4,455,000 ha are, in principle, allocated for sustainable production, including 1.34 million ha in KoloAla areas (sustainable forest resource management areas). This national vision will be refined through regional land use plans incorporating all stakeholders in each region.

2. LAND USE AND DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

2.1 Land use and tenure

Until the early 2000s, land tenure in Madagascar was based on the principle of State ownership under which the State owned all vacant and unregistered lands. The only guaranteed and recognized form of private ownership was registration following a continuous period of at least ten years during which an individual had personally and demonstrably had possession of and improved the land, after which that individual was deemed to own it. This system failed to secure the land rights of large groups of rural inhabitants, and after more than a century of the State ownership principle, only 15 percent of the land has been registered.¹⁸ Customary land rights have persisted, evolving under the influence of demographic, economic, and social factors, coupled with an inadequate number of forest officers and the erosion of their authority as a result of a general deterioration in attitudes and behavior. The impacts of land tenure insecurity on deforestation are twofold. The existence of secure legal title to forest lands is a rarity under current land tenure laws, and is not respected by the local population. Forest clearing for agriculture is common even on forest lands clearly owned by the State (classified forests, forest reserves) and cannot be controlled by particular administrations.

On the edges of forests, conversion of forest land to farmland is the type of improvement most often undertaken by households to gain legitimate ownership and recognition of personal possession.¹⁹

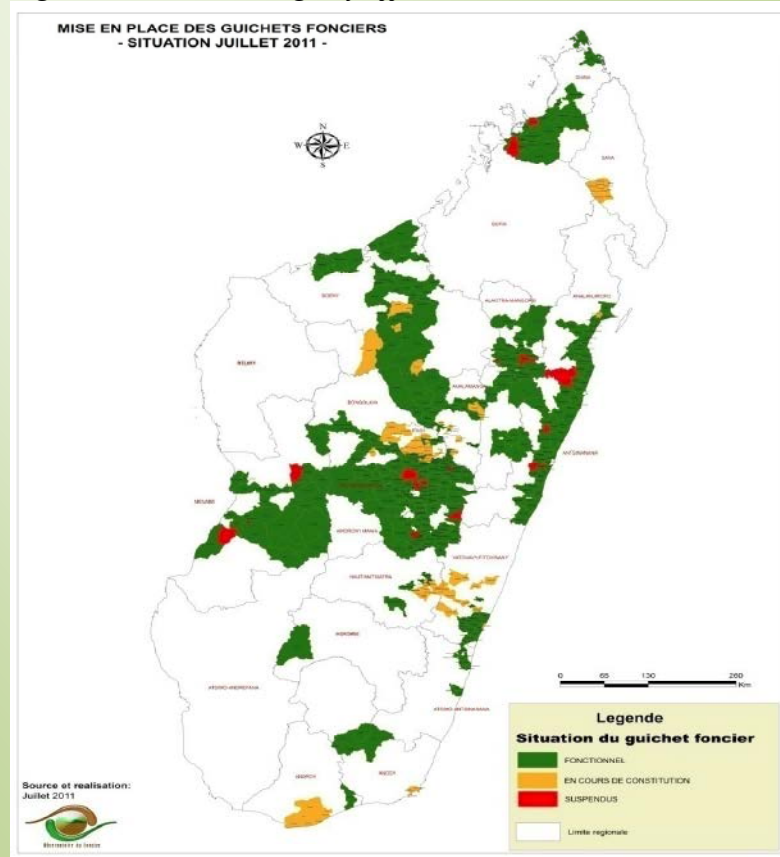
In contrast to customary rights and local practices, land tenure management practices inherited from the colonial era are a source of insecurity for rural populations, discouraging them from investing in the sustainable development of their plots. To address this problem, a land reform process was launched, with the adoption of a land policy in 2005 and the establishment of several programs and mechanisms since 2007 (National Land Tenure Program, Land Tenure Observatory, updating of the cadastre, and establishment of a system of decentralized land management, including the creation of community land registry offices authorized to issue land certificates and to register land on the basis of local land use plans [*plans locaux*]).

¹⁸ The individual registration procedure consists of 24 steps and can take over 15 years to complete, with an average estimated cost of US\$ 276 (National Land Tenure Program).

¹⁹ In addition to evidence of improvement, recognition of ownership requires continuous possession for at least 10 years, which is not the case of the slash-and-burn agriculture practiced by itinerant farmers.

d'occupation foncières PLOFs], and inter-community land resource and information centers [*centres intercommunaux de ressources et d'information foncières* CRIF]). However, this reform has yielded mixed results: only 154 of 876 planned PLOFs have been established, 406 land registry offices have been opened in 1,653 communes (one quarter), and approximately 6,000 certificates have been issued out of 120,000 applications filed. It should also be noted that land reform as described above has mainly served to settle disputes over non-forest land and has had very limited impact in terms of securing forest land.

Figure 2a-2: Land registry offices in 2011



Source : Land Tenure Observatory

For the vast majority of rural inhabitants, forest land is primarily a reserve of arable land to be used for farming or grazing. Forest clearing and slash-and-burn farming give rise to a certain form of land ownership. Population growth and migration have significantly increased the pressures on forest areas and led to a marked increase in forest clearing in some regions, especially where mining operations exist. The mechanism of appropriation begins with the extraction of all products of value from the forest (timber, fuel wood, leaves, etc.). Once the forest has been depleted, the land is converted to farmland by burning, with ecological and environmental functions and services often taking a back seat to immediate survival needs. This form of land ownership runs counter to positive law, but slash-and-burn clearing gives those who practice it two types of rights under customary law: the right of clearance (“axe rights”) and the right of fire. Together, these two types of rights constitute the customary law of property inasmuch as clearing is considered a form of land improvement.

2.2 Deforestation and forest degradation

2.2.1 Historical background on deforestation in Madagascar

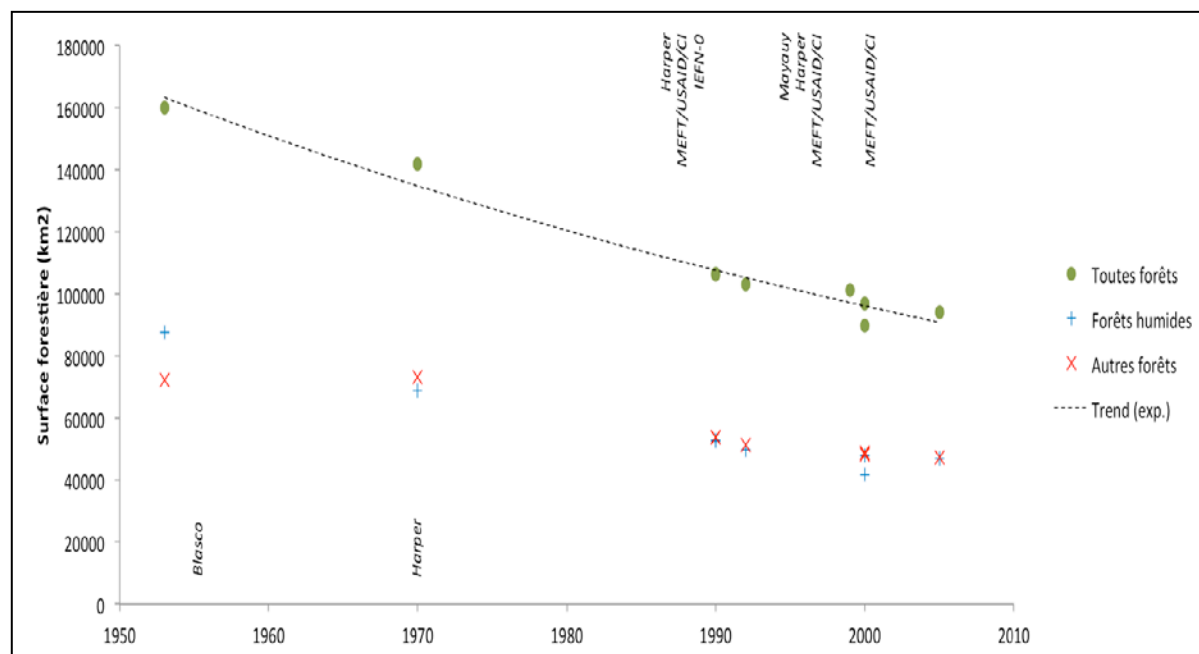
The changes in Madagascar's native forests prior to 1990 are a fairly contentious issue and the paucity of reliable data has resulted in widely varying estimates from various data producers. The figures provided prior to 1960 were based on simple estimates prepared by data producers and should therefore be treated with caution. Several subsequent studies were either based on forest cover maps published by the Water and Forests Service, which did not include the entire national territory, or on extremely low spatial resolution data, which in all likelihood resulted in an underestimation of the national forest cover. Estimates were also provided in 1965 by Humbert and Cours Darne (approximately 19 million hectares for the 1950s) and in 1995 by Faramalala (15.8 million hectares for the 1970s), which, when compared with IEFN estimates (12.94 million hectares in the early 1990s), reveal a fairly linear annual deforestation rate of roughly 144,000 hectares (or approximately 1 percent).²⁰ (See also Figure 2a-4 below.)

The 2007²¹ analysis of forest cover changes using Landsat satellite images covering the period 1990-2000-2005 shows a considerably smaller surface area in 1990 of only 10.7 million hectares. This difference is in part attributable to the fact that the 2007 analysis used a stricter definition of a forest (minimum height: 5 meters; minimum surface area: 2.5 hectares; minimum level of coverage: 80 percent), and excludes several secondary, degraded, and artificial forests. This study, which included forest plantings, estimated the total forest surface area at roughly 9,990,000 hectares in 2000 and at approximately 9,725,000 hectares in 2005, which in fact suggests a reduction in the annual deforestation rate from 0.83 percent for the period 1990-2000 to 0.53 percent between 2000 and 2005. The latest analyses confirm this trend toward lower deforestation rates. The analysis of forest cover changes conducted by ONE and the Ministry of Environment and Forests in 2013²² showed that the deforestation rate appeared to have fallen below 2.4 percent during the period 2005-2010 across the entire country. Annex 2a-2 shows the changes in the surface area of the ecosystems in the 22 regions.

²⁰ Blasco, F. (1965) *Notice de la carte de Madagascar*, Faramalala, M.H. (1988) *Etude de la végétation de Madagascar à l'aide des données spatiales*, Green, G.M. & Sussman, R.W. (1990) *Deforestation history of the eastern rain forests of Madagascar from satellite images*, Mayaux, P. et al. (2000) *A near-real time forest-cover map of Madagascar derived from SPOT-4 VEGETATION data*, FAO (2000) *Global Forest Resources Assessment 2000*, Harper, G.J. (2007) *Fifty years of deforestation and forest fragmentation in Madagascar*, FAO (2010) *Global Forest Resources Assessment 2010*

²¹ MEF, USAID, and CI (2009): *Évolution de la couverture des forêts naturelles 1990 – 2000 – 2005, Madagascar*. Data on native forest surface areas were provided by [text missing] forest cover done by USAID and Conservation International in 2007, while the data on plantations were extracted from the 1996 National Forest Ecological Inventory.

²³ ONE, MEF, CI, FTM et MNP (2013) : *Evolution de la couverture des forêts naturelles à Madagascar*. National Office for the Environment, Ministry of Environment, Ministry of Environment and Forests, Conservation International, Foiben-Taosarintanin'i Madagasikara, Madagascar National Parks, Antananarivo, Madagascar.

Figure 2a-4: Previous studies on historical deforestation

While the annual deforestation rate in rain forests fell by more than 50 percent from 0.79 percent to 0.35 percent and by only 40 percent in dense dry forests (0.67 percent to 0.40 percent), it increased slightly from 1.19 percent to 1.23 percent in thorn forests. Similar variations were observed in Madagascar's regions, with a very sharp decline in deforestation in the Analanjirofo region (from 0.59 percent to 0.11 percent), a relatively slight reduction in the Atsimo Andrefana region (from 1.19 percent to 0.98 percent), a virtually steady rate in the Androy region (between 0.62 percent and 0.66 percent), and a significant increase in deforestation, from 0.47 percent to 1.02 percent in the Anosy region (see Table 2a-2).

These analyses ultimately contribute to the emergence of trends with respect to deforestation spatialization. Figure 2a-3 shows that the areas hardest hit by deforestation during the 1990-2005 period were the southern and southwestern sections of Madagascar, where the observed nationwide reduction in deforestation also appeared to have been less pronounced. The figures in Table 2a-2 confirm this impression and demonstrated that of the four regions in the south and southwest, three even showed an increase in the rate of deforestation (6 percent in Androy, 18 percent in Menabe, and 117 percent in Androy), while the rate fell by 18 percent in the Atsimo Andrefana region, considerably lower than the national average of 36 percent. This observation is especially worrying because the dry and thorn forests in these areas have very limited natural regeneration potential, which means that deforestation is more often than not irreversible.

However, relative to the 2000-2005 period, there was a dramatic turnaround during the 2005-2010 period, as the deforestation rate declined by 80 percent in Anosy and 85 percent in Androy, and remained stable in Menabe.

2.2.2 The direct causes of deforestation

2.2.2.1 Conversion of forests into farmland

The conversion of forests to farmland (tavy) using the slash-and-burn technique remains the principal cause of deforestation in Madagascar. The findings of the analyses of deforestation mentioned in the preceding section confirm that most of the forests lost between 1990 and 2005 had been converted into farmland. Rain forests in eastern Madagascar were therefore cleared almost primarily for subsistence agriculture, and these plots were abandoned after two to three years of crop growing. Secondary forests replaced the primary forests; however, owing to sustained burning in the agricultural areas, the regeneration process has been disrupted and deforestation is generally considered to be permanent and is irreversible.

In the case of commercial and industrial agriculture, the clearing of forests for the cultivation of sugar cane, the main ingredient for the production of local spirits, is a growing threat, particularly in light of

the increasing promotion of the production of biofuels such as ethanol. This cause could potentially worsen in the coming years. In addition to subsistence agriculture practiced by migrants, dry and thorn forests in the west and south are cleared for commercial agriculture carried out by wealthy producers and targeting the national market and the Indian Ocean islands. Forest clearings for industrial agricultural production are in line with international market trends, as was the case, for example, with the production of maize in the southwest in the early 2000s. Tenure insecurity in forests in particular is driving these producers to clear native forests rather than develop already cleared land. In view of the slow reconstitution of these ecosystems and the regular use of burning in livestock rearing systems, the conversion of these cleared areas may be considered to be permanent. These biomes have experienced the highest clearing rates over the past twenty years.

2.2.2.1 Mining

Mining-related deforestation typically occurs on a small scale and cannot be truly described as deforestation. However, especially in the case of large-scale operations such as ilmenite mining in the Fort-Dauphin region or nickel and cobalt mining in Ambatovy, these operations may lead to more widespread deforestation. The mining sector is expected to expand further and, as a result, pressures exerted by this sector on the forest ecosystems are projected to increase.

2.2.2.2 Logging

Logging is typically a direct cause of forest degradation and not of actual deforestation. A close link between logging activities and deforestation activities for the expansion of farmland is however evident in a number of regions in Madagascar, and, in this regard, logging contributes directly to deforestation. This is especially true in the southwest, where logging is often linked to the production of charcoal for the major urban centers. The latest analyses of deforestation conducted during the 2000-2005 and 2005-2010 periods show that logging of mangroves along the western and northwestern coast for the production of firewood does not, however, appear to be a major contributor to deforestation in the coastal areas in the west (see Section 2.2.1).

2.2.3 The indirect causes and underlying drivers of deforestation

2.2.3.1 Rapid population growth

Rapid population growth, estimated at an annual rate of 2.8 percent, is the main factor contributing to a marked increase in the demand for subsistence and cash crops. Along with poor soil management in areas beyond the forests, it results in migration to forest areas with richer soils. This is the case with the western side of the eastern rain forest corridor (migration from the highlands), the Sambirano area (migration of people from the south and southeast), and the dense dry forest in the west and north (migration of the Antandroy and Koraho peoples). Free access to resources (and forest land) intensifies the effects of this population growth on deforestation.

Box 2a-1: *The COGESFOR project in Didy*

Between 2009 and 2014, the COGESFOR project (sustainable management of natural resources for the conservation of three biodiversity hotspot regions in Madagascar) designed a biodiversity conservation strategy based on sustainable development. Financed by the French Global Environment Facility (FGEF), this project has formulated a planning-based conservation strategy in three sites in the Alaotra-Mangoro and Atsimo-Andrefana regions, with protected areas, controlled logging areas, and areas that are available for agricultural development. The aim was to generate wealth through the sale of timber and non-timber forest products, partition the spaces through land security in order to address the need for security for farmers, and put in place conditions for the conservation of areas that are threatened but are rich in biodiversity. In addition to these efforts to generate wealth, the COGESFOR project supported the development of conservation-based agriculture through innovative crop management techniques that are alternatives to the tavy technique. The project also facilitated the implementation of a management transfer information system (SITG) developed in collaboration with the forest authorities (DGF/DVRN). The system for sustainable and controlled logging put in place includes a timber logging information system (SIEBO) and a decentralized forest monitoring system (CFD) that ensures self-financing of monitoring activities. The project also marks products (timber) to track them from the logging point to the merchant buyer in the city and thus verify the legality of these products.

In the Ambohilero forest, results give cause for hope that logging operations are shifting from the status quo of illegal logging and the degradation of forest areas. In the case of timber, real revenue for beneficiaries is still low insofar as logging quotas have not been achieved. An estimated 23 percent of the quotas have been logged over a two-year period, generating revenues totaling close to Ar 550,000,000 (EUR 200,000). Local populations receive 55 percent of the sale price of a plank of ordinary wood, from the felling of the trees, hauling, and then processing by the VOIs and lumberjacks. The essential oil sector still needs to be developed, although 53 kilograms have been sold and quality-related issues still need to be addressed. Potential annual production, which is estimated at 350 kilograms based on quotas and less than 100 kilograms by distillers, is still a long way from being achieved. In 2013, annual revenues stood at Ar 3.5 million for 36 jobs generated, an average per capita income of close to Ar 100,000. The true innovation has been the development of a leaf collection method involving tree climbing. In the past, collectors would cut down the trees, but now they have been trained to collect leaves without destroying the trees, a positive development in the effort to combat deforestation, create wealth, and promote ownership of conservation areas.

Source: COGESFOR project, 2014. Progress report as of 12/31/2013. CIRAD, FOFIFA, Association Partage

2.2.3.2 Unsustainable agricultural practices

To boost their production levels, farmers must expand their crop area. As crop yields from old clearings plummet precipitously owing to the rapid loss in soil fertility, this agricultural expansion is almost always into forest areas, which involves new clearings. This trend is more marked for a number of cash crops grown in the forests, without the knowledge of the authorities as these products are illegal (sugar cane for the production of local spirits, unauthorized tobacco, and hemp). The agricultural yields of traditional production systems have either remained stable or declined over the past several years. In 2009, the FAO²³ reported that the per capita agricultural production index had fallen steadily from a high of roughly 131 between 1979 and 1981 to 91 in 2003, before rebounding slightly to 96 in 2004. Efforts aimed at boosting productivity were primarily focused on relatively accessible areas, that is, areas that were fairly distant from the main forests. The problems facing the agricultural sector are analyzed in detail in Annex 2a-3.

2.2.3.3 The sociocultural behaviors of rural populations

As Section 1b demonstrates, the rural populations' traditional perception of the forest is also a very important contributor to deforestation. Local populations view forest land as a mere reserve of arable and grazing land. Land clearings thus become the traditional way of gaining access to land (the right of fire and "axe" rights), and it is common to see forest areas that have been cleared solely for this reason and not subsequently cultivated, often by relatively well-off persons who pay local farmers to carry out this activity.

In the case of sacred forests, these behaviors may also result in protection of the forests. It should, however, be noted that this type of protection is rarely provided to large forest areas only and is typically limited to forests that are located near to residences and already subject to fairly significant human pressures.

2.2.3.4 Poverty and the precarious living conditions in households

It is a recognized fact that 80 percent of Malagasy households are poor, and that 80 percent of the population lives in rural areas: the further away from urban centers and delimited areas the more precarious the living conditions. The only sources of household income are agriculture, forest land use, and natural resource extraction (forest, mining, fishing and other products). Households have very few links to the market, receive very little support, and have a low level of education, thus making them extremely wary about adopting new techniques, however effective they may be. Furthermore, owing to the absence of coherent intersectoral visions, these remote forest areas are still being not being taken into account in the country's development policies and programs.

2.2.3.5 Governance of forests

Owing to the sociopolitical crisis plaguing Madagascar since 2009, the current state of forest governance in Madagascar (see Section 4.3) has resulted in free access to forests, which has promoted rather than deterred land clearings and the illegal exploitation of natural resources. The root causes of this situation are as follows:

- Inadequate resources available to the forest management administration and the other forest management stakeholders to perform their respective roles in managing and monitoring forest operations;
- Still very low participation of local populations in the processes for sustainable forest resource management and use, despite very large numbers of transfers of forest resource management that have taken place;
- An inadequate legal and regulatory framework that is ill-suited to current conditions, with a considerable lack of implementing regulations and sustainable management procedures, and legal provisions ill-adapted to the current context.

²³ Special report - *Mission FAO/PAM d'évaluation de la sécurité alimentaire à Madagascar*, August 2009

2.2.3.6 The lack of financial incentives for sustainable resource use

Households do not necessarily see the utility of forest conservation and the potential benefits; instead, they view forests as potential farmland. Environmental Services Payment (ESP) mechanisms are currently being developed, specifically through the implementation of several pilot REDD projects in the ecoregion of the eastern rain forests. Other ESP approaches are under review.

2.2.4 The direct causes of forest degradation

No specific studies on forest degradation (using the REDD+ definition) have been conducted in Madagascar. A study conducted by the JariAla project²⁴ has, however, estimated that to meet annual demand for timber products in Madagascar, more than 21.7 million m³ of timber will have to be harvested each year. The sustainable production of natural and artificial forest stands destined for production was estimated at approximately 23.5 million m³. However, in view of steadily increasing demands and declining forest production areas, the study estimates that, as of 2010, sustainable production will no longer suffice to meet needs, thus resulting in increased degradation.

The degradation-fragmentation-deforestation cycle is increasingly common, as degraded forests are generally cleared afterwards. Clearing a fragmented forest is easier than compact blocks. As has already been noted with regard to deforestation, this cycle has the greatest impact on dry and thorn forests, primarily because these forests regenerate at a much slower rate than rainforests, but also because their stand volumes are lower and, as a result, the effects of logging are most dramatic.

The main causes of forest degradation are unsustainable logging and extensive rearing techniques such as grazing in forests and burning for pasture renewal.

2.2.4.1 Unsustainable logging

Loggers often fail to comply with the management plan or use logging techniques that promote regeneration. The timber market has been beset by problems following the difficulties encountered by the Forest Administration with the application of the new system for awarding logging permits through competitive bidding. As a result and owing to successive political crises, there has been a sharp increase in illegal logging in recent years, especially in the eastern rain forests that are home to commercially valuable species such as the rosewood. These logging activities are essentially large-scale indiscriminate felling of trees. In addition, a huge spike in the global demand for precious woods triggered an increase in illegal logging since the 2009 sociopolitical crisis. It should nonetheless also be noted that the sustainable and sound exploitation of forest resources is feasible, as evidenced by initiatives such as the COGESFOR project in Didy (see Box 2a-1).

2.2.4.2 Fuel wood consumption

Based on estimated needs, annual timber consumption amounts to 21.73 million m³: 9.03 million m³ of firewood, 8.58 million m³ of charcoal, and 4.13 million m³ of construction wood (Meyers *et al.* 2005). Between 90 percent and 95 percent of household energy needs are met by firewood and charcoal, with a trend toward increased consumption in households and by other users in rural and urban areas, except for fuel wood in urban areas. Households are forced to select the least costly option and not the most energy efficient or user friendly, resulting in increased demand for forest resources over the next decade. Strong demand for charcoal exports could also lead to an increase in resource exploitation. The eastern rain forests are mainly exploited for fuel wood, while the western and southern dry forests are under strain to produce charcoal. As a result, entire sections of forests are being cleared. Demand comes primarily from urban centers (energy for household cooking and to meet needs of some local industries). The underlying drivers determine the scale of the impact on deforestation of the use of forest resources for energy, chief among which are:

²⁴ MEF and USAID JariAla (2006): *Etude sur la consommation et la production en produits forestiers ligneux à Madagascar* [Study on the consumption and production of timber forest products in Madagascar]

- Inefficient carbonization techniques with processing rates below 15 percent;
- Wastage and inefficiency of uneconomical stoves. Despite efforts by PNEBE to reduce consumption by 30 percent, most households use traditional stoves because of their low purchasing power;
- Inordinate costs of alternative energy sources relative to the average income of the Malagasy population.

2.2.4.3 Grazing on forest land

Grazing on forest land contributes to the degradation of forest resources, as livestock graze and trample on seedlings in the passage areas during migratory herding, causing direct damage to the stands and preventing normal regeneration. In addition, livestock may introduce invasive species within the forests, particularly in the western dense dry forests. Livestock farming in forests is also seen as a deterrent to theft: it is more difficult to steal livestock grazing in forests than from hamlets and villages. Extensive livestock farming techniques also include the frequent use of bushfires to regenerate pastureland. While this practice affects forest edges and can even destroy degraded stands, it especially inhibits the natural regeneration of destroyed stands. The adoption of significant fire prevention measures to promote reforestation is routinely required.

2.2.4.4 Uncontrolled expansion of small-scale and illegal mining

Madagascar has abundant mineral resources spread across the entire country. Several deposits have been identified, including industrial ore (e.g., graphite, chromium, quartz, mica, coal, ilmenite, nickel, and cobalt), decorative stones (e.g., marble, celestite, corundum, and ammonite), precious stones (e.g., ruby, sapphire, emerald, and beryl), quarry, gold, and oil and gas. While mining activities officially contributed 4 percent to GDP in 2002, the Government of Madagascar made provisions for a contribution of 30 percent to GDP in 2012, if all existing reserves are brought on stream in a formal and controlled manner.

Informal operators involved in mining are typically small-scale operators that carry out their activities in an uncoordinated manner, and thus contribute to forest degradation. On occasion, an influx of operators occurs in a small area, inevitably leading to wide-scale forest degradation, as was the case in the northern part of the Ankeniheny-Zahamena Corridor in 2012. The dense eastern rain forests are typically the hardest hit and given the very limited intervention resources of the mining and forestry authorities and law enforcement, protected areas are definitely included. The implementation of the Interministerial Committee on Mines and Forests helped resolve or achieve consensus on most conflicts.

2.2.5 Factors contributing to degradation

2.2.5.1 Political, economic, and social degradation

Successive political and economic crises in Madagascar have always had an impact on the forests. After a job loss, households turn to mining, charcoal-making, and illegal (timber or non-timber) logging. The forest industry is lucrative, particularly with regard to the distribution of added value and incomes in the industry (Global Witness, 2009). The barrier to entry is high (logging is an expensive activity). However, because informality is commonplace, many operators can participate. The current rosewood logging trend in the SAVA region is believed to be linked to the 2009 political crisis.

2.2.5.2 Inefficient processing industries

The techniques used to harvest and process construction wood and timber (commonly referred to as COS in French) that include precious woods result in the significant loss of forests. It is estimated that less than 20 percent of untreated timber stands actually arrive on the markets as semi-finished products (e.g., boards and beams), while the remaining 80 percent is lost during the production process (mostly directly in the forests during felling and primary processing). Under these conditions, 5 to 6 times more wood has to be harvested to meet demand for construction wood and timber, which impacts the affected stands.

2.2.5.3 Lack of diversification and professionalization of stakeholders

Despite impressive strides with respect to management transfers in recent years (GELOSE and GCF), the Forest Administration remains the main manager of forest resources. Its management capacity is weak and is hobbled by a lack of resources. Efforts to increase the delegation of forest management to professional private sector operators (private operators, NGOs, associations) and decentralized local and regional authorities should therefore be stepped up. The forest reform planned for 2002 had defined the main sovereign responsibilities of the State and of the other stakeholders (NGOs, operators, associations, etc.) that should perform operational functions.

2.3 Crosscutting causes of deforestation and forest degradation

Deforestation and forest degradation, which are analyzed separately in this R-PP (Section 4 of this component), are also attributable to clear governance shortcomings: the legal framework and technical references for authorized logging, as well as the crackdown on and application of laws pertaining to illegal logging. The propensity for corruption of some officials weakens governance of the sector.

2.4 Analysis of the drivers of deforestation and degradation by biome

An analysis by biome following regional consultation shows that the drivers of deforestation and degradation differ.

Table 2a-1: The drivers of deforestation and degradation by type of forest

	Rain forests	Dry forests	Thorn forests	Mangroves
Ecoregions	Ecoregions in the east and Sambirano	Ecoregions in the south, west, and north	Ecoregions in the south and west	Ecoregions in the west
Regions consulted	Alaotra-Mangoro, Analanjirofo, Amoron'i Mania, SAVA	Atsimo Andrefana, Menabe, Boeny	Atsimo Andrefana, Menabe,	Boeny, Menabe,
Deforestation	Subsistence shifting cultivation Opening up of trails and roads Mining	Collection of firewood Commercial agriculture	Collection of firewood Commercial agriculture	Collection of firewood
Degradation	Illegal logging	Collection of fuel wood Grazing in forests	Collection of fuel wood Grazing in forests	Collection of fuel wood

2.5 Spatial analysis of the drivers of deforestation and degradation

Based on the record of identified threats in the 22 regions, the long list, from a geographical standpoint, of some of the causes, while not exhaustive, appears in Table 2a-2 below. The diagram in Figure 2a-5 summarizes the categories of causes and underlying drivers of deforestation and degradation described in the preceding sections.

Table 2a-2: Analysis of the drivers of deforestation by region

REGIONS	Drivers										
	Defor. 90-00 (%/yr)	Defor. 00-05 (%/yr)	Defor. trends %	Defor.* 05-10 (%/yr)	Defor. trends %	Conv. for agric.	Bush fires	Forest fires	Logging	Coal production	Mining
Alaotra-Mangoro	0.97	0.37	-62%	0.70	+89%	✓	✓		✓	✓	✓
Amoron'i Mania	2.77	1.49	-46%	0.70	-53%		✓		✓		
Analamanga	1.68	1.04	-38%	0.30	-71%		✓		✓		
Analanjirifo	0.59	0.14	-76%	0.10	-29%	✓			✓	✓	✓
Androy	0.62	0.66	+6%	0.10	-85%	✓	✓		✓	✓	✓
Anosy	0.47	1.02	+117%	0.20	-80%	✓	✓			✓	✓
Atsimo-Andrefana	1.19	0.98	-17%	0.80	-18%	✓	✓		✓	✓	
Atsimo-Atsinanana	1.00	0.54	-46%	0.20	-63%	✓	✓			✓	
Atsinanana	1.13	0.56	-50%	0.30	-46%	✓			✓		✓
Betsiboka	0.45	0.29	-36%	0.00	-100%			✓	✓	✓	
Boeny	0.91	0.40	-56%	0.90	+125%			✓	✓	✓	
Bongolava	0.01	0.05	+500%	0.00	-100%						
Diana	0.62	0.52	-16%	0.10	-81%	✓	✓		✓	✓	
Haute Matsiatra	2.22	0.07	-97%	0.20	186%	✓	✓				
Ihorombe	0.27	0.24	-11%	0.30	+25%	✓	✓			✓	✓
Itasy	7.49	6.66	-11%	0.00	-100%						
Melaky	0.22	0.20	-9%	0.60	200%	✓					
Menabe	0.51	0.60	+18%	0.60	-0%	✓			✓		
Sava	0.31	0.12	-61%	0.10	-17%		✓		✓	✓	
Sofia	1.04	0.30	-71%	0.30	-0%	✓	✓	✓	✓	✓	
Vakinankaratra	2.72	4.09	+50%	0.00	-100%						✓
Vatovavy-Fitovinany	1.5	0.24	-84%	0.10	-58%	✓			✓	✓	
Madagascar	0.83	0.53	-36%	0.40	-25%	-	-	-	-	-	-

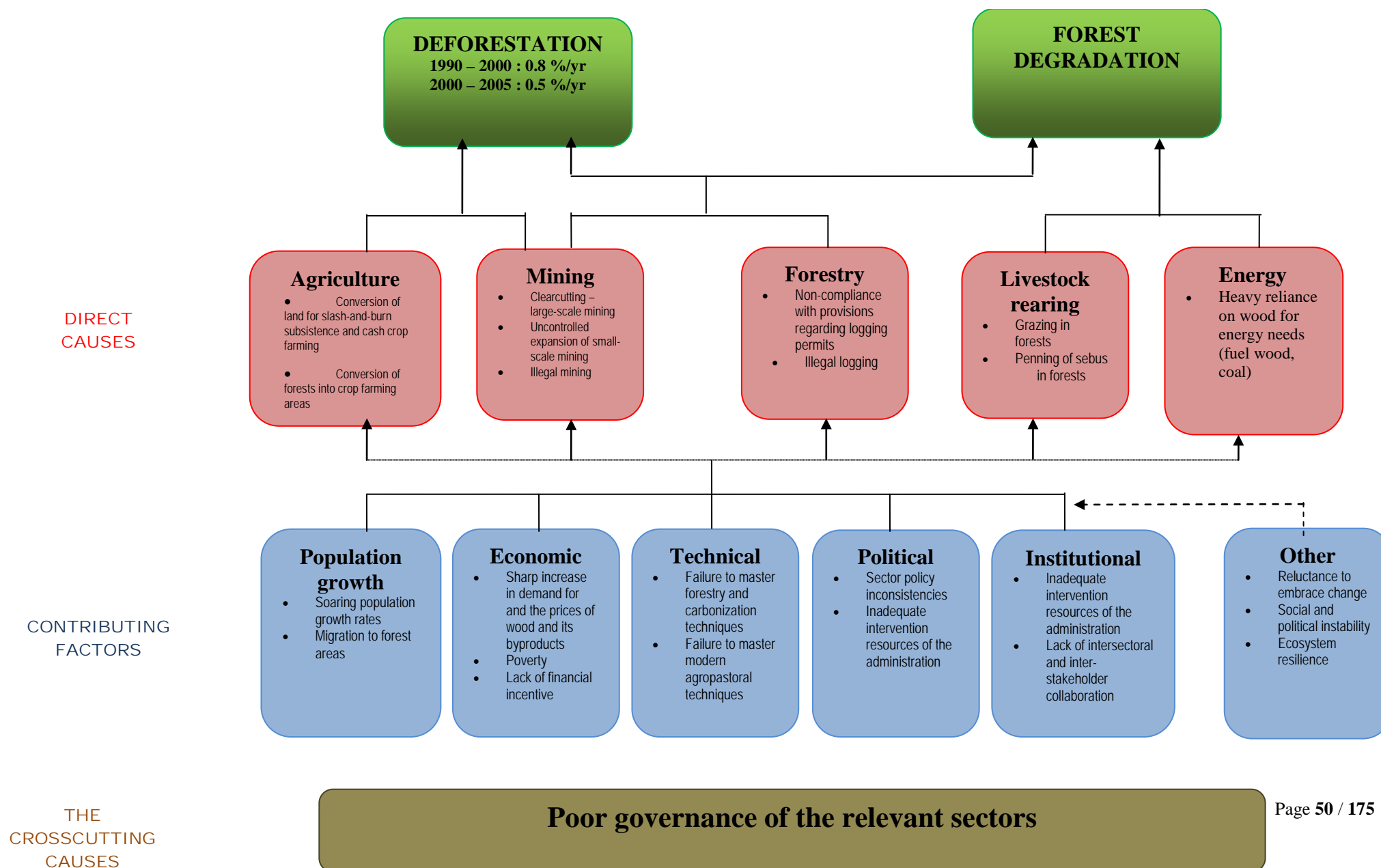
Sources:

For the periods 1990-2000 and 2000-2005: *USAID/JariAla (2009). Étude sur l'évolution de la couverture de forêts naturelles à Madagascar*

For the period 2005-2010: *ONE, MEF, CI, FTM and MNP (2013). Evolution de la couverture des forêts naturelles à Madagascar.*

* It should be noted that the 2013 study stated that the deforestation rates in Madagascar's 22 regions were close to 0.1 percent and not 0.01 percent as indicated in the preceding study.

Figure 2a-5: Summary of the drivers of deforestation and forest degradation in Madagascar



3 SECTOR POLICIES AND MEASURES TO COMBAT DEFORESTATION AND FOREST DEGRADATION

3.1 The Environmental Charter

The first version of the Environmental Charter, which was prepared in 1990, aims to halt the spiral of environmental degradation. Two key aspects of degradation are recognized in this charter: land degradation (soil erosion) and the decline in forest cover. The charter served as a reference for the PNAE and as a channel for mobilizing funds for the environment and biodiversity in general. Current results on the decline in deforestation are attributable to the environmental program, particularly its “protected areas” component. A steering committee is currently updating this charter.

3.2 The environment policy

The environment policy serves as the reference for environmental management in Madagascar. It provides a comprehensive vision, highlighting climate change actions as a national priority, and presents a picture of the environment if no environmental measures are adopted.

3.3 The forest policy

The Law on Forest Legislation, which was promulgated in August 1997, and its main implementing regulations serve as the point of reference for the forest policy. This policy stems from the recognition of significant degradation (in the broadest sense) of forest resources, the decline in public administration authority, the lack of accountability of the stakeholders, and the inadequate development of the forests’ economic potential.

3.3.1 Core principles and broad guidelines

This policy is based on six core principles: (i) consistency with the national development policy; (ii) forest resource conservation based on adequate sustainable management; (iii) minimization of ecological risks; (iv) the contribution of the forest sector to economic development; (v) the accountability of the local stakeholders with respect to forest resource management; and (vi) the adaptation of forest-related actions to the country’s circumstances. The broad guidelines are aimed at halting forest degradation, improving forest resource management, increasing the forest surface area and the potential of forests, and boosting the economic performance of the forest sector. The core principles and broad guidelines are in line with the country’s environment policy, the objective of which is to curb increasing environmental degradation.

3.3.2 Decentralization and participatory resource management

These two elements play a particular role in the current forest policy. The decentralized management of forest-related actions includes deconcentration of the administration, the establishment of goals by region, and the involvement of regional and local sectors in resource management. The nature and scope of this involvement are outlined in the local, participatory forest resource management framework, and entail the transfer to local authorities of all or a part of forest management authority to ensure greater accountability with respect to management of these forests. This transfer of management responsibilities is a key component of the forest strategy within a broader approach to local resource management initiated under the PNAE. Efforts to combat deforestation and forest degradation are included in the broad guidelines of the current forest policy. Participatory forest resource management is a legal means of achieving this goal.

Madagascar has, to date, made close to 1,000 transfers of responsibility for forest resource management, covering more than one million hectares of native and artificial forests. Most of these management transfers have already been evaluated by the Forest Administration and transfer contracts have been extended for a period of 10 years, which in principle demonstrates at a minimum a satisfactory quality of forest management.

Box 2a-2: *The delegation of forest management in Madagascar*

The origin of the delegation of forest resource management can be traced back to Law 96-025 (Secure Local Management or GELOSE) and Forest Law 97-017.

Origin and objectives: These two core legislative provisions in Madagascar's forest and environment policies date back more than 15 years. While they are no longer in the "embryonic" stage, they have not yet been fully developed; they could be considered to be in the "adolescent" stage! They were devised at the start of the PAE as some sort of return to Madagascar's secular renewable natural resource management methods (see the Code of 305 Articles promulgated by Queen Ranavalona II on March 29, 1881). The colonial and post-colonial periods appear therefore to be transitional, and repressive and exclusive management approaches to be temporary. The GELOSE law reflects strong continuity in the local management approach that dates back to the time of the monarchy and the findings of the 1995 Antsirabé workshop. The issue is one of recapturing ownership by the local, grassroots communities of local management of resources, including forest resources. This transfer of management responsibilities from the State to these communities cannot be realized over a period of a few years. Only a sustained effort, maintaining a steady course, will help, following ongoing evaluation of results, ensure the truly successful reintroduction of local resource management.

Current situation: In 2013, a total of 1,210 management transfer contracts were signed in the 22 regions, of which 288 were contract renewals. Of this total, 51 percent were drawn up in accordance with Decree 2001-122 (GCF), 32 percent in accordance with Law 96-025 (GELOSE), and 17 percent of unknown origin! These two pieces of legislation have similar objectives but differ notably with respect to the terms and conditions governing the transfer of forest resource management. This difference should raise concerns about the legal consistency between intersectoral legislative provisions under Law 96-025 and sectoral legislative provisions, in particular, those pertaining to forests, under Special Law 97-017. Under this GCF decree, the services of an environmental ombudsman and the involvement of the rural commune were no longer mandatory. Relative land tenure security, one of the key demands made by the rural populations, was also temporarily set aside. More than 15 years after the application of these laws, it should be noted, at the end of this documentation exercise, that spatialization of this information facilitated an analysis of the transferred regions: 41 percent of the communes making up the 13 regions covered in the study are affected by the transfer of renewable natural resource management, 21 percent of the contracts signed are fully or partially integrated into the new protected areas (NAP) and 49 percent have been established on the periphery (up to 10 kilometers) of the protected areas.

Impact assessment: The impact assessment of the management transfer contracts remains a methodological problem and complex practice. Participatory monitoring is an indispensable tool for the stakeholders involved. Manager communities receive support with a simple monitoring methodology that allows them to (i) conduct self-assessments and then act accordingly to enhance their capacity for good governance of the resources; and (ii) meet the expectations of the State and donors with respect to information on the impact of the transfer of management. Under the COGESFOR project implemented by CIRAD, FOFIFA, and the PARTAGE association, in close collaboration with the DGF/DVRN, the principles and criteria identified for monitoring and evaluation of the transfer of renewable natural resource management and of its impact are based on several principles, including (i) ecological monitoring, in the narrow sense; (ii) socioeconomic monitoring that measures changes in wealth created by the contracts and the transfer of resource management, in particular with respect to improvements; and (iii) legal and institutional monitoring, including social acceptance of dinas, the guarantee of land rights by the commune and State and importance and nature of the conflicts. This SITG is fully operational and the forest administration has all the tools for this system.

Source: Lohanivo A., 2014. Evaluation quantitative de la mise en œuvre de la loi GELOSE : recensement des TG dans 22 régions de Madagascar. CIRAD, ESSA Agromanagement

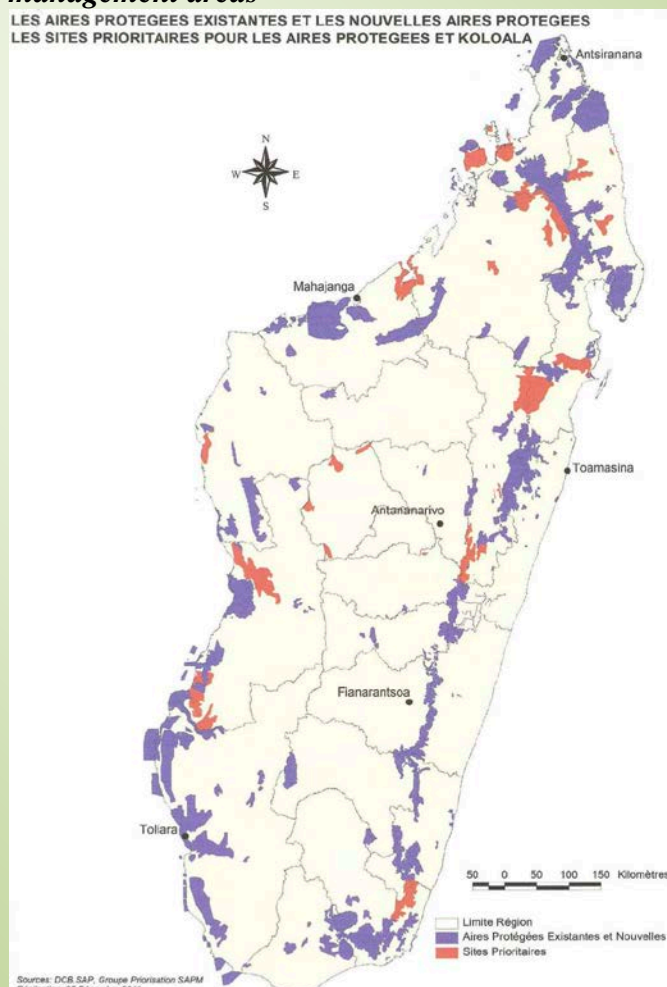
3.4 Protected Areas Legislation

This involves a law on the management of protected areas, which are to a large extent land-based, since the biodiversity that led to their creation is found mainly in the primary forests. One feature of the legislation is that it calls for specific sanctions for encroachment in protected areas and for harming hard core resources (cutting trees or injuring animals). Implementation of the Durban Vision (which consists of tripling the total amount of protected area in Madagascar) has led the country to revise the legislation so as to incorporate methods of governance including, among others, the adjacent populations and calling for a partnership with private entities, as well as new categories of protected areas where conservation can successfully be linked to sustainable development. This law, amended in 2008, accordingly places special importance on man, biodiversity, nature in general, aesthetics, morphology, and culture, all for the sake of multiform preservation in the general interest. Parliament voted for the new legislation and the High Constitutional Court issued an assenting opinion, but it could not be ratified in early 2009, when the political crisis began, and it will be resubmitted at the next parliamentary session and at all required levels. Thereafter, the preparation of its implementing decree is urgently recommended.

3.5 Rural Development Programs

Even though Agriculture, Livestock, and Fisheries (*Agriculture, Elevage et Pêche: AEP*) accounts for 86 percent of total employment in rural areas and 54 percent in urban areas, this sector's macroeconomic contribution has consistently remained insufficient. Over 30 years, the primary sector, which includes agriculture, livestock, fisheries, and forestry, has seen its contribution to GDP stagnate at around 25 percent, and its growth has been very modest, with an average annual rate of slightly above 1.5 percent. And while successive efforts undertaken between 2002 and 2009 resulted

Figure 2a-6: Prioritization of the location of Protected Areas and sustainable forest management areas *



* Map taken from Interministerial Order No. 52005/2010 of December 20, 2010

in a few modest indications of recovery, the political events of 2009 have since undermined them. In 2010 and 2011 the primary sector showed negative signs of growth (-3.4 percent and -0.1 percent respectively, versus 8.5 percent in 2009). As such, the AEP sector does not manage to satisfy the food requirements of a steadily growing population, nor to boost income levels and stem poverty in rural areas. The country's poverty rate grew by nine percentage points between 2005 and 2010, thus touching 77 percent of households, the highest rate in Africa according to the World Development Indicators (World Bank, 2011). Moreover, this sector is unable to help absorb the 300,000 young people newly arriving on the job market each year.

The Rural Development Action Plan (PADR), adopted in 1999, provides a framework for designing, formulating, and guiding rural development strategies and programs in Madagascar. The objectives embodied in this framework are to: i) ensure food security; ii) help improve economic growth; iii) reduce poverty and improve living conditions in rural areas; iv) promote the sustainable management of natural resources; and v) promote training and information in order to improve production in rural areas. The PADR takes up the sectoral analyses performed in the forest and environment sectors and considers the challenges specific to these fields to be part of the challenge for rural development as a whole.

Following adoption of the Poverty Reduction Strategy Paper (PRSP) of 2003 and the presidential vision "Madagascar, Naturellement" ("Madagascar, Naturally") of 2004, the PADR evolved into the PNDR (National Rural Development Program) starting in 2005.

The PNDR shares the development objectives of these strategy papers and proposes to achieve them by embracing five major goals: i) Make the sector's institutional framework more effective and more efficient so as to bring administrative functions closer to those affected, while providing quality service; ii) Facilitate access to capital and inputs so as to boost growth in a lasting and sustainable way; iii) Improve food security and expand agricultural output and processing so that any Malagasy can enjoy access at all times to a balanced and healthy diet appropriate to his or her purchasing power; iv) Optimize natural resources and protect natural production factors by promoting implementation of the necessary conditions for sustainable development; and v) Develop markets and organize subsectors by placing a priority on capacity building and the vigor of the local economic fabric, along with the development of diversification of output through the intensification of extra-local trade and export.

Later, beginning in 2008, efforts were initiated to develop the Agriculture, Livestock, and Fisheries Sector Policy (*Politique Sectorielle de l'Agriculture, de l'Elevage et de la Pêche*: PSAEP), with an eye to modernizing the agricultural sector and, at the same time, sustainably improve the performance of all three sectors. The PSAEP basically aims for a substantial reduction of poverty and a sustainable and significant increase in economic growth, driven by small producers and the private sector. To achieve these results, implementation of the PSAEP needs to be capable of reaching the following five major specific objectives: i) Expand and ensure the sustainability of resource production and utilization spaces/areas; ii) Increase productivity on a sustainable basis and promote competitive production systems; iii) Contribute to food and nutritional security and reduce risks for vulnerable populations; iv) Develop access to national markets and promote a repositioning of Malagasy exports; and v) Improve governance of the institutions involved and build stakeholder capacities.

The PSAEP will be implemented over a 12-year period from 2014 to 2025 and will include three phases:

- Post-crisis recovery phase, 2014-2015: Actions to be taken will mainly revolve around raising the awareness of all stakeholders, launching reforms intended to support the program, and implementing priority actions planned for sector recovery in the National Programs for Agricultural Investment (PNIA's).
- Intermediate phase, 2016-2020: This phase will permit implementation of the investments planned in the PNIA's.

- Growth phase, 2020-2025: This phase calls for adjustment of the program and continuation of the actions listed in the PNIA to maintain agricultural economic growth.

Finally, the Ministries involved (Agriculture, Livestock, and Fishery Resources), with the support of the Ministry of Environment and Forests, have developed a national strategy for dealing with climate change in the Agriculture-Livestock-Fisheries sector over the period 2012-2025. This strategy revolves around the following five strategic goals: i) Agriculture-Livestock-Fisheries adapts to climate change; ii) Mitigating actions generate socioeconomic benefits for Agriculture-Livestock-Fisheries; iii) Agriculture-Livestock-Fisheries incorporates concerns related to climate change in all its actions; iv) Agriculture-Livestock-Fisheries has sustainable financial mechanisms available for its adaptive and mitigating actions; and v) Agriculture-Livestock-Fisheries promotes applied research and technical innovations and makes use of the research results in decision-making tools and effective development for dealing with climate change.

3.6 Other REDD+ - related Policies

3.6.1 Land Tenure Policy

Madagascar has initiated a vast program called the National Land Tenure Program that is intended to resolve land tenure problems. The objective of this new land tenure policy is to promote land management conducive to: private investment; agricultural production; the management, protection, and renewal of natural resources; the development of decentralized administrations by making land and fiscal management tools available to them; and the development of greater social cohesion at the local and municipal levels.

The Land Tenure Policy rests on three strategic goals:

- The restructuring, modernization, and computerization of land tenure and topography commissions – which means improving the quality of public service provided to users (holders of land titles and purchasers of public lands) by revising, updating, and digitizing land tenure and topographical documents.
- Decentralization of land management – thus providing Municipalities with a local legal and institutional system (municipal or inter-municipal land tenure office) empowered to issue or change a document guaranteeing land security (land tenure certificate). The existence of cartography (PLOF²⁵) on the land statutes and the formation of Local Recognition Commissions are among the requirements for opening a land tenure office.
- Revision of land tenure and public lands regulations – for the purpose of adapting the laws to the new public lands and land tenure system, based on the principle of decentralization, and updating old legal statutes that no longer bear any relation to the land tenure and management realities of today, as well as providing legal support for the use of new information technologies.

Land management as inherited from the colonial era, as opposed to customary law and local practices, has created a sense of insecurity on the part of rural residents, keeping them from investing in the sustainable development of their lands. Awareness of the problem led to a process of land tenure reform, launched by the adoption of the land tenure policy letter of 2005 and implementation of a number of programs and entities (national land tenure program; land tenure observatory; modernization of the land registry and implementation of a decentralized land management system including the creation of municipal land tenure offices empowered to issue land tenure certificates and record them on the local land tenure plans or PLOFs; Inter-Municipal Land Resource and Information Centers or CRIFs). The reform provides remarkable innovations that depart from the principle of presumption of state ownership in effect for more than 100 years, in particular with an assurance of land tenure strengthened by legal recognition in the form of land tenure certificates, “customary

²⁵ PLOF: Local Land Tenure Plan

property rights,” in other words a presumption of customary property. Indeed, Article 21 of Law 2005-019 of October 17, 2005 introduces the concept of land held by private persons by virtue of an “untitled property” right that can be established and recognized by an appropriate procedure. This is of special relevance in the case of people’s long-term occupancy of lands not yet registered and presumed to belong to the state under the prior legislation.

However, the reform has been mixed since 154 of the planned 876 PLOFs have been completed, 406 land tenure offices have been created out of 1,653 municipalities (1/4), and some 6,000 certificates had been issued out of 120,000 applications. Mainly, the reform has provided a way to settle land tenure conflicts apart from forest resources. Also, following the reversal of the presumption of state property, the status of developed or improved lands inside the forest areas is vague. Except for forest reserves and protected areas, where the rules and boundaries are more or less well known, one might reasonably wonder whether state property rights still prevail when areas within these forests are occupied. The same holds true in regard to the nature of rights stemming from earlier occupancy and possession within areas declared to be new protected areas, or protection areas governed by international statutes (Ramsar Convention). In sum, other types of rights will need to be taken into account in the process of improving the National Land Tenure Program. In addition, there are several points of confusion and questions concerning the definition of the land tenure certificate. It is described as an “administrative act attesting to the existence of personal and exclusive rights of occupancy, use, and development, over a parcel of land, established pursuant to a specific, legally defined procedure. The certificate recognizes a property right opposable to third parties barring proof to the contrary” (Article 3 of Law 2005-019). The concept of development (*mise en valeur*) poses a problem: at what moment can one actually start to say that land is developed? This matter preoccupies the agents of the state lands directorate, because the directorate defines the field of intervention of the land tenure office and thus, consequently, that of the land tenure services. The same holds true for conservation actors, and particularly those involved in REDD, insofar as recognition of ownership based on the customs and practices of the moment and the place (Article 2 of Law 2006-031) presents a risk of perverted incentives. Indeed, “tavy” would be an easy and socially accepted way to secure occupancy of forestland converted to farmland.

While forest policy aims to boost forest potential, it does not take sufficiently into account the new situation created by the land tenure reform and thus provides an example of weak horizontal governance. With respect to national forestlands, one of the main problems lies in the fact that the forests generally lack deeds, including the national parks. This results in encroachment situations between forest reserves and private deeds or land tenure certificates. In addition, there are many farm/forest land tenure conflicts, especially on the east coast. The Water and Forests Service, represented in the various regions, is not systematically invited to participate when PLOFs are being developed. Formerly, when the Ministry was establishing protected areas, the land tenure services were not always asked to participate either, even though the Directorate of Biodiversity Conservation and the Protected Areas System participates in the COS. However, there has been a gradual improvement in collaboration between the latter two services, ever since promulgation of Interministerial Order No. 52005 of December 20, 2010 establishing overall temporary protection of the sites of new protected areas.

It is therefore of critical importance to link land tenure policy to other sectoral policies, mainly in the areas of agriculture, forestry, and mining. In addition, a number of laws and legal statutes need to be reviewed and updated because they are proving to be sources of confusion and even conflict.

3.6.2 National Land Planning Policy (PNAT)

The PNAT was developed in 2006, incorporating into its strategic goals the sustainable management of natural resources, the ultimate goal of which is to ensure effective national land management. The main objective is to streamline and improve the management and development of these natural resources by incorporating an environmental dimension in all land planning actions, in all sectors, and at all levels. To that end, the present policy advocates effective enforcement of the regulations in effect concerning management of the environment.

The purpose here is to manage and tap natural resources in a rational way, while providing a quality physical and living environment in areas of human concentration (large cities, secondary cities, towns, villages). In the physical assessment of the existing situation and also in the consideration of future commitments, the current plan takes into account both forests (including reforestation schemes) and protected areas (including future protected areas under the Durban Vision). Thus, without any mention of REDD+ as such in these policies, the reduction of deforestation and forest degradation constitutes an integral part of the main policies in Madagascar.

In connection with implementation of the National Land Planning Policy (PNAT), and in order to develop a system of reference for spatializing and ensuring consistency among interventions at the sectoral and regional levels, efforts were initiated in 2008 to develop the National Land Use Plan (SNAT). The SNAT is a tool that should guarantee synergy and consistency between sectoral interventions in the country. To that end, the inclusion and participation of all sectors, from the outset, will guarantee ownership and ultimately implementation. In August 2012, a workshop was held to officially kick off the process of finalizing the SNAT, and all sectors were invited to attend, with the environment represented by MEF, AVG, ONE, MNP, and WWF.

3.7 Coastal and Maritime Areas Sustainable Development Policy

The sustainable development policy for coastal areas stems from the socioeconomic and ecological importance of these coastal areas, long considered a marginalized environment even though they offer tremendous opportunities for development. The policy is based on the advantages and potentialities of the Malagasy coast, the economic context, the legal and institutional framework, the environmental problems of the coastal areas, the necessity of sustainable development, and the implementation of Integrated Management of Coastal Areas (GIZC). It was developed after broad consultations at the regional and national levels. Decree No. 2010/137 of March 23, 2010, laying out the regulations for Integrated Management of Coastal and Maritime Areas in Madagascar, was promulgated for this purpose.

This policy aims to promote the sustainable development of coastal and maritime areas by implementing integrated management. As such, it involves a participatory planning process and the inclusion of all fields of activity, all sectors, and all relevant administrative levels. It is based on the numerous local and regional experiments carried out in the country, while also taking into account other experiments conducted around the world.

Since implementation of PE II, a working group has been formed, called the Environment and Fisheries Commission, with the participation of all stakeholders involved in these two areas. This commission is meant to be a platform for exchanges and consultations, plus mutual discussions on managing potential conflicts, in order to uphold the common interest in regard to sustainable development. In recent years, with the formation of the Emergency Prevention and Management Unit (CPGU), placed directly under the Office of the Prime Minister, and taking into account the ecological and economic stakes of coastal areas, GIZC falls directly under this entity. Finally, at the present time, the creation of maritime protected areas is also an area of discussion for GIZC.

Implementation of this policy is of fundamental importance for the sustainable management of mangroves, which constitute a substantial reservoir of carbon and biodiversity, mainly on the country's west coast (260,000 ha).

3.8 Mining Legislation

The new mining code that came out in 2005 more fully incorporates the environmental dimension so as to promote sustainable management of natural resources and the protection of biodiversity in Madagascar in connection with the creation of new protected areas. All applications for mining operations will be subject to a study of their environmental impact and environmental commitment plans, laying out the environmental commitments of the permit holder. The Mining-Forests Interministerial Committee was created to improve enforcement of the regulations in effect, both at the national and regional levels (see Chapter B-2.1). Mining-Forests Interministerial Order No. 52005 of December 20, 2010 (amending Interministerial Order No. 18633 of October 17, 2008, establishing overall temporary protection of the sites covered by Ministerial Order No. 17914 of

October 18, 2006, and lifting the freeze on the issuance of mining and forestry permits for certain sites) is now in a renewal phase with an eye to continuing the protection of the new protected areas and certain forestry production sites.

4 GOVERNANCE

4.1 Introduction

Forestry in Madagascar has a long history, which began to draw notice in the early 19th century with King Andrianampoinimerina (1787-1810) banning the destruction of forests, considered property of the King. Forests represented final recourse for the survival of the most underprivileged populations. Queen Ranaivalona II (1868-1883) promulgated the Code of 305 Articles (published on March 29, 1881), which includes a number of articles (101-106) pertaining to access to – and use of – forest products and laying out very harsh penalties for those who destroy forests.

The colonial era (1896-1960) led to fuller knowledge of the resources through, among other factors, the inventory efforts made by naturalists and scientists of the times. These efforts by scientists contributed to the creation of the first Forest Reserves based on the principle of conservation. Twelve Integral Natural Reserves with regulations permitting no logging or extraction and a number of reserved forests were created by legislation prior to independence. The colonial period was characterized by a structured forest service, all the way to the decentralized level with Forest Inspectorates, Forest Ranges, and Forest Triages possessing the status of Criminal Investigation Officers allowing them to investigate crimes related to forestry operations. It was during this period that profit-driven forestry operations really got underway in unprotected areas. Lastly, to support the railroad program, this period was also marked by large-scale reforestation with eucalyptus, especially between Antananarivo and the Moramanga and Alaotra area along the east coast railroad line.

4.2 Definition of Forest Governance

The revision of the Environmental Charter adopted the following definition: *“Governance is the exercise of political, economic, or administrative authority in managing the affairs of a country at all levels. Governance includes the mechanisms, processes, and institutions through which citizens and groups put their interests into play, resolve their differences, and exercise their legal rights and obligations.”*

Consistent with the above, the current R-PP considers forest governance as being all the rules, means of application, and interactive processes influencing the activities of actors and sectors at the various levels of forest management.

In any event, the seven following principles should be retained:

1. **Obligation to account** for actions undertaken on the basis of decisions and agreed objectives
2. **Transparency** in decision-making
3. **Efficiency and effectiveness** in managing administrative actions and services rendered to stakeholders
4. **Receptiveness and attention** to actors’ critiques and expectations
5. **Anticipation** of efforts to seek solutions to the various problems and constraints, based on available data and observed trends
6. **Efforts to fight all forms of corruption**
7. **Strict enforcement of the law**, regulations, and codes

4.3 Status of Forest Governance

Forest governance has slackened to some extent in recent times. The main causes are generally linked to the sociopolitical context of the last two years, marked by Administration instability. This situation particularly affects the logging of precious woods. The situation as of January 5, 2010, as compiled by ONESF, shows that, in the period since Order No. 38244/2009 authorizing rosewood exports was issued in Madagascar, the number of authorized operators has risen

substantially, from 31 to 49 operators. Initially, the total number of containers authorized for export was 758, but by February 2010 this figure more than doubled, with 1,588 containers of rosewood counted, for a total estimated cost of US \$220 million.

The November 2009 report prepared for PGM/TGZ by C3ED and Ndriana Rahaga, concerning the economic impact of the orders authorizing exports of precious woods issued in Madagascar in 2009, shows that, in five years, the country has lost US \$40,939,202, representing five years of loss of biodiversity and five years of loss of hydrological protection for watersheds, plus two years of loss for ecotourism, i.e. a net loss of US \$19,283,436 after deducting the share of value captured by the Government. Under the same hypotheses, in 10 years the loss would be US \$43,700,246. This situation coincides with the end of the National Environmental Action Plan (PNAE), for which there is no follow-up in sight. The SWAp process, expected to replace the PNAE, is on “stand by” pending transition government recognition.

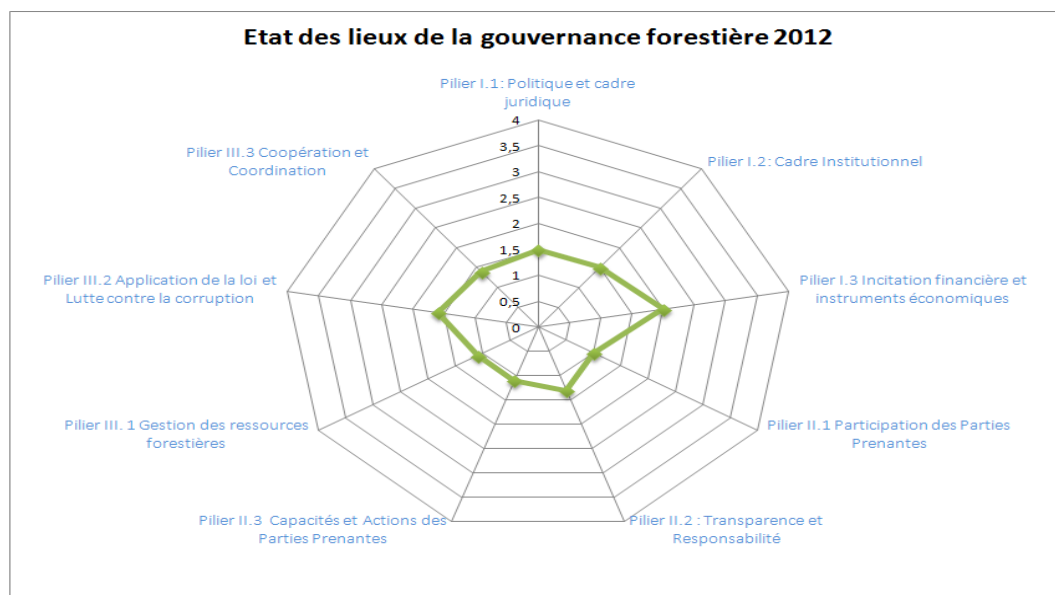
Following a workshop on baseline studies conducted under the PROFOR method (World Bank and FAO) with representatives from all stakeholders (Forest Administration, other government sectors, private sector, civil society, and decentralized administrations), which was organized by Alliance Voahary Gasy, it turned out that the various aspects of Malagasy forest governance can be summarized with a straightforward “yes, but.” Indeed, there are positive elements everywhere in regard to good governance, capable of ensuring the sustainability of forest resources while also permitting their sustainable and effective development. In addition, there are structures in place for defending Malagasy society against illegal actors who plunder and destroy these resources.

However, the workshop participants cited a number of problems related to sector governance, of which the following are the most important: (i) The policies and strategies, as well as the statutes and regulations pertaining to forest resource management, are sometimes contradictory, and generally little known by most stakeholders and therefore poorly enforced; (ii) The staffing, financial, and technical resources of the Forest Administration are inadequate for it to fulfill its mandate effectively; (iii) The interests of different stakeholders are often in competition and poorly managed; (iv) The policy places too much weight on conservation and not enough on urgent market needs, with the result that management is slipping from the Administration’s hands and chaos is taking hold; and (v) Forest management is perceived and practiced by the Administration as an exclusive privilege, with no meaningful participation from other stakeholders.

The analytic framework comprises **three pillars** upon which all forest governance rests:

- Policy, legal, institutional, and regulatory frameworks
- Planning and decision-making processes
- Implementation, enforcement, and observance of regulations

The figure below depicts the three pillars and their nine subcomponents, based on stakeholder perceptions in 2012:



Source: AVG, November 2012

As immediate recommendations, the following proposals were made:

- Promote, in discussions with Government and other stakeholders, the formation of a Joint Forest Governance Commission;
- Prepare a detailed action program for dealing with the current double transition (political and cultural);
- Take prompt action to involve decentralized and deconcentrated actors in the process.

All these efforts have been undertaken to improve forest management and governance, and they deserve to be continued. In this regard, REDD+ represents a response aimed at building on the progress already made.

4.4 Outlook

Pursuant to the recommendations of the 2012 workshop, regional conferences culminating in the initiation of joint forest governance commissions were held in three preselected regions (Haute-Matsiatra, Boeny, and Atsimo-Andrefana) in November 2013; the commissions' main tasks are to assess, plan, and implement forest governance actions in the regions. This regional cooperation led to a national multi-sectoral and multi-actor conference on forest governance for the development of a proposal for a shared long-term vision (2030) of the forest sector:

“The forest sector contributes more to the development of Madagascar through sustainable development of the Island’s forest capital, thereby improving ecological services and satisfying the Malagasy people’s need for forest products, by instituting healthy and balanced governance.

“Madagascar will succeed by establishing a sustained policy of accountability and capacity-building for the sector’s various actors, by creating better linkages with other sectors, by promoting the active involvement of the private sector, communities, Fokonolona and COBA, and civil society, and by making knowledge available about our forests’ present and future potential.”

To achieve this vision, stakeholders agreed to the following actions in a joint statement:

- Establish a functional policy, legal, and institutional framework in the service of good governance;
- Promote accountability of actors at all different levels for effective involvement in the planning and decision-making processes;
- Harmonize planning actions in line with the shared vision laid out in the forest policy and establish operational systems for monitoring the activities;
- Implement a program of reform within the Forest Administration;
- Make standard tools and the necessary resources available to actors involved in forest governance;
- Restore and increase forest capital through tax reform for all actors.

4.5 Institutional Framework

The forest sector has endured many structural changes. These successive changes have certainly had an impact on management of the supervisory ministry's assets, human resources, functions, and funding, particularly in the forest sector.

4.5.1 Ministry of Environment, Ecology, and Forests (MEEF)

Based on the principles and provisions of the Environmental Charter and international conventions related to environmental protection that Madagascar has ratified, the Ministry of Environment, Ecology, and Forests (MEEF) is charged with designing, coordinating, implementing, and monitoring and evaluating government policy in the area of the environment and forest resources. MEEF's stated objective is to "safeguard our environment and natural resources for the welfare of the Malagasy people and the country's sustainable development."

MEEF exercises supervisory authority over a number of connected organizations that are governed by specific statutes and that provide support for accomplishing its mission in managing the environment and forest resources: (i) National Office for the Environment (ONE); (ii) Madagascar National Parks (MNP); (iii) National Association for Environmental Action (ANAE); (iv) FANALAMANGA corporation; (v) National Forest Seeds Silo (SNGF); (vi) National Center for Environmental and Forestry Training, Studies, and Research (CNFEREF); (vii) Unit to Combat the Event of Maritime Pollution from Hydrocarbons (OLEP); (viii) National Observatory for the Environment and the Forest Sector (ONESF); (ix) Environmental Management Support Service (SAGE).

4.5.2 Other Sectors or Intersectoral Interplay

This means setting up an environmental unit within the various ministries to build consistency among the visions of all sectors in regard to the use and consumption of space, which proves indispensable, especially by incorporating an environmental dimension in plans, schemes, and guidelines for developing specific areas.

4.6 Management Instruments

Three aspects of forest governance are analyzed below: implementation of legal instruments, enforcement of laws, and management of forest data.

4.6.1 Legal Instruments

The main statutes governing the management of forest resources in Madagascar are:

- Forestry Law No. 97-017 of August 8, 1997, with Implementing Decree No. 98-781 of September 16, 1998, the implementing orders of Decree No. 98-782 concerning the logging system
- Decree on reforestation to “increase the amount of forestland” (No. 2000/383 of June 7, 2000)
- Decree No. 2001-122 setting the conditions for implementing contract management of state forests (GCF or management transfer decree)
- Law No. 96-025 on Secure Local Management (GELOSE) along with its implementing decrees
- Law No. 2001-005 establishing the Protected Areas Management Code (COAP) and its implementing statutes

4.6.2 Law Enforcement

The laws related to forest resource management generally show deficiencies in terms of enforcement. This is largely due to the Forest Administration’s weak capacity to enforce statutes governing the sector for lack of both material and human resources, not to mention the gaps in existing statutes, especially in regard to sanctions for crimes involving forest resources.

4.6.3 Forest Data Management

The institution responsible for managing forest data is the ministry in charge of forests. For this purpose, it has a unit specialized in this area and uses advanced technologies for processing geographic information on forests. In general, the data on forest cover and deforestation are reliable, while other information on forest use, based on a tracking system and fed with field data, is less so. ONE also generates environmental information and makes it available to the public. It produces information directly from satellite imagery and reproduces information from other departments of the Ministry, as in the case of other sectoral information.

5 ANALYSIS OF EARLIER FOREST SECTOR EFFORTS

The strategy for protecting forests in Madagascar was long limited to setting up the national private arrangement, accompanied by the use of repressive tools to regulate the use of forest resources. In the late 1980s, Madagascar made the commitment to protect its environment through the 15-year PNAE, divided into three phases: the first (PE1) for implementing the institutional framework, the second (PE2) for carrying out activities in the field, and the last (PE3) for developing the environmental reflex. The measures taken since then and the institutional, financial, and technical frameworks set in place have constituted a leap forward in this commitment, with support from partners. The objective was to combat impoverishment and seek a better regional balance in order to protect and promote forest resources for the sake of sustainable development.

Table 2a-3 below summarizes the results of steps taken to remedy the problems of deforestation and forest degradation. The details are given in the table in Annex 2a-4. Other sectors have taken initiatives that have had effects on deforestation and forest degradation, notably the energy sector, mining, transportation, agriculture, and land use planning. Based on the analysis of types of management (Table 10) and the results of regional consultations, the main governance issues that need to be examined in greater detail during the preparation period are the following:

- Imbalance between the Forest Administration’s responsibilities and its resources
- Ineffective deconcentration and decentralization of responsibilities and resources, including for local communities and administrations
- Law enforcement and intersectoral synergy
- Information and data on forest resources either unreliable or unavailable

Table 2a-3: Lessons learned from different approaches to the management of forest resources

Actions taken	Lessons learned
FOREST SECTOR	
<p>Creation of Protected Areas:</p> <p>Some protected areas in Madagascar (integral natural reserves) were established in 1920, and others after 1960. It was in connection with implementation of the Environmental Action Plan, however, that significant changes occurred in the management of protected areas. During its first phase (1991-1996), an approach was developed to integrate conservation of protected areas and development of neighboring areas.</p>	<p>For forest conservation, the results are palpable, but development of the surrounding areas has been slower (and more costly), and the effectiveness of the alternatives is unclear. Nevertheless, it can be argued that ecotourism has been a success, and the formula for redistributing the proceeds (50 percent of proceeds for the local population in the form of community projects) has been beneficial to the population. The target areas had become small hubs of development, which accentuated migration. In addition to actual conservation activities, in the beginning the projects financed social development activities as well (referred to as "entryways") and they later targeted activities that can provide alternatives to the pressures.</p>
<p>Eco-regional approach to ecosystem conservation:</p> <p>Another approach was developed during the second phase of the environmental program. This approach targeted the forest corridors linking protected areas. The amount of land involved was substantial.</p>	<p>The idea is to no longer directly finance income-generating activities or the alternatives as in the case of the PCDIs, but rather to develop sectoral approaches and facilitate access to markets. Even though the activities are more diffuse, a reduction of encroachment in the two main forest corridors has been observed. The approach has the merit of preparing the country for greater commitments in the area of conservation (Durban Vision of 2003) and it has paved the way for other forms of governance for protected areas.</p>
<p>Transfer of management:</p> <p>This involves transferring the management of small forestry schemes (under 300 ha on average) to grassroots communities organized for this purpose (90 households on average). The initial formula, GELOSE, includes land tenure negotiations based on recognition of community rights to village lands. The community retains its user rights and regulates access to resources. A streamlined form of transfer, community management of forests (Contract Management of Forests), was later developed.</p>	<p>The plan is to accompany the transfer of management with relative land security, but this formula has been less effective than expected (due to an overburdened land tenure service). GELOSE concerns transfers of management for all types of natural resources, and Contract Management of Forests, developed without land tenure negotiations, solely concerns forest resources, without land tenure security and without a mediator, and has not garnered decentralized community involvement. Moreover, the statutes regulating the transfer of management are not sufficiently explicit and constitute a gateway to logging abuses. A total of 500,000 ha of forests were placed under a transfer of management in 2004 (a total of 1,000,000 ha are expected to be transferred by the end of PE3). Expedited establishment of TGRNs without any real support or capacity-building for grassroots communities disrupted the work of the forest services, laid out in the Forest Administration reform. The assessment of management transfers (Resolve, 2004) highlighted the decline in encroachment and the community's greater accountability in regard to resources. It also mentioned the displacement of pressures toward other areas (an out-migration phenomenon). At present, contract monitoring and renewal remain problematic due to the absence of evaluation standards. The entire monitoring system still needs to be developed (responsibility, financing). Initially planned as a decentralization of resource management, the transfer of management is ultimately a form of deconcentration (Resolve, 2004) of forest service responsibilities (caretaking and control).</p>

Actions taken	Lessons learned
<i>Individual and industrial reforestation:</i>	Individual reforestation differs from other forms of reforestation because of its land security approach and its principle whereby the individual, not the community, may become interested in investing in reforestation. Industrial pine reforestation schemes have been carried out in the northeastern (Fanalamanga) and south-central regions (Haute Matsiatra).
<i>Community reforestation:</i>	This formula is still being used, mainly by the Forest Administration and certain funding organizations (Tany Meva, etc.). The idea is to support a community (technically and financially) in planting trees on community lands. While the planting itself has been generally successful, there is no longer any support for maintenance of the plantings, which is poorly performed by the communities. The issue of forest ownership (and land ownership for the reforested area) remains unresolved.
<i>Sector management reform:</i>	The main objective was to refocus the government's role and implement delegations of management to regional actors, and to develop tools for the sustainable management of forests, such as (i) creation of the KoloAla sites, (ii) timber products tracking system, (iii) forest zoning, which was supposed to contribute to a concerted assignment of land throughout the country, and (iv) rehabilitation of the forestry permit management systems. The divergent interests of decision-makers, the excessive political interference in government, and the administrative staff's lack of motivation all impeded implementation of the reform.
<i>"Conservation pacts"</i> Conservation pacts are long-term interventions that provide sustainable solutions for the benefit of conservation and local populations and that also lead to stronger social structures and get people involved so they will become "caretakers" of key natural resources, in exchange for benefits that offset their losses. Conservation actions are paid for either through direct payments, particularly for surveillance patrols, or through other in-kind benefits as defined by the communities themselves.	The experience with the 13 "conservation pacts" in the Ankeniheny-Zahamena Corridor (CAZ) has shown positive impacts for the land, based on more responsible behavior in favor of natural resources, with populations motivated by incentives to conduct conservation actions. These experiences suggest that this system could be an effective system both for distributing the benefits of REDD+ and for monitoring and evaluating deforestation/forest degradation. Indeed, this strengthening of the "conservation pacts" includes the introduction of monitoring of deforestation and forest degradation by the communities themselves. Recommendations have been formulated for improving this approach (c.f. Annex 2a).

Actions taken	Lessons learned
OTHER SECTORS	
<i>Mining sector</i>	<i>For the mining sector, the most important mineral resources in Madagascar are found for the most part under forests.</i> This creates a permanent conflict between the two sectors. The damage is all the more serious in the case of small mines and illicit operations which develop anarchically. For large mines, implementation of the MECIE legislation helps the mining administration exercise general control. A mines-forests interministerial committee has been formed to deal on a case-by-case basis with problems of overlap between mining sites and forests.
<i>Energy sector</i>	Studies and extension efforts have been carried out for the wood energy sector. The activities have focused on improving the carbonization techniques and the use of improved stoves. This sector does, however, present one major obstacle. Due to free access to some natural forests, charcoal continues to be produced anarchically in such areas and remains untaxed, even though, given its higher calorific value, charcoal is still used the most by Malagasy households. Thus, these initiatives help reduce the pressure on forests but fail to stop deforestation and forest degradation.
<i>Agricultural sector</i>	The intensification of rice-growing under the SRI/SRA system (Intensive/Improved Rice-Growing) has been disseminated to improve rice production and reduce the practice of <i>tavy</i> . However, it has been proven that <i>tavy</i> -based rice production is less expensive than paddy-based production (Brand et al., 2002), and therefore the impact of these techniques on deforestation is not apparent. Madagascar has promoted the techniques of direct seeding and agro-biological soil management, through the GSDM group that includes a research center (FOFIFA) and extension NGOs (TAFE, ANAE, etc.). These mechanisms are used to manage soil fertility and effectively combat erosion. The results are encouraging, especially in the target areas (Hautes Terres, Alaotra, etc.). These techniques have not yet reached areas around the forests. The migration policy implemented for the midwest area has borne fruit, but a lack of security in rural areas is becoming an impediment as the new migrants are discouraged by the pillagers.
<i>Land tenure and land use planning</i>	The first results from implementation of the land tenure reform are promising and this has been made clear by the enthusiasm of municipalities, the positive reaction of the media, and government support. However, it should be noted that the process is only at an early stage, and the hypothesis of greater effectiveness and fairness in decentralized land tenure management remains to be proven. The major risk lies first of all in the possible discrepancies between the initial standards of municipal land tenure management, no matter how closely tied to local practices, and the interpretations of these standards (abuses, patronage, corruption, etc.). Furthermore, the sustainability of this system is not yet fully established, as it currently remains dependent on external financing. Thus, the reform now underway, the establishment of land tenure offices, and the reform of the land tenure law are beginning to bear fruit, but the heavy work still needs to be done, particularly in forest areas. Development of the national land use and housing plan constitutes a participatory and multisectoral approach which will form the basis for all other planning actions concerning the use of space in Madagascar. At the regional level, gradual implementation of the regional land use plan, itself an offshoot of the SNAT, would help reduce intersectoral conflicts. The SRAT should be complementary with the regional forest zoning now underway, and these two tools will have to provide the basis for implementing the local land use plan. The success achieved in implementing these general principles creates a favorable framework for the REDD+ approach, notwithstanding the uncertainties mentioned above.

A synoptic analysis of a few operations based on the criteria of effectiveness, efficiency, fairness, and the generation of co-benefits provides a way to better situate these operations within the REDD+ context. This analysis will be deepened during preparation of the national REDD+ strategy.

Table 2a-4: Synoptic analysis of different approaches

<i>Operation</i>	<i>Effectiveness</i>	<i>Efficiency</i>	<i>Fairness</i>	<i>Co-benefits</i>
Protected areas and PCDIs	Strong reduction of deforestation	High cost	Limitation or subtraction of public access to resources	Hydrological services, ecotourism repercussions, maintenance of biodiversity
Eco-regional approach	Weak reduction of deforestation	Lower cost than for protected areas	Maintenance of public user rights	Hydrological services
Transfer of management	Weak reduction of deforestation	Low cost	Maintenance of public user rights	Discounts and fees for the local population
Individual reforestation	High rate of success	High cost	Property rights recognized for the reforester	Security of land tenure
Community reforestation	Low rate of success	High cost	User rights recognized for the community	
Reform of sector management	Improvement of the governance framework	Medium cost	Participation of the local population in resource decisions and management	Reduction of corruption

6 POTENTIAL OPPORTUNITIES AND BARRIERS FOR REDD+

One of Madagascar's main advantages in regard to the implementation of REDD+ is the fact that the country already has several relatively advanced REDD+ initiatives and pilot projects (cf. Box 2). Some of these projects or initiatives were developed as early as 2001 and have since provided a large quantity of data and experience that permit a fairly detailed analysis of the potential opportunities and barriers for REDD+ in Madagascar.

- **Relatively high carbon stocks:**

The first studies of biomass stocks in Malagasy forests were conducted by Rarivoariveloarimanana in 2001 and gave an average of 160 metric tons of above-ground biomass per ha, corresponding to roughly 75 metric tons of C or 276 metric tons of CO₂ equivalent (CO₂-e). On this basis, the potential revenues generated by carbon marketing were estimated at US \$356 per ha (Pavy, 2002). It is clear that these estimates have been surpassed.

More recent studies (FORECA, 2010) based on the White classification have shown that the average above-ground biomass of forests in Madagascar is 194.2 metric tons/ha (335 mtCO₂-e/ha). A more detailed analysis of the results estimated the volume of above-ground biomass at 262.9 metric tons/ha for rain forest and 112.3 metric tons/ha for degraded rain forest (FORECA, 2010).

Under the Makira REDD+ pilot project, greater carbon stocks were found for the above-ground biomass compartment: 392 mtCO₂-e for low-altitude forests (0-800 m), and 610 mtCO₂-e for mid-altitude forests (800-1,800 m). This altitude-based gradient has been confirmed by a LIDAR²⁶ study conducted under the PHCF, which demonstrates a significant reduction of carbon stocks following human degradation below 500 m in the country's south (Fort-Dauphin) and below 1,000 m in the north (Massif de Tsaratanana).

Since the IPCC reference figure for the above-ground biomass of tropical rain forests is 194 metric tons/ha (334 mtCO₂-e/ha), these results demonstrate a relatively high REDD+ potential so far as the rain forests are concerned. In dry and thorn forests, on the other hand, the carbon stocks are considerably lower, with a lower REDD+ potential as a result, partially offset by the higher rates of deforestation.

- **Substantial REDD co-benefits:**

It is expected that the reduction of deforestation and degradation of forest resources will have major co-benefits on three levels:

- *Environmental services attributable to forests:* The environmental services provided by Malagasy forests are substantial: they fill functions of production,²⁷ regulation,²⁸ and signification.²⁹ The economic benefits of maintaining protected areas and forest reserves for 15 years are estimated at roughly US \$57 million for ecotourism services and US \$80 million for hydrological services (Carret, 2002).

- *Maintenance of biodiversity:* Madagascar is classified as a country of mega-diversity. The terrestrial (mainly forest) biodiversity is characterized by very high endemism and very high concentration: the Island is one of the world's hot spots for biodiversity and counts, among others, 244 species of amphibian (all endemic), 370 species of reptiles (92 percent endemic), 98 species and subspecies of

²⁶ Asner et al., 2012: Human and environmental controls over aboveground carbon storage in Madagascar. *Carbon Balance and Management* 7:12.

²⁷ Productive function: food, water for irrigation and consumption, medicinal plants, fuels, and raw materials for construction and handicrafts.

²⁸ Regulatory function: regulation of runoff in mountainous areas, regulation of flooding, water retention, and recharging of the groundwater table.

²⁹ Significative function: aesthetic, cultural, spiritual, and scientific value.

lemur (all endemic), and 209 nesting bird species (51 percent endemic). Roughly 12,000 floristic species are presently known (90 percent endemic), including palm trees (194 species, all endemic) and baobabs (seven endemic species, out of eight existing species worldwide) (MEF, CBD national report, 2009).

- *Benefits for rural communities*: Permanent availability of timber and non-timber forest products: construction materials, food, medicinal plants, cultural function, etc.

Table 2a-5: Summary of success and risk factors for REDD+

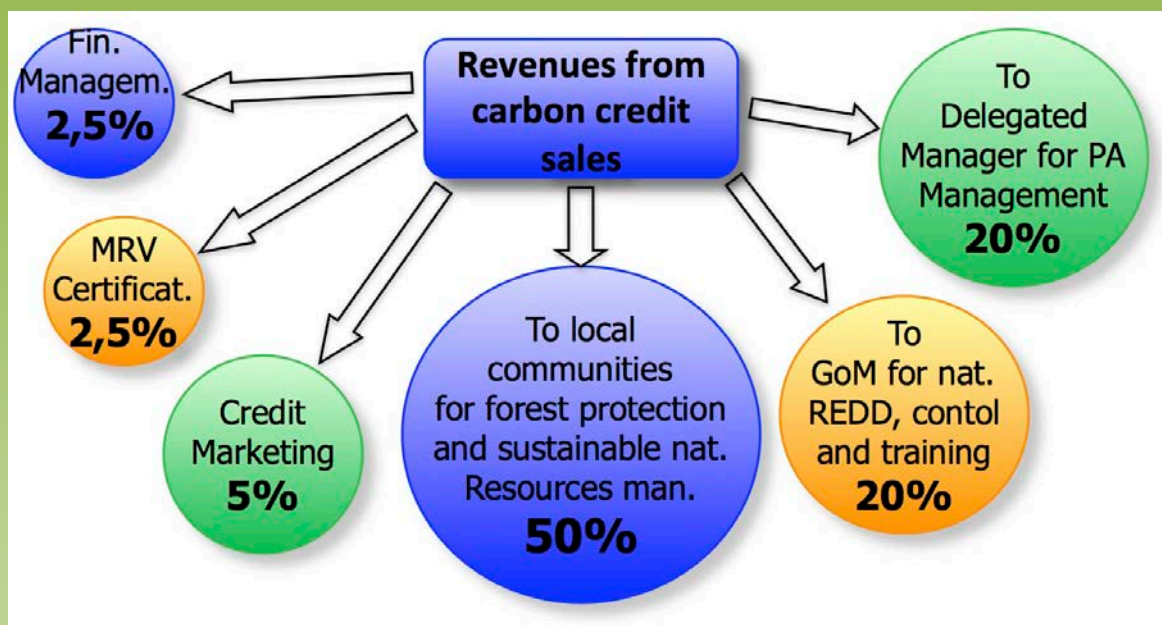
Successes	Potential opportunities
Establishment of protected areas	New land tenure policy
Eco-regional approach to conservation	Forest policy favorable to REDD+
Transfer of management and local accountability	Major co-benefits
Individual reforestation	
Failures	Obstacles / barriers
Community reforestation	Forest governance
Relative security of land tenure	Overlap with mines
Information management	Precarious modes of existence for households
Administration reform and refocusing	Weak synergy between sectors
	Administration politicization

Box 2a-3: Makira REDD pilot projects**Makira REDD pilot project:**

The Makira development project was launched in 2001, but it wasn't until 2003 that MEF formally charged WCS with creation of the new Makira protected area, taking into consideration alternative financing options, including the REDD mechanisms. The REDD+ project got officially underway on January 1, 2005 with a 30-year project life. During this period, it is estimated that, in the project area which measures 360,060 ha, the project will generate more than 38 million metric tons of emission reductions.

The project's central activity in regard to the reduction of deforestation is the creation of the new Makira protected area, along with its sustainable management. At the same time, the project also supports numerous agricultural and social activities on the outskirts of the protected area, notably by providing support for transferring the management of forest resources to local communities, strengthening rice-growing productivity (SRI and SRA), and promoting alternative income-generating activities (ecotourism, vanilla, cacao, etc.). Through these interventions, in its first five years the project generated a total of 830,000 mtCO₂-e in VCS verified emission reductions.

Pursuant to its relatively advanced status, the Makira project initiated discussions with MEF on sharing the REDD revenues generated by the project. The scheme that was developed (20 percent for Government, 20 percent for the manager, 50 percent for the adjacent communities, and 10 percent for marketing, MRV, and financial management) now serves as a model for other initiatives. In 2013, the first sale contracts for close to 70,000 VCS Verified Carbon Units (VCUs) generated by the Makira project were signed between the Government and voluntary purchasers Zoo Zürich and Microsoft, the revenues from which will be distributed according to the following scheme.



Box 2a-4: CAZ and PHCF REDD pilot projects**CAZ REDD pilot project:**

The CAZ (Ankeniheny-Zahamena Corridor) REDD project was designed in 2004. It got underway in 2007, a year during which the stakeholders' agreement was obtained and their suggestions were gathered through public consultations. These consultations were used to develop a concerted strategy for combating deforestation, principles for using the forest, and CAZ zoning. The project concerns a large part of the eastern rain forest, measuring some 325,000 hectares, and is projecting emission reductions totaling 15,750,840 mtCO₂e during its first ten years of implementation, i.e. approximately 1,575,084 mtCO₂e per year.

To achieve this, the project's strategy consists of implementing specific activities, among them the establishment of the CAZ protected area, for which temporary protection status was obtained in 2005 and for which management of the outskirts is entrusted to the local communities, thus reinforcing their forest resource user rights. Conservation contracts linking development to conservation have been established with the communities and the manager of the CAZ protected area. Support has been provided for agricultural intensification and for the diversification of income sources as a way to offer alternatives to *tavy* and as an incentive for sustainable practices throughout the corridor.

PHCF REDD initiative:

Financed entirely by Air France, the first phase of the Holistic Program on Forest Conservation (PHCF) started in October 2008 and ended in December 2012. A second phase is now in progress and will end in October 2017 with financing from Air France, AFD, and FFEM. After the first pilot phase, which covered five intervention sites spread over 515,000 ha of rain forest and thorn forest, PHCF now covers just 300,000 ha and two intervention sites in the rain forest: COMATSA (Marojejy-Anjanaharibe-Tsaratanana Corridor) and Beampingaratsy (Anosy region).

The activities on reducing deforestation and forest degradation now revolve around the creation of two new protected areas and some fifty Transfers of Management of Natural Resources (TGRNs). At the same time, PHCF has sought to strengthen in particular its system of support for developing alternatives to slash-and-burn: higher rice-growing yields (SRI, SRA), income-generating activities, and crop diversification (market gardening, poultry farming, beekeeping, cash crops, etc.). Twenty-five technicians and agricultural engineers will be mobilized on a permanent basis to serve local grassroots communities.

Through multiple research efforts (cf. Component 3 of this R-PP), the potential reduction of emissions from deforestation has been estimated at 35 MteCO₂ by 2030 (for the five sites of the first phase). Over the same period, the potential increase in forest carbon stocks has been estimated at 2.57 MteCO₂.

Box 2a-5: FORECA and MRV AFD-ONE REDD pilot projects

FORECA REDD pilot initiative

The REDD-FORECA project was launched in 2007 as a multi-partnership project between the Ministry of Environment and Forests, the Swiss foreign aid agency, the German foreign aid agency (GTZ), the University of Antananarivo (ESSA-Forests), the World Forest Institute (vTI), and Intercoopération. The project objective was to support the Government of Madagascar in establishing a REDD mechanism by developing methodological tools for identifying activities and incentives necessary for REDD and for quantifying emission reductions in different types of forest.

The project quantified deforestation rates and carbon stocks in the above-ground biomass in five different forest ecosystems in Madagascar. At the same time, it conducted socioeconomic analyses of the causes of deforestation and forest degradation at the local level to go beyond the reference levels and identify activities and incentives necessary for reducing deforestation and forest degradation. In striving for a national approach for REDD rather than a project approach, REDD-FORECA initiated the dialogue on the REDD mechanism at the national level and formed the REDD Technical Committee which ultimately developed the R-PP.

In its second phase of capitalization in 2010-2011, the project came out with the FORECA toolkit which describes a bottom-up methodological approach for engaging local grassroots communities in the REDD system at the national level (including identification of necessary activities and incentives, monitoring and evaluation, and distribution of benefits). Donor involvement ended with this second phase because of the political situation. As a result, the project was unable to implement the deforestation reduction activities.

AFD-ONE REDD pilot initiative

Since 2012, technical assistance to support the REDD+ process in Madagascar has been financed by *Agence Française pour le Développement*. The technical assistance is coordinated by ONE and provided in partnership with HELVETAS Swiss Intercoopération and CIRAD. It focuses on building the capacities of national institutions for implementing a REDD+ system at the national level, specifically to establish a reference emission level (REL) and a national system of monitoring, reporting, and verification (MRV). It came to a close at the end of 2013.

In the first months of operation, the technical assistance trained DGF and ONE employees to a) conduct carbon inventories in the above-ground biomass and soil compartments; b) use allometric equations and evaluate forest inventories for carbon; and c) process and analyze satellite imagery, specifically for assessing historical deforestation. At the same time, the technical assistance established the MRV Technical Group, which, according to the R-PP, will guide development of the REL and the MRV system.

Training on deforestation modeling, carbon mapping, and precision analysis was planned for 2013. Apart from building national capacities, the technical assistance has the goal of producing a preliminary national reference level (according to the existing data bases) and a proposal for an MRV system. These preliminary results should make it possible to develop guidelines for working toward an improved REL and MRV system in the coming years, while taking into account the country's specific features. The technical assistance will also attempt to set up technical and financial partnerships for continuing this work.

Box 2a-6: Eco-regional REDD initiative with additional financing (FAPE3 REDD)

This initiative, undertaken jointly with all REDD+ stakeholders of the rain forest eco-region, was just launched in December 2013 with additional World Bank financing for the third phase of the Environmental Program (PE3). The main objective of this initiative is to highlight all the experiences of the REDD pilot projects through a joint approach in regard to the rain forests of Madagascar, and thereby harmonize the ensuing methods and outcomes and reduce the implementation costs. This initiative encompasses the following components and activities:

- **Component 1: Determine harmonized methodologies for developing the eco-regional reference scenario:** i) Validate, based on the evaluation and comparison work performed by the MRV-ONE project, the methodologies related to ex post and ex ante estimates of emissions linked to deforestation and degradation of rain forests; ii) Evaluate and compare the existing methodologies for monitoring non-carbon aspects (environmental and social impacts, causes of deforestation); iii) Propose options of harmonized methodologies for these non-carbon aspects and support the validation of a definitive methodology; iv) Build stakeholder capacities regarding the use of these harmonized methodologies.
- **Component 2: Develop a reference scenario for the rain forest eco-region:** i) Demarcate the eco-region; ii) Establish a map of biomass and soil carbon stocks; iii) Analyze historical deforestation; iv) Analyze the causes and factors of deforestation and forest degradation; v) Develop a model of the evolution of deforestation in the future; vi) Validate the reference scenario at the national level; vii) Share the results.
- **Component 3: Conduct additional research to move toward the establishment of a reference level and strengthen the eco-regional REDD implementation framework:** i) Study the possibilities and opportunities for integrating other carbon compartments (deadwood, long-life timber products, etc.); ii) Study the possibilities and opportunities for taking into account forest degradation and the growth of forest carbon stocks (REDD+); iii) Evaluate existing schemes for distributing REDD revenues and propose harmonized procedures.
- **Component 4: Develop and ultimately implement monitoring systems in the eco-region:** Develop and promote a system for monitoring carbon aspects in the rain forest eco-region; Develop an information system on REDD+ safeguards pertaining to rain forests; Develop a system for monitoring deforestation and forest degradation factors in the eco-region.

Components 1 and 3, consisting mainly of studies and analyses, will be awarded by international competitive bidding (Subcomponent 1) and national competitive bidding (Subcomponent 3). The implementation of Components 2 and 4, comprising the activities of an actual eco-regional REDD project, was assigned to a consortium (principal REDD actors for the eastern rain forests, WCS, ONE, MNP, and ETC Terra). The first interventions of the FAPE3 REDD initiative focused in particular on harmonization of the methodologies to be applied in developing the reference scenario and on the MRV systems (cf. Section 4a of this R-PP). In early February, the consortium launched Components 2 and 4, and the work of analyzing carbon stocks in the biomass and the soil is now underway.

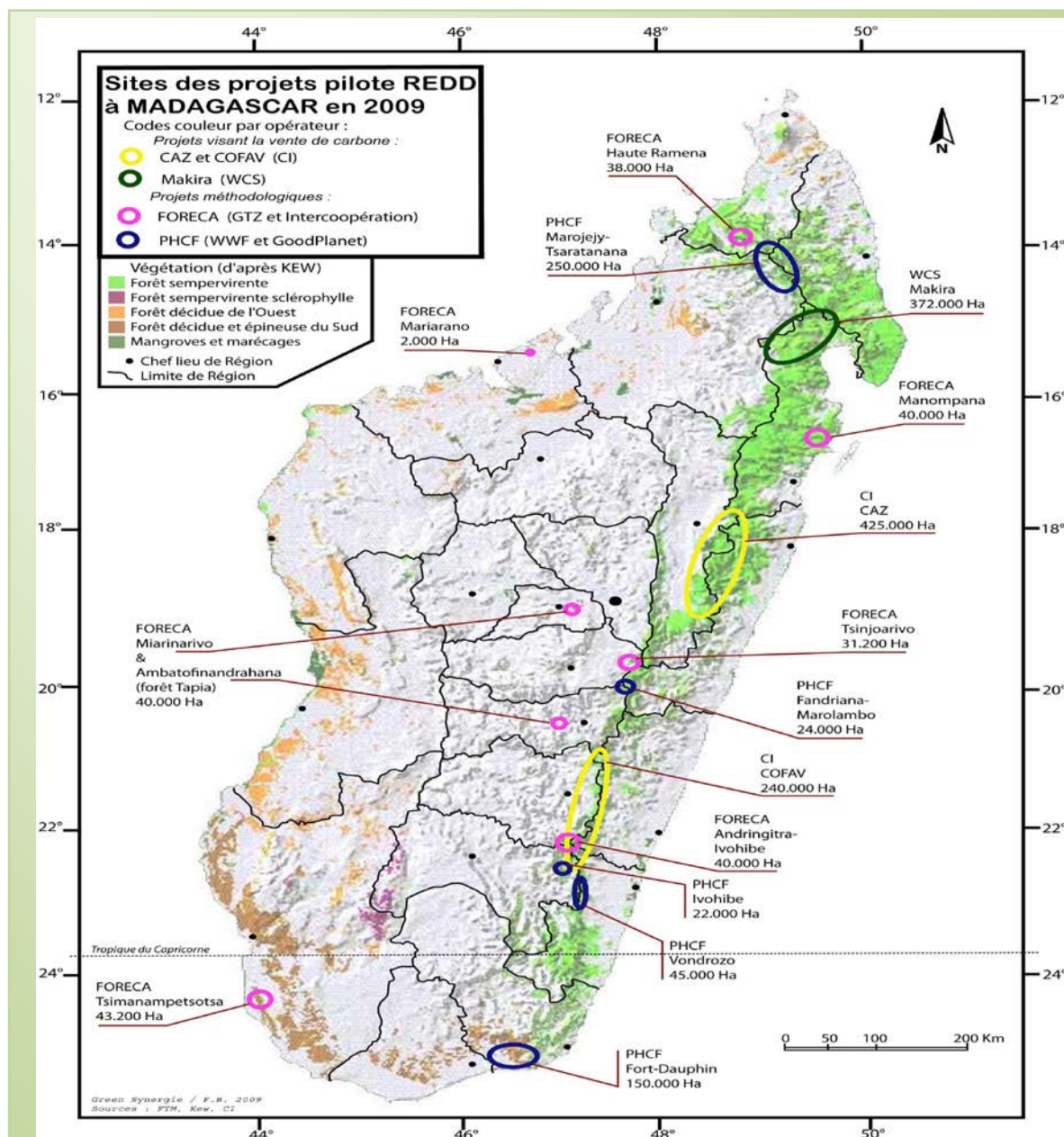


Figure 2a-7: Map of REDD+ pilot projects and initiatives underway in Madagascar

7 ADDITIONAL STUDIES TO STRENGTHEN THE CRITICAL ANALYSIS

This review (Component 2a) underscored the main factors of deforestation and forest degradation. It also shows the need for more in-depth studies on certain aspects if the critical analysis is to provide a solid basis for developing the REDD+ strategy. Six studies are envisioned:

- Analysis of deforestation and forest degradation actors and classification of same according to their deforestation and degradation potential.
- Analysis and spatialization of the causes of forest degradation and deforestation in Madagascar. A zone-by-zone understanding of variations in the causes of deforestation will be useful in formulating areas of intervention to be implemented in the short and medium term.
- Analysis of the political economy of deforestation and forest degradation in order to clarify and anticipate the main obstacles to implementation of the reforms needed to arrive at REDD+. The results of this study will be used in the SESA (cf. Component 2d).
- Analysis of the economic contribution of the forest sector. This should result in comparisons over land use and its economic impacts.
- Detailed overview of existing knowledge about the causes and factors of stagnant agricultural productivity.

The terms of reference for these studies are provided in Annex 2a-5.

Gender issues should be taken into account in these studies through analysis and assessment of the following aspects, culminating in a proposed REDD+ gender strategy:

- Profile of activities including division of labor by gender and gender roles, as well as factors of influence;
- Separate consideration of anthropic activities (of men and women) in acts of deforestation and forest degradation;
- Changes induced by regulations regarding the division of labor by gender designed to promote the accountability of young people and women within the operation and improve female-male relations in a forest society;
- Profile of access to and control of resources and benefits;
- Practical needs such as energy resources and strategic interests related to social status and circumstances;
- Forms of power, including attention to the strengthening of decision-making powers;
- Access – particularly on the part of women and vulnerable segments of society – to land and to various means of development, with particular attention to appropriate related legislation.

Table 2a-6: Summary of activities and budget for assessing land use, forest policy, and governance

Principal Activities	Sub-Activities	Estimated cost in US \$			
		Year 1	Year 2	Year 3	Total
Analyze deforestation and forest degradation actors and classify them according to their deforestation and degradation potential.	Identify and prioritize actors according to the impact of their activities on deforestation and forest degradation.	4,000			4,000
Analyze and spatialize the causes of forest degradation and deforestation in Madagascar. A zone-by-zone understanding of variations in the causes of deforestation will be useful in formulating areas of intervention to be implemented in the short and medium term.	Define and identify the most representative areas in regard to deforestation.	6,000			6,000
	Conduct a review and analyses of existing knowledge on the causes of deforestation and forest degradation.	12,480			12,480
	Proceed with sampling and conduct surveys at the regional and local levels.	58,325			58,325
	Process and analyze data, extrapolate at the national level.	4,000			4,000
Analyze the political economy of deforestation and forest degradation in order to clarify and anticipate the main obstacles to implementation of the reforms needed to arrive at REDD+.	Determine the typology of entities affected by deforestation and forest degradation.	1,600			1,600
	Conduct a review and documentary analysis of the main stakes of deforestation and forest degradation.	3,400			3,400
	Conduct field surveys and investigations.	51,927			51,927
	Analyze the data, synthesize the results, and propose recommendations.	10,000			10,000
Analyze the economic contribution of the forest sector. This should result in comparisons over land use and its economic impacts.	Review the various existing economic studies and gather basic data for calculations.	3,000			3,000
	Collect additional data.	12,398			12,398
	Formulate hypotheses, process the data, analyze and interpret the results.	4,400			4,400
	Analyze the outlook and formulate recommendations.	10,000			10,000
Summarize existing knowledge about the causes and factors of stagnant agricultural productivity.	Collaborate with the Ministry of Agriculture in analyzing assorted documents and knowledge.	6,600			6,600
	Total 2A	188,129			188,129
	Government				
	FCPF	188,129			188,129
	Other donors				

2b. Strategic Options for REDD+

1. FROM PROJECT APPROACH TO NATIONAL APPROACH

For several decades, the importance of deforestation and forest resource degradation has been recognized, and numerous efforts and measures have been undertaken to deal with this problem (cf. Component 2a). However, the fight against deforestation and degradation is not limited to the forest policy framework, since the main causes of deforestation and forest resource degradation originate from a variety of sectors. The broad goals of sectoral policies aimed at sustainable management of forest ecosystems, biodiversity conservation, participatory management, and poverty reduction, described in Component 2a, led to identification of a series of strategic options during the process of consultations for developing this R-PP.

Sub-options are proposed for each option, mainly reflecting the experiences of the REDD+ demonstration projects discussed in the preceding component. The Makira project has made progress in aspects of sharing benefits and involving communities in the implementation of actions designed to reduce deforestation and forest degradation. The Ankeniheny-Zahamena Corridor and Ambositra-Vondrozo Corridor projects in the east have underscored the governance aspect at the local level and the use of carbon revenues for development actions related to REDD. The REDD-FORECA project has developed methodological approaches that promote local participation in defining deforestation factors and the system of incentives, as well as the governance structure. Annex 2b-1 shows the pilot project locations and Annex 2b-2, lessons learned from their implementation.

2. STRATEGIC OPTIONS FOR THE REDD+ NATIONAL STRATEGY

The proposed strategic options are provisional: they are derived from analysis of sectoral policy goals of the last decade, deforestation and forest degradation factors, and consultations with stakeholders discussed in the preceding components. Each option contains a series of intervention sub-options, to be fleshed out either through the process of preparing for REDD+ or in partnership with programs and activities now in progress. This approach will serve to raise the level of mainstreaming of REDD+ in the sectors involved and ownership at the national and regional levels.

The options and their respective sub-options will be examined by specific, in-depth studies in order to assess their potential contribution in addressing the main direct causes of deforestation and forest degradation, as well as their underlying factors determining intensity and location. These studies will serve to either confirm or call into question the proposed options and, through several different scenarios, combine the best elements for a preliminary national strategy. Finalization of the REDD+ national strategy will then entail several stages of discussions and consultation with stakeholders at the local, regional, and national levels (see Figure 2b-1). The legal and institutional framework for implementing the REDD+ strategy will be developed in connection with the implementation of Component 2c.

In addition, the REDD+ strategic options and sub-options will be laid out in greater detail during this process based on feasibility, impact, and cost studies, as well as pertinent experiences from the REDD+ pilot initiatives and projects and the various existing partnerships (Boxes 2a-1 and 2a-2 and Figure 2a-5 in Component 2a). They will be combined to develop the REDD+ national strategy, to be implemented on two levels:

- At the national level, in the form of policies, strategies, regulations, and reforms of relevant sectors, for the purpose of establishing a viable “long-term” framework for REDD+;

- At the regional and inter-regional level, through “spatialized” strategies and priority activities in areas predefined as possessing strong potential for REDD+. Their purpose will be to encourage rapid short- and medium-term implementation.



Figure 2b-1: Stages in formulating the strategic options

3. SUMMARY OF REDD+ STRATEGIC OPTIONS

The analyses of sectoral policies, deforestation causes, and preceding initiatives presented in Component 2b, combined with the consultations carried out in connection with developing this R-PP (see Component 1b), clearly show that deforestation and forest degradation are closely linked to the three levels of forest governance: first of all, the policy level and the sector's legal and institutional framework, but also sector planning and decision-making processes, and finally implementation and enforcement of the law.

However, these same analyses show as well that deforestation and the degradation of forest resources also originate in underlying causes and factors situated outside the forest sector, related in particular to farm and stockraising techniques, mining operations, and land use planning. Consequently, the four following REDD+ strategic options will serve as the basis for developing Madagascar's REDD+ national strategy:

- **Strategic Option 1:** Improve the overall policy framework of the forest sector and other sectors relevant to REDD+;
- **Strategic Option 2:** Create incentives for sustainable management and efficient use of forest resources;
- **Strategic Option 3:** Reinforce forest monitoring and control and law enforcement at all levels;
- **Strategic Option 4:** Develop and promote alternatives to deforestation and the degradation of forest resources.

These options, along with their respective strategic sub-options, are described in greater detail below and will be analyzed and tested as part of the preparation process, as described in Figure 9 above.

3.1 Preliminary Analysis of Strategic Option 1

A preliminary analysis of the four proposed strategic sub-options under Strategic Option 1 is presented in Table 2b-1 below. This assessment takes into consideration the following aspects for each of the proposed strategic sub-options:

- **Costs of implementing the proposed strategic sub-option:** Including capital costs, but also opportunity costs and transaction costs related to the strategic sub-option;
- **Feasibility of implementing the proposed strategic sub-option:** Including financial feasibility based on cost estimates, but also the political and social feasibility of implementing the proposed sub-option;
- **Direct benefits from implementing the proposed sub-option:** Including the financial benefits from REDD+ mechanisms, as well as benefits related to the reduction of deforestation and forest degradation;
- **Other impacts from implementing the proposed sub-option:** Especially including impacts on the social environment, as well as impacts on the environment in general and on biodiversity in particular;
- **Sustainability of benefits and positive impacts from implementing the proposed sub-option:** Mainly with respect to the inclusion of measures to reduce emissions linked to deforestation and forest degradation in national and sectoral policies and strategies;
- **Potential fallout from implementing the proposed sub-option:** If the sub-option is concentrated in a particular area, including fallout from the displacement of deforestation and forest degradation activities and economic losses.

This assessment is mainly based on the experiences of the various REDD projects described in Component 2a of this R-PP, as well as other projects and initiatives working on conservation and sustainable management of natural resources and rural development.

3.2 Strategic Option 1: Improve the overall forest sector policy framework

This option addresses shortcomings identified in the policy and strategy arena, as well as in the legal and institutional framework of the forest sector. The objective of the interventions is to create good foundations for implementing the REDD+ national strategy in all sectors and with the involvement of all relevant actors. This includes harmonizing the national strategies for the protection and sustainable production of timber resources, continuing to reform the Forest Administration, and updating and expanding the implementing statutes for the new forest legislation. Since many causes and factors of deforestation and forest degradation originate outside the actual forest sector, this option will also need to include measures for integrating REDD+ in other key sectors, particularly agriculture and livestock, as well as energy and mining.

The four strategic sub-options discussed below will be tested and analyzed to better assess the relevance of each sub-option in regard to the reduction of deforestation and forest degradation and, if necessary, refine and adapt it to the field context.

3.2.1 Sub-Option 1.1: Harmonize protection and sustainable production strategies

As noted in the preceding chapters, Madagascar is characterized by heavy dependence on forest resources because of its energy requirements, which are almost entirely covered by wood, without any strategy for supplying markets with legal and sustainable timber products. A strategy to reduce emissions linked to deforestation and forest degradation would not be very effective.

In regard to Sub-Option 1.1, the main idea is to strike a better balance between protection and satisfying the needs for timber products. This process will be modeled on the national strategy for expanding the network of protected areas (Durban Vision), which has met with extraordinary success pursuant to strong political leadership, the integration of all actors and sectors, and the use of innovative scientific approaches and recent, comprehensive information and data.

With respect to the strategy for the sustainable use of timber resources, there is existing information on needs and on the potential for producing COS timber, fuelwood, and wood for charcoal production, but the process is currently much less advanced than for the protection strategy. Under this sub-option, a strategy for sustainably supplying markets with timber products will be developed, encompassing the sustainable use of existing natural and artificial forests as well as reforestation schemes and the restoration of degraded forest stands. Thus, this strategy will serve as a guiding line for REDD+ Strategic Sub-Options 2 and 3 discussed below.

3.2.2 Sub-Option 1.2: Amplify and improve the sector's legal and institutional framework

Even though forest policy in Madagascar addresses all aspects and problems related to deforestation and forest degradation, it lacks implementing statutes in several areas and needs to be updated in line with major policy goals. This results in a somewhat paradoxical situation where numerous very old statutes have yet to be repealed for lack of new implementing statutes to replace them, or at least an updating of the inappropriate statutes. At the same time, the Forest Administration finds itself in circumstances that do not presently permit it to perform its main sovereign functions pertaining to sustainable management of the country's forest resources. Consequently, there are two different levels of intervention under this strategic sub-option:

With respect to the legal framework, problem statutes and missing statutes first need to be identified, and then updated if possible or else new statutes need to be developed. Numerous

statutes have already been improved in recent years, but not yet promulgated, for example the new order concerning categorization of types of wood. Similarly, several new orders have been developed by the Forest Administration and its technical partners, including:

- Draft decree on authorizations for removing timber products, proposed in 2008;
- Draft decree on delegated management of state forests in 2009;
- Draft decree to revise the legal and regulatory framework for energy wood, proposed in 2009;
- Draft order on state forest development and management standards, with a model development plan;
- Reflections on the tracking systems derived from tests conducted by the JariAla project and TCP FAO;
- Proposals for implementing statutes in Article 54 of the GELOSE law being developed by the COGESFOR project.

But most of these new and improved statutes have not yet been promulgated by the ministry in charge of forests. During the REDD+ preparation phase, an effort will be made to set the institutional framework (see below) and strategies in place, followed by the decision-making systems needed to make quicker progress in this direction.

With respect to the institutional framework, it will be necessary in particular to continue the Forest Administration reform already underway. The reform will need to focus on Government's withdrawal from production functions and concentration on sovereign functions, in particular the strengthening, independence, and effectiveness of monitoring/oversight of local actors' interventions. This should also include reorganization of support from the Government's technical and financial partners in regard to means of intervention at all levels, as well as a complete overhaul of decision-making systems for the forest sector in its entirety, permitting more effective participation by all stakeholders (see also Strategic Sub-Option 1.3 below).

3.2.3 Sub-Option 1.3: Promote involvement of civil society and private sector actors

It was noted in Component 2a that one of the main objectives of the new forest policy was to diversify the actors involved in the management of forest resources. Through the GELOSE law and the GCF decree, a first step was taken in this direction, specifically by involving the communities adjacent to the forests in their sustainable management, and Madagascar now possesses more than 10 years of experience in the area of community management of forest resources. Numerous analyses have already been carried out, and, even though the experiences have not always been positive, these studies provide valuable information that can be used to further strengthen a more diversified and decentralized approach to forest management. The most recent experiences concerning illicit removal of forest resources clearly demonstrate the important role that local actors can play in the conservation and sustainable management of forest resources and, accordingly, this strategic sub-option places special emphasis on continuing these forest management diversification and localization efforts.

With respect to the management of protected areas, the Forest Administration has recently crossed a new threshold by delegating the management of state forests to national and international nongovernmental organizations by decree. However, the process of delegating management to entities other than local communities was set forth by legislation. It seems important to continue efforts to establish a generalized legal framework for delegating management to operators as diverse as local communities, nongovernmental organizations, and private sector actors, as well as decentralized regional and local administrations if that turns out to be appropriate. In addition to delegated management arrangements already established for protected areas, this could also be based

on the arrangements for awarding the first forest concession in the Mandaratsy reforestation scheme in 2009.

In view of these experiences, and faced with current world challenges (climate change and globalization), it is now beyond dispute that collaboration and strengthening of the "Good Governance Triumvirate" (Government - Civil Society - Private Sector) are essential for sustainable development in general and for the sustainability of REDD+ projects in particular. It must be clearly understood that, apart from its sovereign functions, the administration is always the last link of the decision-making chain, yet it must agree to compromise at the same time with civil society organizations (including local grassroots communities) and, as much as possible, with the private sector, for the sake of sustainable, transparent, and jointly responsible management of forest resources.

Technical and financial partners complete the picture by providing technical and/or financial assistance coupled with a straightforward desire to ensure the sustainability of the system via a predetermined and realistic withdrawal strategy.

3.2.4 Sub-Option 1.4: Facilitate incorporation of REDD+ in other sectors

As noted several times, deforestation and the degradation of forest resources do not originate solely in the forest sector. Numerous direct causes and underlying factors spring from other sectors, notably the justice system, the police, finance (specifically customs), agriculture, livestock, mines and hydrocarbons, land use planning, transportation, and infrastructure. The REDD+ strategy will need to harmonize its interventions with these other sectors.

In this sub-option, the goal is to promote exchanges between sectors regarding land use planning. The preceding chapter clearly showed that strategies and visions for the use of forestlands already exist in several sectors; although the REDD national strategy is not directly involved in these aspects, it will have to try to harmonize the interventions.

It thus appears extremely important to facilitate harmonization of the various sectoral policies and strategies related to REDD+, at both the national and regional levels. Synergy should be sought among the different sectoral plans in the context of regional and national land use planning and strategies for combating deforestation and the degradation of natural forest ecosystems.

Table 2b-1: Preliminary assessment of Strategic Option 1:
Improve the overall forest sector policy framework

Sub-Option	Costs	Feasibility	Benefits	Other Impacts	Sustainability	Potential Losses
1.1-Harmonize protection and sustainable production strategies	Capital : - Opport. : +/- Trans. : +/-	Financial : ++ Political : +/- Social : ++	Fin. : - CO ₂ : -	Social : + Envir. : +/- Biodiv. : +/-	+	Displ. : -- Econ. : -
1.2-Amplify and improve the sector's legal and institutional framework	Capital : +/- Opport. : -- Trans. : -	Financial : + Political : +/- Social : +	Fin. : + CO ₂ : +/-	Social : +/- Envir. : + Biodiv. : +	++	Displ. : -- Econ. : -
1.3-Promote involvement of civil society and private sector actors	Capital : - Opport. : -- Trans. : +/-	Financial : + Political : + Social : ++	Fin. : + CO ₂ : +	Social : + Envir. : + Biodiv. : +	+/-	Displ. : -- Econ. : --
1.4-Ensure harmonization with other sectors	Capital : +/- Opport. : + Trans. : -	Financial : +/- Political : - Social : +/-	Fin. : +/- CO ₂ : +	Social : + Envir. : + Biodiv. : +	+	Displ. : -- Econ. : +/-
Average	-	+	+/-	+	+	-

N.B.: ++ = very high; + = high; +/- = medium; - = limited; -- = very limited

3.3. Strategic Option 2: Create incentives for sustainable management and efficient use of forest resources

This option addresses the direct causes and factors of deforestation and forest degradation identified in regard to forest sector planning and decision-making. Accordingly, it aims to improve existing carbon stocks maintenance through sustainable management of forests destined for protection and production. But it also includes aspects of increasing the carbon stocks by promoting reforestation schemes and through incentives for the restoration of degraded forests. Lastly, this option includes the goal of greater efficiency in the use of timber products. In addition, all these measures should serve to boost the competitiveness of the sustainable use of forest resources, compared to unsustainable or destructive uses, and thereby contribute to a significant reduction in the pressures exerted on forests.

The four strategic sub-options described below will be analyzed as part of the REDD+ preparation phase in order to assess their potential for reducing emissions related to deforestation and forest degradation, as well as their social, economic, and environmental impacts.

3.3.1. Sub-Option 2.1: Improve forest sector planning

This strategic sub-option will rest on widespread application of the forest zoning process, so as to find the sustainable balance between production and protection already proposed by the national strategies cited under Sub-Option 1.1. It will also entail incorporating this process in regional and municipal development plans to ensure devolution to local grassroots entities, as well as the sustainability of the plans that are developed. For sites lacking actual stakeholders in the field, the three-step approach already proposed and tested for regional forest zoning will be applied:

- Formulation of the major goals of forest resource development and management (protection, sustainable management, restoration/reforestation) at the national and regional levels, in sync with other broad planning processes, especially land use planning actions already underway at the national level (PNAT) and in certain regions (SRAT);
- Determination of management approaches (management under government control or by delegation to new operators) for each forested landscape, for protected areas, or for KoloAla sites (see below) or else at the municipal level, e.g. the Municipal Forest Development Scheme (SAFR) of Didy;
- Detailed planning of forest development and management for each Forest Development Unit (UFA) such as individual management transfers, logging concessions, protected areas, etc., based on forest development standards established by the Government.

In this regard there are very close connections between this strategic option and Strategic Option 1 (cf. Chapter 3.1.2), especially because the planning procedures at different levels will need to be framed by legal and regulatory statutes established at the national level.

3.3.2. Sub-Option 2.2: Promote sustainable management of forest resources

This sub-option mainly targets the conservation of carbon stocks contained in natural and artificial forests, through their sustainable management based on rational production and use as well as protection via the system of protected areas. There will be two different levels of intervention:

- With respect to sustainable production of timber products, this sub-option will seek to reinforce the KoloAla concept for sustainable management of productive forests. The KoloAla concept

was developed by the Forest Administration to strike a better balance between the goals of protection and the needs for sustainable timber production by involving a variety of actors as discussed under Sub-Option 1.2. This process has already been tested through the provisional creation of four KoloAla sites in natural forest settings and one KoloAla site within the Haute Matsiatra reforestation schemes.

- With respect to the protection of forest ecosystems, this sub-option will strive to maintain existing carbon stocks through sustainable management and effective protection of terrestrial protected areas and current and potential productive forests. As noted above, this will also involve a variety of actors in the context of broader delegated management.
- Finally, this strategic sub-option will include activities to promote and facilitate the mechanisms of Payment for Environmental Services (PSE) at all levels (production and protection), in order to reinforce sustainable financing of forest resource management. The REDD+ financial mechanisms are of course part of the PSEs, but other payment arrangements for the conservation of biodiversity (conservation contracts) and the regulation of water supply will be studied in this context.

3.3.3. Sub-Option 2.3: Promote reforestation schemes and the restoration of degraded forest resources

This strategic sub-option focuses on increasing the forest cover and thereby the forest carbon stocks through reforestation and restoration of degraded areas and the fight against vegetation fires. In this area, the private sector can play a fundamental role, and the following measures are conceivable:

- Revise the forest sector tax system in order to develop incentives for reforestation;
- Provide support to the Designated National Authority (DNA) in promoting Self Development Mechanisms (MDPs) at the national level;
- Improve the sustainable management of forest plantings through capacity-building and diversification of actors;
- Boost the productivity of existing forest plantings, particularly in the case of energy wood plantings, through gradual diversification of the species used and the introduction of improved reproduction techniques, so as to reduce their gradual degradation.

Efforts to restore degraded natural forests will focus on the following measures at existing and future protected areas and KoloAla sites:

- Maintain connectivity and conserve biodiversity by restoring sensitive points in forest corridors;
- Promote forest research needed to improve native forest species regeneration techniques.

3.3.4. Sub-Option 2.4: Boost efficiency in the use of timber products

In the timber industry, rather substantial losses still occur during the removal of woody raw materials. Greater effectiveness in the processing and use of timber resources is considered a short-term strategy for rapidly reducing GHG emissions while awaiting the increase in carbon stocks described in the preceding strategic sub-option. Inefficiencies are found in terms of production (logging and processing), but also in terms of use, particularly the use of charcoal, and this sub-option will accordingly focus on two different levels:

- With respect to the production of timber products, this sub-option will focus on improving logging, skidding, and timber processing techniques in order to reduce the losses observed at each of these three stages. The main thrust will be to move processing operations outside the forest and transpose them to sawmills with more appropriate equipment for efficient processing. Experiments conducted in the Didy forest, for example, have shown that the skidding of ½ or ¼ of rough lumber associated with transport tools such as logging wheels is a way to substantially reduce losses occurring during the initial processing in comparison to the skidding of standard pieces squared off in the forest. In areas of difficult access where the skidding of large pieces is not possible, the use of mobile sawmills should be considered. Finally, in regard to charcoal production, numerous trials have shown that relatively simple improvements can practically double the production yield. There is also a need to change producer behavior with concrete financial incentives.
- With respect to the consumption of timber products, this sub-option will focus on improving the use of charcoal in the large urban centers. Charcoal accounts for some 40 percent (baseline figure) of wood consumption in Madagascar, and it seems essential to reduce the losses stemming from inappropriate techniques used by urban households. A great number of trials promoting improved stoves have been conducted throughout the country, some of which have been very successful. Nevertheless, for this sub-option, the focus should be to change consumer habits.

3.3.5 Preliminary Analysis of Strategic Option 2

Table 2b-2: Preliminary assessment of Strategic Option 2: Create incentives for sustainable management and efficient use of forest resources

Sub-Option	Costs	Feasibility	Benefits	Other Impacts	Sustainability	Potential Losses
2.1-Reform forest sector planning procedures	Capital : ++ Opport. : -- Trans. : -	Financial : - Political : +/- Social : +	Fin. : - CO ₂ : +/-	Social : +/- Envir. : +/- Biodiv. : +/-	+/-	Displ. : -- Econ. : --
2.2-Promote sustainable management of forest resources	Capital : +/- Opport. : -- Trans. : +/-	Financial : + Political : +/- Social : +/-	Fin. : + CO ₂ : +	Social : + Envir. : + Biodiv. : +	+	Displ. : -- Econ. : --
2.3-Promote reforestation schemes and the restoration of degraded forest resources	Capital : +/- Opport. : -- Trans. : -	Financial : + Political : + Social : +	Fin. : + CO ₂ : +	Social : + Envir. : + Biodiv. : +	+	Displ. : -- Econ. : --
2.4-Boost efficiency in the use of timber products	Capital : + Opport. : -- Trans. : -	Financial : + Political : + Social : +	Fin. : + CO ₂ : +	Social : +/- Envir. : + Biodiv. : +	++	Displ. : -- Econ. : --
Average	-	+	+	+	+	--

N.B.: ++ = very high; + = high; +/- = medium; - = limited; -- = very limited

3.4. Strategic Option 3: Reinforce forest control and law enforcement

This strategic option seeks to remedy shortcomings and problems identified in relation to the implementation of policies, strategies, and plans developed in the two preceding areas of forest sector

governance, as well as in the context of monitoring and controlling forest activities and enforcing the law.

3.4.1 Sub-Option 3.1: Reinforce forest monitoring and control

The problem of illicit logging and export of precious woods in northeast Madagascar in recent years highlights the gaps that exist in forest control and the enforcement of forest legislation. To address the situation, this sub-option will place special emphasis on the independence of forest control at the Forest Administration, so as to avoid conflicts of interest on the part of elements of the control service and/or the technical services, and also on the involvement of new actors in the control procedures. At the same time, efforts will be made to strengthen the technical and financial resources of this service to permit more effective interventions, as well as to build the capacities of the various stakeholders, both within the Administration itself and within the justice system, often poorly informed about the objectives and content of the new forest legislation. Lastly, the diversification of forest resource management actors proposed under the preceding options should be optimized and these new actors should be integrated into forest control systems according to their capacities.

Nevertheless, these efforts will not be fully successful unless the systems for monitoring interventions in the sector become more effective and provide reliable, up-to-date information. Above all, systems will need to be developed and set in place for clearly distinguishing products removed illicitly from legal products so that the forest control service can intervene efficiently. Such tracking systems for timber products have already been developed and tested in three regions and the experience gained should make it possible to expand the system nationwide. In addition, regular forest inventory systems applied at the time of forest improvements, but also before and after logging operations, will provide a way to monitor the evolution of forest resources and then move more quickly to reverse undesirable trends. These systems could easily be combined with the systems for analyzing deforestation and monitoring emissions from deforestation and forest degradation as presented in Components 3 and 4.

3.4.2 Sub-Option 3.2: Improve law enforcement

The justice system is often poorly informed about forest legislation, which sometimes results in ineffective enforcement of existing statutes in the court system. This sub-option will therefore focus on improved communication and information about forest legislation and implementing statutes in the justice system in order to facilitate enforcement. It is also common to see some penalties escape enforcement because major acts of corruption are simply not addressed. Accordingly, this sub-option will also strive to fight corruption in the forest sector and other sectors involved in governance (Justice, Customs, and Police).

3.4.3 Sub-Option 3.3: Build stakeholder capacities

This sub-option comprises all the capacity-building measures deemed necessary to ensure effective and efficient implementation of the strategic sub-options discussed above for the forest sector. Accordingly, it will target all actors involved in the management and conservation of forest resources, from the Forest Administration to local community managers, through nongovernmental organizations, civil society, and/or private sector actors.

3.4.4 Sub-Option 3.4: Monitor forest sector governance

In Component 2a of this R-PP, the significance of various gaps in forest governance regarding deforestation and the degradation of forest resources was described a number of times. As such, an appropriate strategy to control deforestation and forest degradation cannot be limited to oversight of the technical activities of the forest sector, but must also incorporate independent scrutiny and

observation of sector governance and monitoring of related corruption. This strategic sub-option could incorporate the following aspects:

- Reinforcement of independent observation of forest sector governance through solid support to civil society organizations in this area to better fulfill their functions. These organizations would clearly include ONESF, but other entities such as regional branches of the National Office for the Environment (ONE) or civil society associations like Alliance Voahary Gasy (AVG) could certainly play important roles in observing the evolution of forest sector governance;
- Corruption has become a very important factor in deforestation and the degradation of forest resources. It is mainly fed by the sizable financial stakes involved in illicit logging of precious woods (rosewood and ebony) in some regions of the country. As a result, it appears absolutely essential to include the monitoring of corruption within the sector in the systems and structures set up to scrutinize governance. Collaborations between REDD preparation management structures (cf. Component 1a of this R-PP) and established structures such as the Independent Anti-Corruption Bureau (BIANCO) could provide a boost in this direction.

3.4.5 Preliminary Analysis of Strategic Option 3

Table 2b-3: Preliminary assessment of Strategic Option 3: Reinforce forest control and law enforcement

Sub-Option	Costs	Feasibility	Benefits	Other Impacts	Sustainability	Potential Losses
3.1-Reinforce forest monitoring and control	Capital : ++ Opport. : +/- Trans. : +/-	Financial : -- Political : ++ Social : +/-	Fin. : + CO ₂ : +	Social : - Envir. : + Biodiv. : +	+	Displ. : -- Econ. : +/-
3.2-Improve law enforcement	Capital : + Opport. : + Trans. : +/-	Financial : - Political : + Social : +/-	Fin. : + CO ₂ : +/-	Social : - Envir. : + Biodiv. : +	+/-	Displ. : -- Econ. : +/-
3.3-Build stakeholder capacities	Capital : ++ Opport. : -- Trans. : +/-	Financial : -- Political : + Social : ++	Fin. : +/- CO ₂ : -	Social : ++ Envir. : + Biodiv. : +	+/-	Displ. : -- Econ. : --
3.4-Monitor forest sector governance	Capital : +/- Opport. : -- Trans. : -	Financial : +/- Political : - Social : +	Fin. : - CO ₂ : --	Social : + Envir. : +/- Biodiv. : +/-	-	Displ. : -- Econ. : --
Average	+/-	+/-	+/-	+	+/-	-

N.B.: ++ = very high; + = high; +/- = medium; - = limited; -- = very limited

3.5 Strategic Option 4: Develop alternatives to deforestation and the degradation of forest resources

According to the analysis of causes and underlying factors of deforestation and forest degradation in Component 2a, some of the most important direct causes of deforestation actually originate outside the forest sector. This is particularly true of slash-and-burn agriculture and very extensive cattle raising techniques, identified by most stakeholders as major causes of deforestation in Madagascar, along with mining operations, as well as underlying causes such as conflicts between traditional land tenure rights and positive law.

It therefore seems appropriate to incorporate in the REDD+ preparation process a specific strategic option to tackle these direct causes and related underlying factors and to establish close links

and collaborations among the different sectors affected by REDD+. This strategic option rests on the various policies and strategies of other sectors and aims primarily to develop alternatives to techniques and practices that destroy and/or degrade forest ecosystems and thereby contribute to greenhouse gas emissions; it thus represents a direct link between the REDD+ national strategy and the strategy documents for agriculture, livestock, and rural development. Consistent with the sectoral policies and strategies presented in Component 2a, this sub-option contains further sub-options related to improvements in land tenure security in rural areas and an expansion of agricultural lands, optimization of livestock and agricultural production systems, reorganization of mining operations, and support for sustainable development. Their implementation as described in the following sections should lead to a significant reduction in pressures exerted on forest resources and thus a reduction in emissions linked to deforestation and forest degradation.

3.5.1 Sub-Option 4.1: Harmonize expansion of agricultural lands

The expansion of agricultural lands as a result of population growth is no doubt the leading cause of deforestation in Madagascar. In view of rapid population growth and stagnant yields in recent years, expanding the amount of land under cultivation is often the only solution for rural populations to ensure their survival. For various reasons (insecurity, land tenure, etc.), non-forest lands are often inaccessible for most smallholders, so they turn instead to forest lands which they “develop” and “occupy” through deforestation.

Accordingly, this strategic sub-option leans heavily on the National Rural Development Program (PNDR) and the Agriculture, Livestock, and Fisheries Sector Policy (PSAEP) and it aims for close collaboration among the forest, agriculture, livestock, mining, and land tenure sectors in order to make abandoned non-forest lands more attractive for the expansion of agriculture. It could include the following measures:

- Participate proactively in national or regional programs or projects designed to link land tenure policy with other sector policies (mainly agricultural, forest, and mining policies) so as to make non-forest lands more accessible and attractive for rural populations seeking agricultural lands;
- Incorporate forest zoning results in national and regional land use planning and reinforce recognition of forest planning initiatives in other sectors, especially the mining and hydrocarbons sector;
- Review and update a number of laws and legal statutes that are sources of confusion or even conflict between sectors and thus contribute to deforestation and/or the degradation of forest resources;
- Strengthen land tenure security in rural areas in order to improve the sustainability of farms and motivate agricultural operators to invest more heavily in their farmlands.

3.5.2 Sub-Option 4.2: Optimize agricultural and livestock production systems

Rampant poverty in rural areas limits the choices available to households in allocating their productive capital (time and labor) and investments. They fall back on subsistence and food production on nearby lands. The low productivity of traditional agricultural systems pushes those who live next to forests to expand their cultivated area in order to offset the insufficient productivity, which inevitably results in greenhouse gas emissions due to deforestation and the degradation of forest resources.

It therefore seems necessary to take measures to boost the yields from agricultural and livestock production in areas bordering forests, specifically by providing support to rural populations situated on the edge of forests, focusing on sustainable and profitable agriculture and the maintenance of soil

fertility. This sub-option will be implemented in close collaboration with sectoral programs on agriculture and livestock. This collaboration will be carried out in the context of strengthening the implementation of agricultural and land use sector policies. A partnership will also be sought with microfinance institutions, leading to the development of an appropriate local financing mechanism to encourage a settlement process. This sub-option will need to clearly distinguish the agricultural sector and the livestock sector and the following interventions will be tested:

- **Agriculture:** Promote improved cropping techniques, particularly agro-ecological and agroforestry techniques for sustainable agriculture, thus encouraging a settlement process for farmers, followed by reinforcement of actions to enhance land tenure security (see also Sub-Option 4.1);
- **Livestock:** Develop and set in place an improved pasturage system by establishing collective agreements and a simplified development and management plan to ensure long-term management without any land degradation effects.

This strategic sub-option will mainly involve building the capacities of producers via improved agricultural production techniques, as well as the search for new varieties that perform better under current conditions and that are better suited to market demand. Nevertheless, other factors such as land tenure security, conducive to greater investment in agricultural lands, as well as facilitation of access to means of investment for rural producers, will also play an important role.

It has been noted that boosting the agricultural yield may in fact increase the pressures on forest resources, since lands where the old techniques were used before may now become profitable due to higher productivity. Analysis of this sub-option should therefore place special emphasis on this type of perverse effect so that subsequent implementation does not lead to an increase in emissions linked to deforestation and the degradation of forest resources.

3.5.3 Sub-Option 4.3: Promote rural development

REDD+ revenues should lead to growth in revenues derived from forest resource management to the benefit of forest populations in areas under heavy pressures, in particular by developing and promoting an environmental services payment mechanism, promoting biodiversity conservation with ecotourism, and diversifying the economic development of forest products, both timber and non-timber. This assumes a scaling-up of various forms of successful approaches such as private sector involvement or family initiatives and could lead to measures such as the following:

- Support the development of income sources that provide alternatives to slash-and-burn agriculture in areas near forest resources and develop related sectors to ensure sustainable revenues for producers;
- Facilitate rural inhabitants' access to financing sources by promoting microfinance systems;
- Improve information systems for producers concerning demand for agricultural, forest, and livestock products and strengthen their access to local, regional, national, and international markets for these products.

3.5.4 Sub-Option 4.4: Reorganize mining operations

Referring to Component 2a, large-scale mining operations contribute to deforestation, while traditional, often illicit operations result mainly in the degradation of forest resources. Under this sub-option, the Mining Administration will be helped to improve control and monitoring of mining operations, in order to reduce the latter's impact on forest ecosystems and ensure compensating reforestation and/or restoration schemes in the event that deforestation or forest degradation is

inevitable. Like similar forest sector interventions proposed under Strategic Option 3, these measures will be carried out in close collaboration with the judicial system to ensure better enforcement of the laws and regulations pertaining to mining operations. Efforts aimed at dissemination of the law, public participation, and access to information would certainly help improve the situations and collaborations at the local and regional levels.

3.5.5 Preliminary Analysis of Strategic Option 4

Table 2b-4: Preliminary assessment of Strategic Option 4: Develop alternatives to deforestation and the degradation of forest resources

Sub-Option	Costs	Feasibility	Benefits	Other Impacts	Sustainability	Potential Losses
4.1-Harmonize expansion of agricultural lands	Capital : ++ Opport. : +/- Trans. : +	Financial : -- Political : +/- Social : ++	Fin. : +/- CO ₂ : ++	Social : ++ Envir. : ++ Biodiv. : ++	+/-	Displ. : -- Econ. : --
4.2-Optimize agricultural and livestock production systems	Capital : + Opport. : - Trans. : +	Financial : - Political : +/- Social : ++	Fin. : ++ CO ₂ : +/-	Social : ++ Envir. : +/- Biodiv. : +/-	+	Displ. : -- Econ. : +/-
4.3-Strengthen rural development	Capital : ++ Opport. : -- Trans. : +/-	Financial : -- Political : +/- Social : ++	Fin. : ++ CO ₂ : +/-	Social : ++ Envir. : +/- Biodiv. : +/-	+	Displ. : -- Econ. : +/-
4.4-Reorganize mining operations	Capital : +/- Opport. : + Trans. : +	Financial : +/- Political : +/- Social : +/-	Fin. : +/- CO ₂ : +	Social : +/- Envir. : + Biodiv. : +	+/-	Displ. : +/- Econ. : +
Average	+	+/-	+	+	+	-

N.B.: ++ = very high; + = high; +/- = medium; - = limited; -- = very limited

4. REDD+ STRATEGY DEVELOPMENT PROCESS

After acquiring fuller knowledge of the causes of deforestation in Component 2a and the strategic options that have been proposed as a reference in Component 2b, development of the Madagascar REDD+ strategy will entail:

- Consultations with actors involved in or affected by deforestation at all stages of the decision-making process;
- A series of assessments and analyses in order to permit adjustments to the strategic options to be implemented, on the one hand, and to develop the tools and skills needed to implement the REDD+ national strategy, on the other.

The strategy development process comprises five stages spread over two years: i) Assessment and detailed analysis; ii) selection of effective and sustainable strategies; iii) specific studies; iv) finalization of the REDD+ national strategy; and v) establishment of favorable operational conditions.

4.1 Stage 1: Assessment and detailed analysis of each strategic sub-option

After the spatialized study of deforestation, the list and characteristics of strategic options and areas of intervention will be refined and clarified. Next, each area of intervention will be analyzed in detail based on the following five main studies to be carried out concurrently. The terms of reference for these studies are provided in Annex 2b-3.

- **Assessment of potential benefits and impacts:** This study will assess to what extent each strategic sub-option will truly influence the reduction of emissions linked to deforestation and forest degradation. It will analyze direct impacts in regard to REDD+, as well as potential co-benefits with respect to biodiversity conservation and community development, based on spatialization of the potential for reducing deforestation and forest degradation. The establishment of a close link with the Strategic Environmental and Social Assessment (SESA) described in Component 2d will be critical for this study, so as to permit careful consideration of potential negative impacts on biodiversity and/or communities bordering the forests in question. The goal of the study is to rank the strategic sub-options by degree of impact and expected co-benefits, as well as to identify priority areas for their implementation.
- **Assessment of feasibility of implementation:** This study will serve to assess the feasibility of each of the sub-options by identifying the main socioeconomic, political, and institutional risks associated with their implementation, based on area of implementation, and thereby infer any reorientations, adjustments, or improvements needed to ensure their success.
- **Assessment of costs:** This study will assess the estimated costs (including capital costs, opportunity costs, and transaction costs) of each strategic option. The goal is to be able to compare costs and economic advantages associated with options proposed in specific areas.
- **Assessment of sustainability:** The goal of this study is to analyze the potential for incorporating strategic options and their sub-options in national development policies and the strategies and policies of relevant sectors and thereby assess the sustainability of emission reductions attributed to each option.
- **Assessment of risks of losses:** This study will analyze potential losses due to displacement of emissions or market losses.
- **Strategic Environmental and Social Assessment (SESA):** The SESA, described in detail in Component 2c of this R-PP, is a key element in the development of the REDD+ national strategy of Madagascar. Beyond the abovementioned analyses, it will assess the impacts of the various proposed REDD+ measures and REDD+ implementation framework on the environment and on affected communities and other stakeholders. This process will be participatory, involving regular consultations with all REDD+ stakeholders in Madagascar, and will thus provide a way to refine the national REDD strategy and related measures and then reach a national consensus. It should however be noted that, unlike the abovementioned studies, the SESA will be spread over a much longer period, thus permitting a constant give-and-take between assessments, stakeholder consultations, and refining the REDD+ strategy.

4.2 Stage 2: Selection of effective and sustainable strategies

Strategy selection will be based on an iterative analysis of advantages and drawbacks:

- Comparison followed by selection of sub-options within each strategic option. Feasibility, costs, urgency, and effectiveness will be the main criteria.

- Combination of best sub-options between different options, in order to find the best possible synergy. Several strategic combination scenarios will then be developed.
- Comparative analysis between scenarios, followed by prioritization. The main stratification criteria include but are not limited to: impact on deforestation, effectiveness of the framework so developed, contribution to a better vision of deforestation control, effects at different levels, and realism of the proposed measures.
- Discussions will be held with key actors on an iterative basis during this selection process.
- At the same time, environmental and social impact assessments will be carried out in order to detect any possible insoluble blockages in the strategy, in which case it will be necessary to create other acceptable scenarios.

4.3. Stage 3: Specific studies

Additional studies will need to be carried out on scenarios that are chosen and accepted, in order to develop additional technical information likely to shape their feasibility and sustainability. The main studies to be carried out include but are not limited to the following:

- Analysis of integration and impacts in sectoral programs,
- Analysis of sustainability options,
- Analysis of needs for management systems at both the national and decentralized levels,
- Analysis of the system for monitoring and oversight of the proposed strategic mechanism,
- The terms of reference for these analyses are provided in Annex 2b-4.

4.4 Stage 4: Finalization of the REDD+ strategy

At least two sustainable scenarios encompassing accepted strategies need to be proposed, of which one will be chosen through consultation with key actors. The corresponding REDD+ strategy is formulated on two different levels:

- At the national level, constituting the REDD+ long-term framework,
- At the decentralized level, specifying spatialized fields of intervention to be implemented in the short and medium term under REDD+.

4.4.1 National Level

The strategy lays out the REDD+ management framework, covering the following aspects:

- policy, in terms of declaration and inclusion in sectoral goals and visions;
- legislative and regulatory goals;
- incorporation in other sectoral programs and projects;
- prioritization of priority areas for REDD+ implementation;
- direction and commitment to ensure sustainability of the process;
- terms of reference for management, monitoring, and oversight of the mechanism.

4.4.2 Regional Level

The idea is to develop fields of intervention for the main areas deemed to be locations under heavy pressure from deforestation and forest degradation.

4.5 Stage 5: Establishment of favorable operational conditions for REDD+ strategy implementation

At this stage, the conditions most conducive to implementation of the selected REDD+ strategy need to be spelled out, taking into account the following parameters:

- Specification of resource requirements;
- Assessment of available expertise and planning of capacity-building. All actors will be considered during this planning exercise;
- Development of priority tools for implementation of the REDD+ strategy;
- Regulatory statutes for the management system;
- Basic statutes for the data base tools (oversight system, national registry, etc.);
- Plan for setting the entire strategy in place;
- Negotiations between decision-makers and partners/donors to secure the financial resources required for implementation.

The final document will be drafted and there will be communications on various levels to ensure its dissemination and approval. The framework conditions will be set in place by making the statutes official and appointing/creating the REDD+ steering mechanism in Madagascar.

4. SCHEDULE AND SYNOPSIS FOR DEVELOPING THE REDD+ STRATEGY

To establish a well-developed and concerted strategy by the end of 2013, Madagascar will need to begin implementation of the R-PP in 2011. The main institutional arrangements for management will be set in place during this timeframe.

Box 2b-1: Principal stages of REDD+ strategy development

Year 1	<p>Analysis of four strategic options of the R-PP.</p> <p>Detailed, spatialized analysis of the causes of deforestation and forest degradation. The objective is to specify the “parameters” of the root causes and underlying causes of deforestation for each type of zone. General information will be disseminated in a sample of 100 municipalities selected from the 12 regions, where consultations will be held to gather the opinions of the general public in collaboration with PCPR members. These opinions will then be structured and discussed in 34 districts deemed most representative for REDD+ in terms of potential benefits and losses, presence of biodiversity, and size of the population involved.</p>
Mid Year 1	<p>Based on this analysis, the strategic options will be adjusted and “fields of intervention” will be determined and, in practical terms, spatialized and characterized, according to the selection of strategic options to be implemented. Concurrent with this study, discussions will be held on the key principles of “carbon governance” with all stakeholders, following the same approach as before: information and awareness-raising to gather feedback at the local level, discussions and proposals at the district and inter-regional levels.</p>
End Year 1	<p>Detailed analysis of the feasibility and scope of each field of intervention through four studies: impact, costs, feasibility, benefits. This feasibility analysis will take into account lessons drawn from early activities implemented during Year 1.</p>
Year 2	<p>Choice of the most promising and most efficient fields of intervention, in light of the results of the analyses and stakeholder opinions. Several fields of intervention could be combined to obtain different scenarios. Scenarios associated with protective measures will be compared with each other based on the criteria of acceptability, effectiveness, and feasibility.</p> <p>Finalization of the elements of implementation (carbon governance, institutional framework, etc.) for the fields of intervention in question.</p>
Mid Year 2	<p>Development of the REDD+ strategy based on agreement with all stakeholders on two levels:</p> <ul style="list-style-type: none"> • At the national level, in the form of policy, regulations, strategies, institutional arrangements, etc. • At the spatialized strategy level, in the form of programs to be implemented by type of zone. These strategies are short- and medium-term iterations of the national strategy, designed to expedite implementation based on needs in the field.
End Year 2	<p>Key institutional arrangements are now in place to steer implementation of the entire REDD+ strategy.</p>

Table 2b: Summary of strategy activities and budget

Main Activity	Sub Activity	Estimated cost in US \$			
		Year 1	Year 2	Year 3	Total
Adjust the strategic options and establish the list of operational strategies	Refine the list of the most promising options in terms of the causes of deforestation	2 300			2 300
Begin the detailed analysis of the areas of intervention	Assess the benefits and impacts of the operational strategies	41 108			41 108
	Assess the feasibility of implementing the operational strategies	9 019	15 199		24 218
	Analyze the economic advantages and costs of the operational strategies	6 399	7 160		13 559
	Assess the sustainability of proposed strategic options		17 177		17 177
	Analyze the potential for losing the strategic options		16 436		16 436
	Synthesize and compile analyses on the operational strategies		4 160		4 160
Analyze the combinations (scenarios) of the operational strategies	Establish strategy scenarios		3 977		3 977
	Analyze the economic costs and benefits of scenarios				
	Conduct specific studies: search for additional information, SEA integration, continuation, system to monitor the mechanism		28 699		28 699
Formulate REDD plus strategy	Begin the formulation of REDD plus strategies. Formulate spatialized strategies. Consultation. Take into consideration SESA aspects (mitigation, protection...). Negotiation among decision-makers		34 381		34 381
	Assess national capacities, resource requirements, proposal to strengthen capacities.		14 600		14 600
Conduct studies for strategy implementation	Establish plan to develop tools for implementing strategies and reforms			6 000	6 000
	Complete preliminary studies on obtaining additional funding for financing the REDD system				
	Total 2B	58 826	141 787	6 000	206 613
	Government				
	FCPF	58 826	107 406	6 000	172 232
	Other funders		34 381		34 381

2c. Framework for implementing REDD plus

The REDD plus strategy, as mentioned previously, will be designed and carried out within the framework of national development priorities. These priorities are well established in certain countries, while in others it is possible that the implementation framework already exists. In the case of Madagascar, this Component “Framework for implementing REDD plus” is aimed at establishing credible and transparent institutional, legal and governmental procedures which could be necessary if the country is to implement its strategic options prior to REDD plus presented under Section 2b, as well as to respect future potential commitments made by the country under REDD plus. Successfully implementing REDD plus will certainly depend on the confidence of stakeholders and the extent to which they believe in the capacity of the national framework to create enough equitable incentives for the strategic options to be carried out.

This Component deals with the preparation and establishment of the implementation framework for Madagascar’s REDD plus strategy. It takes into consideration the sectors and various actors involved in forest management and land use. It is also linked to the development principles subsequently adopted by the country, independent of changes in the institutional framework, and takes into consideration its natural resource capital, particularly its forests.

Given that the strategy aims at stressing the harmonization of policies, the coordination of initiatives at various levels in different sectors, and the implementation of spatialized intervention activities followed by the establishment of a legal foundation for carbon management, will be taken into consideration within the framework of the implementation process. .

The elements that will be proposed below must be confirmed and given detail (i) in accordance with the results of targeted institutional studies, and then (ii) in accordance with negotiations which will take place within the framework of the national management and preparation mechanism (Component 1a) as well as (iii) through analyses provided for in Component 2a, 2b, and 2d, and the results of consultations (Component 1b).

The implementation of the Madagascar REDD plus will be national in scope. This national approach requires coordinated and integrated intervention, taking into consideration the first experiences and lessons learned from projects initiated over the past several years. Based on the current level of knowledge and skills, the country has opted for an intermediate intervention inspired by the so-called nested approach. This approach will begin in the Eastern Wet Ecoregion, considered to have high potential for REDD plus and containing the majority of REDD plus projects in Madagascar. The outcomes of projects in this approach will contribute to establishing the framework for implementing REDD plus at the national level. The country benefits from the experiences of projects currently being carried out, as these projects can serve as intermediate windows providing answers to all the institutional, legal, technical, methodological and financial issues among the various institutions at different levels, and for conducting activities in the field and at the grass-roots level.

2c-1. Key principles of the implementation framework

- a) **Performance-based incentives:** By creating performance-based incentives, the REDD plus strategy will make the investments necessary to implement the policies and supporting measures as well as to create national capacity to manage the REDD plus process. Strengthening capacities at the regional and local levels will be particularly important in order to allow current participants to become totally involved in the implementation of the future strategy.
- b) **Transparency:** Collecting and handling information will be done in a transparent manner, particularly in terms of:
 - The performance of the various actors,

- The carbon tracking system (see Component 4a),
 - The distribution, use and management of funds and,
 - The social and environmental impacts of policies and supporting measures. (See Component 4b).
- c) **Optimization of existing structures:** The institutions for the framework implementation of REDD plus will govern the flow of information and funds for incentives and investments, as well as the mechanisms for arbitrating disputes among sectors stemming from technical, political, operational and financial issues. The institutional base will rely mainly on existing structures at the national, regional, and local levels.
- d) **Efficiency and equity:** the consultation process during the period of preparation ensures that concerns at different levels are taken into consideration when the strategy is developed. Monitoring the efficiency and equity of how potential REDD plus revenues are shared will be necessary. Moreover, a transparent and regular assessment of outcomes achieved at all levels will be required. Also, in addition to the recognized right of use, sharing a part of revenues generated will also be based on the results of this evaluation.
- e) **Mainstreaming:** The REDD plus strategy shall be integrated into a low carbon emission framework of national development. The development and implementation of a REDD plus strategy will require commitments by actors and sectors at all levels. Capacity building at the regional and local levels will be particularly important.

2c-2. The institutional framework for implementation

Taking into account the above principles, the establishment of the institutional framework for implementation will occur in two phases:

- Proposal for a preliminary framework based on the institutionally arranged preparation (see Component 1a)
- Next, based on this preliminary vision, a proposal for an institutional framework of governance, including:
 - Coordination among sectors and the resolution of potential conflicts,
 - Shared responsibilities,
 - Conducting studies on the need for institutional and legislative reforms.

The preliminary elements and options for a framework of “carbon governance” will be dealt with in paragraph C.

2c-2-1 Preliminary framework

- This preliminary framework will be guided by lessons learned from the preparatory institutional arrangement. (See 1a). The process of developing the implementation framework should clarify the relationships and responsibilities of the institutions and participants in the REDD plus strategy. The charter of national responsibility to be developed should consider all the existing institutions and structures which will later be revitalized (including those established under Component 1a). It should take into account the legislative and regulatory framework as it relates to the REDD, **intersectoral institutional structure: Strategic decision-making** function and arbitration of disputes that have not been resolved at the level of the national structure for monitoring and mediation described below;
- **National structure for monitoring and mediation:** Its functions are to monitor the implementation, maintain REDD plus liaison with the intersectoral decision-making process, planning and **technical** management as well as REDD plus coordination. The structure will also deal with intersectoral disputes and if necessary will refer them to the intersectoral institutional structure;
- **The National Coordination Office – REDD plus (BNC-REDD plus)** has been created within the Directorate General for Forests. It is a steering and coordination body for all activities and for the entire process related to REDD plus. The BNC-REDD plus is also responsible for

making spending decisions and ensuring that activities meet quality standards. Finally, the BNC-REDD plus will be responsible for connecting the REDD process with the political and strategic decision-making policies of the principal sectors involved. It will thus be the official interlocutor of the national institutional monitoring and mediation structure and will also provide information needed by the intersectoral institutional structure for the strategic decisions to be taken.

- **Management Unit (Fiduciary Agency):** It will handle the function of daily operational management in executing REDD plus, the function of financial and administrative management by making funds available to the beneficiaries, follow the planning of the national monitoring structure and the management of REDD plus financing and revenues, and the spending commitments of the BNC-REDD plus. Details on REDD plus management and revenues are given in paragraph D (iii)
- Cutting across lines of authority, a **Monitoring, Reporting and Verification Unit (MRV)**.³⁰
- A mechanism for civil society, vulnerable groups and native populations to express themselves and lodge grievances regarding the effects and benefits of REDD plus

With the exception of the creation of the BNC-REDD plus, the establishment of these structures for the national level will take into consideration the experiences drawn from mechanisms having been set up to coordinate regional and/or local efforts. Accordingly, within the framework of the overlapping eco-regional approach, indicated as an intermediate phase, infra-national/sub-regional structures, even if minor, should also be established in view of the roles of decentralized state services (examples, the different Inter-Regional Directorates in charge of forests, land use, agriculture, etc.) and those of civil society members operational on the ground.

2c-2-2 Proposal for the institutional framework of governance

The final institutional governance plan will be defined following completion of the process of preparing the REDD plus strategy, in order to establish a “REDD plus governance” accepted by all the stakeholders. This framework for governance will include the coordination of REDD plus policies and initiatives, the implementation of activities, the monitoring system as well as the requirements for institutional and legislative reforms. It will also take into account real experiences encountered when the approach was implemented on an infra-national/sub-regional scale. Various detailed studies will be conducted to this end, and the terms of references can be found in Annex 2c-1. The final plan will be chosen once the REDD plus strategies have been designed and validated.

(i) Intersectoral coordination and resolution of potential disputes

The development of the REDD plus strategy involves the following sectors: forests, agriculture, animal husbandry, environment, public works, transportation, energy, mines, decentralization, land use and rural land improvement, water resources, etc.

Accordingly, for intersectoral coordination, the upstream establishment and effectiveness of two structures, namely the intersectoral institutional structure and the structure for national monitoring and mediation, and those of the National Office for REDD plus coordination, and will ensure:

- On the one hand, that the REDD plus strategy is consistent with all national development priorities, and
- On the other hand, that a mechanism is in place for the management and resolution of intersectoral conflicts.

Furthermore, within this multisectoral context, it is inevitable that conflicts between priorities and political objectives will emerge and require a stable and sustainable system. Accordingly, a study

³⁰ All MRV-related issues will be addressed in component 4.

on the mechanisms of conflict resolution will be conducted and will analyze the feasibility of the following process:

- Initially, discussions will be held within the national monitoring and mediation structure where the principle decision-makers of the various sectors will be present;
- And only if necessary will disputes be mediated by the intersectoral institutional structure.

This study will thus highlight the importance of the key roles of each of the above-mentioned structures, as well as the necessity of integrating the conflict management mechanism into the system of intersectoral coordination.

ii) Sharing implementation responsibilities

The REDD plus approach should develop the capacities and experiences acquired by the various actors and organizations in Madagascar which have been engaged until now in the conservation and sustainable management of the forests. The delegation of responsibilities should be enhanced. This enhancement can be done, for example, by assessing existing models on the transfer of natural resource management to local communities, as well as other forms of management delegation including traditional forms of management. The involvement of these local communities will constitute a core element in the strengthening of existing structures. In response to this community involvement, acknowledging their legitimacy, and reciprocally making them aware that they are accepted, is a crucial factor in this delegation and transfer of responsibility. In addition, the different sensibilities of groups (minorities or marginalized, women, youth, etc.) will be taken into account in the sharing and transfer of responsibilities.

The intermediate phase preceding the national approach, will lead to a better appreciation of the development of capacities in a decentralized system and consequently, to a better assessment of the degree of responsibility to confer on the leaders involved.

(iii) Studies on the requirements for institutional and legislative reform

The development of a national system should be done with the implementation of infra-national or sub-regional activities. Accordingly, the following studies will be initiated and administered during the preparatory phase by the REDD plus National Coordination Office:

- The analysis of the regulatory framework and the design of the institutional plan for the national approach;
- The adoption of community management tools to implement the REDD plus approach, or develop appropriate community tools;
- The development of a control system (MRV).

The terms of reference of these activities are found in appendices 2c-1/ TDR 2c.1.1, 2c.1.2 and 2c.1.3.

Subsequently, the national monitoring and mediation structure will handle the process of formulating the necessary reforms.

2c-3. Preliminary elements and options for a framework of “carbon governance”

By “carbon governance” is meant:

- Carbon properties and the carbon registry;
- Allocation of funds to finance the implementation of the REDD plus strategy;
- Transparent management of REDD plus revenues and the sharing of profits;
- Studies and negotiations for carbon governance.

The final carbon governance framework will be established through studies and political decisions during the final preparatory phase of the REDD plus strategy.

Box 2c-1: Carbon property

The definition of carbon property should take into account the following facts:

- Compensation payments (for environmental services) and incentives are not necessarily related to the carbon ownership, especially if the payments are determined by the performance indicators in addition to tons of CO₂ emissions.
- Separate the issue of legal and formal ownership of carbon from the question involving legitimate rights, in a system of allocation of REDD+ funding and revenue sharing generated by a reduction in emissions to implement the REDD+ strategy. As mentioned above, the actors incurring costs and contributing to the investments necessary should be taken into consideration in an equitable fashion for the same emissions reductions.
- The issue of carbon property cannot only depend on the land status, related to the landowner, but also the owner of the trees on the land in question (who would thus be owner of the above-ground biomass.).
- Also consider the role of rural communities, taking into account the notion of ownership under customary law.
- At this time, no legislation in Madagascar stipulates carbon rights. The Madagascar REDD+ strategy should establish this legal foundation, appropriate (i) to the national context and to local realities, and (ii) in conformity with existing international laws and conventions.
- Take into account the current situation related to the unclear legal status of the vast majority of land in Madagascar. Customary law – contrasted with official land titles – is an example. Also clarify the potential differences between “land title” and “land certificate”
- Finally, a deeper analysis will also be necessary to examine the relation between carbon rights and the use of forest products in the different management regimes: community forests, co-management systems and forest concessions (KoloAla, management transfers, etc.) and others.

These elements of the framework should be validated by all stakeholders. Accordingly, studies, analyses and consultations will be undertaken, ensuring that the framework is operationally effective – the relative terms of reference are found in Appendices 2c-1/TOR 2c-4, 5 and 6. Actual examples of revenue and allocation management, drawn from the experiences of pilot projects, are assembled in Appendices 2c-2 and 2c-3.

Ownership of forest carbon and beneficiaries

According to forest legislation, national forested areas as well as national forests belong to the state. This means that all products from these areas are owned by the state, including forest carbon. A study related to carbon ownership is already being planned. Community rights in terms of forest carbon are more related to the use and the management of forest resources than to the issue of land ownership. Moreover, a bill related to management delegation has recently been approved.

All reforms and clarifications related to the ownership of forest carbon should (i) give priority to the harmonizing of customary rights with legal rights and (ii) be considered in the context of a broader reform and clarification of property in order to protect local community rights and to avoid conflicts and negative social impacts during the implementation of the REDD plus strategy.

The State’s actual options to delegate the right to sell carbon to promoters (Makira is a case in point) should be better clarified in order to reassure future private or public investors in Madagascar’s REDD plus activities.

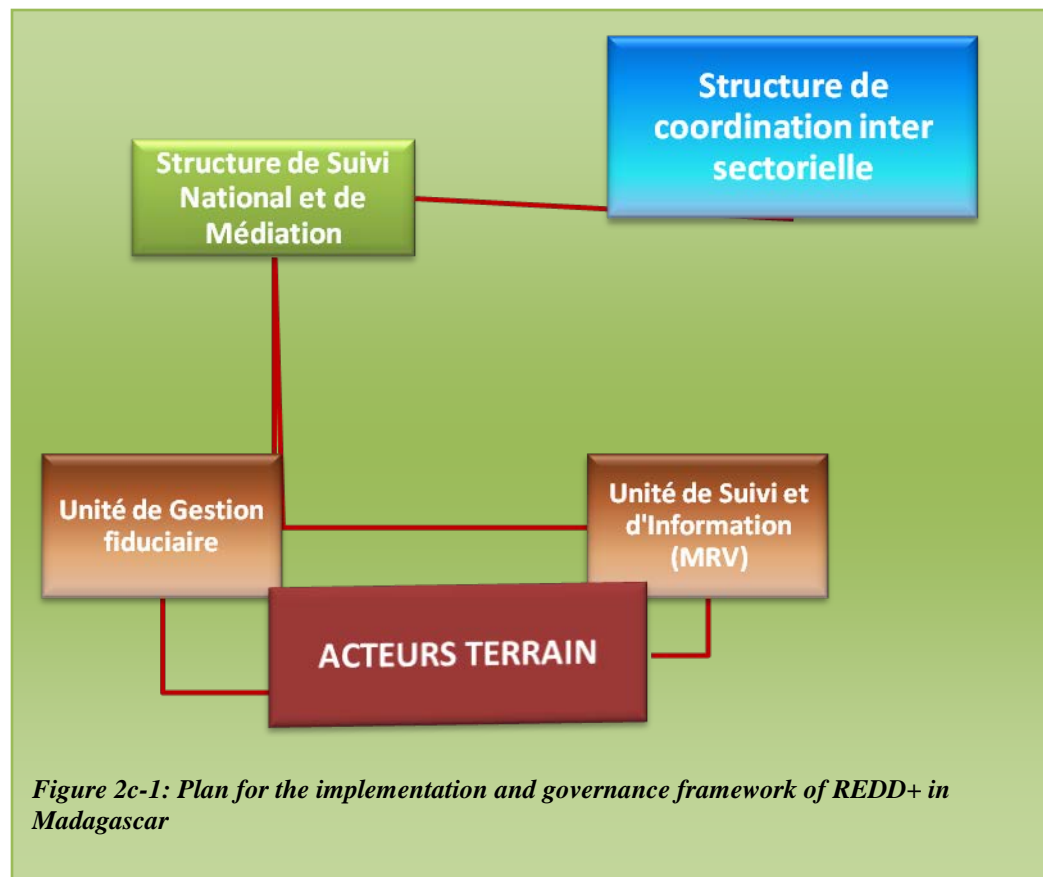
Management of REDD plus funding and revenues

The revenue sharing experiences and methods of current REDD plus projects will be analyzed. It should be noted that the revenues produced by these projects (which target voluntary markets) from the sale of carbon credits are still very limited. This is also true in terms of the effectiveness of their revenue sharing and performance monitoring mechanisms which have yet to be tested, particularly the continuation of emissions reductions. Nevertheless, experiences in the field are progressively evolving (examples of Makira and CAZ) and could be taken into consideration. The profit-sharing mechanisms and experiences from community governance could also contribute to the analysis. Similarly, the tools developed by the Foundation for Protected Areas and Biodiversity in Madagascar (FAPBM) to measure the performance of various protected areas (effectiveness of conservation, financial management, etc.) can provide information which could help in the discussions on the mechanisms of revenue management. The models and experiences of revenue sharing in the mining and petroleum sector will also be analyzed, and those used by the Madagascar National Parks (MNP) for the national system of protected areas, as well as other mechanisms in the country. Proposals made by WCS (Makira) and the FORECA program will also be considered. (See Annex 2c-2)

Various options for the financial management of the REDD plus strategy will be evaluated and compared during the preparatory phase. An evaluation will be conducted of the models of existing institutions which involve funding mechanisms, such as FAPBM, the Tany Meva Foundation, the National Forest Fund and private investment funds. It is possible that a new model could be adapted or created. A combination of elements of these options could also be envisaged. The study will include the advantages, disadvantages, structures and costs of each option and model, taking into consideration the resources targeted and the method of managing those resources.

Finally, it is important to note that taking into account certain profits that are not directly reported in a monetary sense, such as the results of research projects, should be considered and evaluated when negotiating revenue sharing contracts. Outlines and details describing these mechanisms are in Annex 2c-3.

Whatever the option may be, integrating the other sectors must be facilitated and a transparent system of financial audits established. Figure 2c-1 below provides a general overall illustration of the implementation framework and the framework for carbon governance.



Allocation of funds to finance the REDD plus strategy

With respect to all stakeholders, the implementation framework of the REDD plus strategy will ensure that sufficient resources are available for the required efforts and contributions. The costs of implementing actions and the opportunity costs for the various actors in all sectors concerned will be taken into consideration. In order to instill a level of confidence, and to encourage all actors to assume ownership of the REDD plus strategy, all stakeholder sensitivities will be taken into consideration when developing and managing the implementation framework for REDD plus, with particular attention given to the role of civil society. Details are found in Annex 2c-3 on this funds allocation system.

Transparency in the revenue sharing process

During preparation of the REDD plus national strategy, mechanisms will be developed to ensure the effectiveness and transparency of funding REDD plus strategies and activities, as well as revenue sharing for all stakeholders. The process should be independently verified and monitored (for example by international auditors and by the entities that co-finance REDD plus). The national monitoring and mediation structure will also guarantee that all stakeholders in Madagascar have access to information on the funding and revenues generated. These stakeholders will also be involved in the assessment of how effectively revenues are distributed and utilized, in line with previously established guidelines. The involvement of civil society will be very important in this process, particularly through the platform of national civil society organizations with responsibilities for environmental governance. This platform has the advantage of being present or represented at the national level as well as at the regional and local levels.

Studies and negotiations for the governance of carbon

Several analyses will be conducted by the REDD plus platform during the preparatory phase to propose and negotiate the principle elements of carbon governance. The planned activities (see terms of reference in Annex 2c.1 include:

- Preparing the actors on the principles of carbon governance;
- Formulating methods for sharing carbon revenues;
- Developing a governance plan for managing and monitoring carbon revenues.

A series of separate activities will be devoted to supporting these studies, exchanges and negotiations with decision-makers through workshops and missions.

D. Summary of the stages until completion of the implementation framework

Table 2c-1: Stages until completion of the implementation framework

Year 1	Year 2
<ul style="list-style-type: none"> - Identification and design of the institutional plan, taking into account the intermediate phase approach - Studies on institutional and legislative reform requirements (See Annex 2c-1/ First part of TOR 2c.1) - Establishment of the REDD plus strategy coordination structure 	<ul style="list-style-type: none"> - Revitalized conflict resolution mechanism. - Development of Charter of Responsibility - Structures made operational - Establish overall institutional framework
<ul style="list-style-type: none"> - Analyses of the regulatory framework - Identification of areas for intervention - Coordination of REDD plus policies and initiatives (See Annex 2c-1/ TOR 2c.1.1) - Intersectoral procedures for acceptance of REDD plus governance by stakeholders 	<ul style="list-style-type: none"> - Establishment of the legal foundation for REDD plus - Implementation of areas of activity
First stage in developing adapted community tools: <ul style="list-style-type: none"> - Consultations - Analyses of pilot projects (Cf. Annex 2c-1/ TOR 2c.1.2)	Enhancement, preparation, and development of new, adapted community tools Introduction of adapted community tools
Designing a system to monitor factors causing deforestation and degradation (Part 4) (See Annex 2c-1/ TOR 2c.1.3)	Promote, improve and use the system.
<ul style="list-style-type: none"> - Studies for carbon governance: preparation of actors (See Annex 2c-1/TOR 2c.1.4) - Proposals validated by all stakeholders 	<ul style="list-style-type: none"> - Reform - Preparation of actors and sensitivity and communication kits - Framework for carbon governance becomes operational; sensitivity and communication kits - Clarification of forest carbon ownership
<ul style="list-style-type: none"> - Analyses on possible carbon revenue-sharing schemes (See Annex 2c-1/ TOR 2c. 1.5) 	(cont.) Process for sharing carbon revenues is formulated
<ul style="list-style-type: none"> - Comparison of existing financial management schemes (See Annex 2c-1/ TOR 2c.1.6) - Assessment of existing institutions - Possible creation or addition of an institution 	(Cont.) Different options for financial management of REDD plus strategy

The REDD plus National Coordination Office will handle the launch and will supervise the mandates. The implementation of mandates should take into account existing or identifiable local and international competencies, depending on the skill set required.

E. Budget

Table 2c-2: Summary of framework implementation activities and budget

Main Activity	Sub- Activities	Estimated Costs in USD			
		Year 1	Year 2	Year 3	TOTAL
Conduct studies related to institutional and legislative reforms	Analyze the overall regulatory framework for implementing REDD plus strategies. Regulatory analysis. Propose necessary reforms. Design institutional plan. TOR 2c.1	25 009			25 009
	Conduct study and explore ways to ensure sustainability of implementation framework (Tdr2c.1)		17 148		17 148
	Design implementation management tools adapted to the community level (Tdr2c.2)			15 199	15 199
	Propose a monitoring and control system for the strategies and the changing causes of deforestation (TOR 2c.3)	2 000			2 000
	Support and negotiate with decision-makers to formalize the regulations related to the new management plan			4 000	4 000
Conduct studies on issue of carbon governance	Prepare participants on the principles of carbon governance: raise awareness on the principles of carbon governance; edit communication tools (TOR 2c.4)	13 912			13 912
	Gather opinions on carbon governance, associated with consultations during the detailed analysis of the causes of deforestation. Consolidation. Preliminary discussions with key actors.(TOR 2c.4)	12 000			12 000
	Conduct a study on carbon ownership. Proposal. Regulatory analysis for all carbon governance (TOR)	18 378	18 378		36 756
	Conduct a study to formulate a mechanism for carbon revenue sharing, associated with the sustainability of the entire mechanism (cont., MRV etc...TOR 2c.5.)	30 169			30 169
	Develop a transparent management and monitoring plan for carbon revenues. Institutional proposal. Regulatory proposal (TOR 2c.6)		25 169		25 169
TOTAL 2c		101 467	60 694	19 199	181 360
Government					
FCPF		101 467	60 694	19 199	181 360
Other funders					

2d. Social and environmental impacts

A. Rationale

The **goal** of this phase is to evaluate the probable effects (positive and negative) of the REDD strategic options and the implementation framework, either identified in sections 2b and 2c, or to be identified during the preparation of the work. The idea is that REDD, starting with the preparation phase, should “do no harm”, but rather “do good.”

The Environmental and Social Strategic Assessment (SESA) is a valuable tool for integrating the environmental dimension into strategies, policies and development planning. The SESA allows environmental consequences to be fully taken into account at the earliest phase of the process along with the economic and social impacts.

Compared with the Environmental Impact Study (EIE) which is better known and is more at “project scale”, and thus becomes a “short term” tool, the SESA allows the impacts to be taken into account at an early stage, thus controlling them more effectively, while broadening the analyses to a development option. In terms of the REDD plus strategy, the SESA provides recommendations which act retroactively in all the plans, so that consideration of the environmental and social impacts of actions to reduce deforestation and degradation is optimized.

B. Objectives

The main goal of this SESA is to integrate environmental issues into the REDD plus implementation strategy, and to identify, describe and assess the significant and probable impacts and interactions among the environmental, economic and social factors.

It aims at having the REDD plus program (i) conform to the norms of democratic governance as reflected in its national commitments and multilateral agreements; (ii) allow all participants to benefit equitably from the advantages of the REDD plus program; (iii) contribute to the long-term security of living conditions in local communities and increase their well-being - with particular attention given to the most vulnerable; (iv) contribute to more sustainable development, respect for human rights, rights as stipulated in national laws, rights under customary law and collective rights, and national development goals; (v) maintain and increase biodiversity services and ecosystems; (vi) allow all stakeholders to participate fully and effectively, have access to, and receive precise information to allow informed participation in decision making and good governance.

On the one hand, this is a plan for **conservation** which ensures that environmental and social concerns are taken into account during the development and implementation of the REDD plus program:

- It provides an assessment framework to define the conditions necessary for the social and environmental execution of the REDD plus program, using a multi-stakeholder evaluation process;
- It aims at increasing benefits and avoiding negative impacts.

On the other hand, this SESA will lead to a faster evaluation of the lessons learned concerning:

- Experience gained in reducing deforestation and forest degradation, and
- Experience gained in the area of forest governance as it relates to REDD plus

It will provide an opportunity to better identify and assess potential activities related to REDD plus, as well as additional potential benefits (poverty reduction, conservation of biodiversity, greater political will, etc.).

C. Measures

The constitution of Madagascar stipulates that all citizens protect the environment. Two other important and relevant aspects are mentioned in this document:

- The state guarantees that appropriate measures are taken to protect, conserve and enhance the environment. (Art 39)
- The communities (Fokonolona) can take appropriate measures to counter efforts that might destroy their environment, dispossess them of their land, take control over traditional cattle grazing areas or those preserved for their traditional rituals, provided such measures do not prejudice the general interest and public order.

In this regard, the primacy of local communities is recognized when land areas are to be allocated. In 1990, the Malagasy government adopted its Environmental Charter which sets forth three major principles:

- The obligation to protect the environment: *“the protection and respect of the environment is a general interest. Everyone has a responsibility to protect the area in which he lives”* (Art 4);
- The right of the people to information and to participate in decisions on the environment: *“all natural or legal persons must have the opportunity to be informed, either directly or through groups or associations, of decisions that could influence the environment. The ability to participate in decisions shall also be ensured”* (Art 4), and;
- The obligation to carry out impact studies (in the broad sense): *“Public or private investment projects that could harm the environment must be subjected to an impact study, taking into account the technical nature and scope of such projects as well as the sensitivity of the environment in which the project will take place.”* (Art 10). Thus, it is mandatory that the people participate in decisions concerning their environment.

The legal framework of this environmental assessment is established by the MECIE³¹ decree which obliges public and private investors to carry out an environmental impact study (EIE), when these investments could harm the environment, in application of the Environmental Charter. Three major principles can be highlighted: i) any plan, program or policy which could change the natural environment or modify the use of natural resources, and/or the quality of the human environment in an urban and/or rural setting must be subject to an environmental impact study (Annex 1 of the MECIE); ii) the National Office for the Environment (ONE) is the delegated authority and sole access for the MECIE and is responsible for evaluating the EIE, as well as for coordinating the monitoring and conformity of the environmental and social management plans; and iii) the definition of an EIE (in the broad sense): the EIE is a prior assessment of the potential foreseeable impacts of a given activity on the environment.

At the international level, the necessity for an SESA is based on the international agreements ratified by Madagascar in the field of development. The following are references:

- The Declaration of Paris on the effectiveness of development assistance, adopted March 2, 2005, calls upon development assistance agencies and the partner countries to define common approaches for environmental assessment in general and for SEA in particular.
- The SESA for sectorial plans and programs applies to programs funded by the World Bank.
- Resolutions of the Conference of Parties (COP), particularly in the area of protection, rights to information, and human rights.

Although there is no recognized conventional framework in terms of SESA, Madagascar has acquired much experience in the area of environmental assessment through well-established mechanisms that date to 1999:

³¹ Decree No. 99-954 of December 15, 1999 amended by decree No. 2004-167 of February 3, 2004, related to the compatibility of investments with the environment (MECIE)

- Regulatory framework (Environmental Charter, National Environmental Policy, Forest Policy, Environmental Program, ...)
- Institution responsible for environmental assessments – “ONE”
- Environment offices in ministerial departments
- Decentralized territorial administrations (regions, districts, townships), NGOs and research offices created within MECIE
- Several environmental management and assessment tools which have already been developed and are being used; sectoral (including forests) directives and guides. Relevant guidance has been available for the SESA since 2008. This guidance was developed from capitalizing on about 15 completed SESA, and SESA international level performance criteria.

In the general area of environmental evaluation, several hundred initiatives (policies, plans, programs and projects) including 15 SESA have been approved by an environmental assessment.

In the case of Madagascar’s REDD plus, it should be noted that the SESA will be carried out as the REDD plus strategy is being formulated, so that this SESA will have greater utility and be as relevant as possible in terms of which areas for adapted and appropriate intervention will be selected.

D. Principles and criteria

The social and environmental criteria for conducting the SESA are based in international agreements and in the resolutions of the Conference of Parties on (i) biological diversity, (ii) the elimination of all forms of discrimination with regard to vulnerable (minorities, women...) racial and professional groups (iii) the fight against corruption, (iv) the rights of native peoples, (v), access to correct information, (vii) and the Millennium Development Goals (OMD).

E. Protection framework

A REDD plus national protection framework will be established, developed in relation to the applicable and applied frameworks in Madagascar. This framework will be based on the MECIE decree, the operational directives of the World Bank in terms of protection and the functional framework for national procedures of social protection in the safeguarded areas. The following table establishes the parallel assessment processes following the World Bank concept and the concept applied to Madagascar.

Table 2d-1: Characteristics of the different types of assessment processes

Theme	World Bank Safeguard Procedures	National requirements in terms of Protection
Concept	A group of participatory analyses and approaches aimed at integrating environmental and social considerations in policies, programs and plans	Prior examination of the impact of plans, programs and policies on the environment with a view to bringing such impacts down to an acceptable level
Field of application	All plans, programs or policies which initially indicate that there is a potential environmental or social impact (almost all PPPs))	All plans, programs or policies that could modify the natural milieu or the use of natural resources, and/or the quality of the human environment in an urban or rural milieu.
Broad terms of reference		
Reference in the SESA	Operational directives of the World Bank, which are authoritative at the international level.	The SESA guide, with references to good international practice
Consideration of people affected by the project	Operational directives of the World Bank: PO 4.12 on the involuntary resettlement of persons	Avoid, minimize or compensate the negative impacts on the population.
Consideration of natural habitats	Only usage rights of populations are authorized in natural habitats (PO 4.04).	Avoid cumulative negative effects on the environment. As much as possible, avoid impacts on natural habitat
Participation		
Assessment of impact study	All projects presented for funding must be subject to an environmental assessment (PO.4.01). Assessment made by World Bank conservation experts	Participatory assessment involving the populations affected by the project, the public, and an ad hoc technical committee.
Alignment of strategies	Correct the strategy to be in line with relevant points taken from the assessment	Integrate results of the assessment into the strategy

The SESA must include an environmental management and social protection plan (PGEES) aimed at providing extensive details on the stakes or concerns, identified impacts and measures, (environmental as well as social and economic) which could impact the populations affected by the REDD plus strategy (PASR). This plan will later be used as the environmental statement of work (CCE).

The SEA should take the following points into account in its PGEES:

- The analysis of linkages between the environmental, social and economic stakes and concerns, as well as their probable impacts, with the REDD plus and with the socioeconomic development of populations affected by the REDD+ strategy. It can be planned consistent with the principles of sustainable development, taking into consideration the major, far reaching impacts that are international, cumulative and synergistic.
- A detailed analysis of the plans and measures for social protection.

The National Environment Office in collaboration with the General Directorate of Forests will be responsible for developing a PGEES guide for REDD plus strategy and assessment of the PGEES. The guide will translate the measures to be adopted before, during and after development of the SESA, as well as corresponding activities.

F. Charter of responsibility in terms of the environmental and social strategic assessment

The entities involved in the development of the SESA are the Ministry for the Environment and Forests, the National Environment Office and the REDD plus Platform.

The Ministry of Forests

The Ministry of Forests will be the promoter of the SESA. Supported by the BER, it will develop the SESA terms of reference which will be presented for validation to both the National Environment Office and the World Bank. It ensures, through its departments and offices, that the activities of consultants are monitored during the process of developing this strategic environmental and social assessment. The Ministry must ensure that sustainability as well as environmental and social issues and concerns are integrated into the entire assessment. It will also ensure that the results of the SESA are integrated and taken into consideration in the process of establishing the REDD plus. It will also be responsible for information and communication on the SESA and REDD plus strategy.

The National Environment Office (ONE)

In line with the MECIE decree, ONE leads the assessment of environmental impact studies and coordinates the Technical Evaluation Committee (CTE) which is composed of sectoral environmental offices and the Ministry for the Environment. This same principle will be applied within the framework of the SESA. Supported by the REDD plus Platform, ONE together with CTE (i) will validate the SESA terms of reference, and (ii) be responsible for the assessment and validation of the preliminary SESA.

The Platform for Coordinating REDD plus Preparation (REDD plus Platform)

As this is a structure that will replace the CT-REDD during the two years of the R-PP, the REDD plus Platform will be incorporated into the assessment committee directed by ONE. Its role is to ensure the independent monitoring of how the SESA process is carried out, which will lead to greater equity and impartiality in the process.

The REDD plus National Coordination Office (BNCR)

This is the entity responsible for technical and operational management of the process activities; in addition to its role of coordinator and guarantor of activities implemented by the SESA, the BNCR will rule on the measures and arrangements consistent with the general planning established in consultation with the SESA.

The World Bank

It will be responsible for validating the SESA terms of reference.

The final version of the SESA will be subject to an assessment by the World Bank.

Consultants

National consultants supported (or not) by an international consultant will be employed to develop the SESA. They will work under the supervision of the Ministry of Forests (supported by the BNCR). The consultants will also provide for the capacity building of the various stakeholders involved in the SESA, prior to launching the study. Areas needing strengthened competencies are suggested in Annex 2d-1.

Other actors

Several other actors will be involved in the SESA. These are mainly other ministerial departments, regional and local authorities, traditional leaders, the populations that depend on the

forests, populations affected directly by the REDD plus strategy, civil society, universities / researchers and various non-governmental organizations which have a relationship with REDD plus.

It is important to note here the close linkage between this aspect (social and environmental impacts) and aspect 1b (information sharing and preliminary dialogues with groups of key actors) and aspect 1c (consultation with, and participation of, stakeholders), because the approach of consulting with the stakeholders is the same.

Moreover, the launching of aspect 2b (Strategic Options for REDD plus) depends in part on certain elements produced by the SESA, in particular those involving the preliminary study.

For the specific case of the SESA, the communities must participate in the SESA process in order to be able to express their point of view, and in a certain way or to a certain extent, to participate in the decisions taken that could exert some influence on their environment.

Table 2d-2: Mandate and roles of stakeholders in the SESA

Entity	Mandate	Role in developing the SESA
General Directorate of Forests	<ul style="list-style-type: none"> Implement the environmental and forestry policies 	<ul style="list-style-type: none"> Ensures preparation process at REDD plus Promotes the SEA Supervises the SESA
REDD plus National Coordination Office	<ul style="list-style-type: none"> Manage the preparation process at REDD plus 	<ul style="list-style-type: none"> Manages the letting of contracts and finalizes terms of reference Ensures quality of the SESA development process (consultation between stakeholders, communication about SESA, etc.)
National Environment Office	<ul style="list-style-type: none"> Single access point for the MECIE 	<ul style="list-style-type: none"> Validation of SESA terms of reference Validation of frameworking of the SESA Coordination of the CTE of SESA Training on SESA Assessment of REDD plus environmental governance and social protection plan (PGEES)
World Bank		<ul style="list-style-type: none"> Validation of the SESA terms of reference Assessment of REDD plus environmental governance and social protection plan (PGEES) Financial support Methodological support for the process
Research / Consultants Office	<ul style="list-style-type: none"> Conduct the SESA according to the terms of reference 	<ul style="list-style-type: none"> Develop the preliminary version Develop the final version after the assessment

G. Participation of, and consultation with, the public

Type of participation

- Participation with actions when requested (within the framework of consultations, negotiations, cooperation or delegation)
- Participation through independent actions (in the context of lobbying, complaints, media campaigns, ...)

The methodology for involving communities in the process is based on the framework principles of the Aarhus Convention on public participation in decisions related to specific activities (Art.6):

- Ensure participation of the public in the decision-making process for activities “which could have a significant impact on the environment.”
- Inform the public “when appropriate, in an adequate, effective and timely manner.”
- Establish reasonable time frames for public participation procedures.
- Begin public participation “early in the procedure.”
- Encourage discussions among the public and between the project/program and the public to obtain public buy-in before decisions are made.
- Arrange for the public to be able to consult without charge all information relevant to the decision-making process.
- Offer the public the possibility to introduce written documents or participate in public hearings or inquiries so that the people can submit all their observations, information, analyses or opinions.
- Take into consideration public opinion as expressed through these above-mentioned procedures: the procedure should not be just a formality.
- Promptly inform the public of decisions taken; the decision should be communicated to the public, together with the reasons and considerations upon which the decisions are based.

Monitor the participation procedures and ensure that the above measures are applied.

Approach for involving communities in the process

The following tables show the different strategies adopted to ensure that all stakeholders are consulted, including the communities, at different levels, within the general framework of the R-PP and for phases 1b, 1c and 2d.

- Unilateral strategy for involving stakeholders

Level of involvement	Type of involvement	Targeted Goals
Information/feedback	Awareness campaign	<ul style="list-style-type: none"> - Provoke reactions - Obtain agreement - Obtain validation
Consultation	Formal meetings	<ul style="list-style-type: none"> - Assess reactions, opinions and issues - Make the program acceptable
Dialogue	Discussions	<ul style="list-style-type: none"> - Find consensual solutions - Encourage partnerships
Negotiation	Joint committees	<ul style="list-style-type: none"> - Share decision-making power - Jointly decide terms and conditions
Delegation	Decision-making groups	<ul style="list-style-type: none"> - Grant decision-making power and control

- **Unilateral strategy for involving stakeholders**

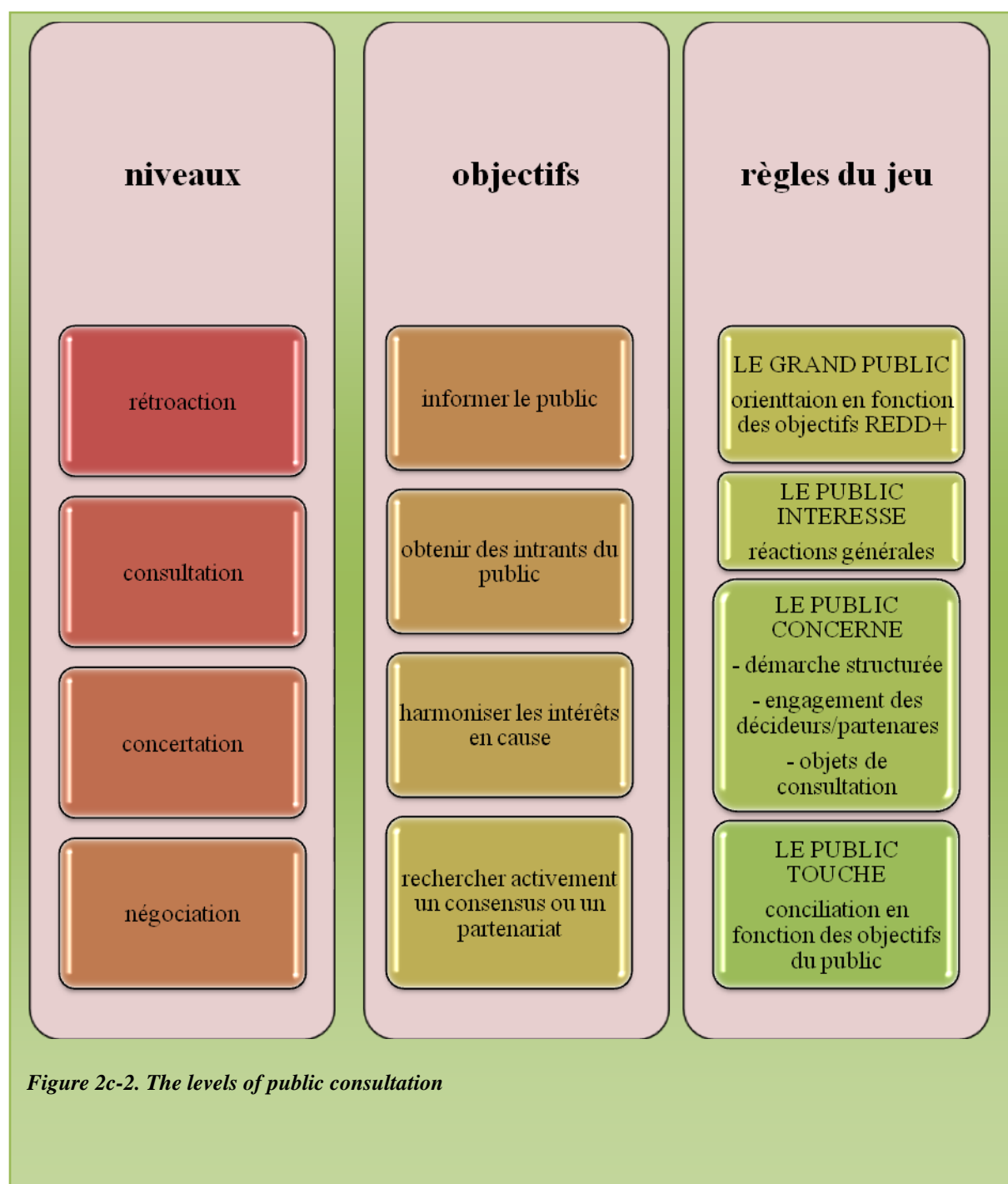
Level of involvement	Type of involvement	Targeted goals
Information	- Publications - Campaigns	- State the guidelines - Explain choices and decisions
	- Objections, - Claims - Appeals	- Delay or impede the activity - Modify the activity
Awareness-raising	- Publications - Campaigns	- Raise the level of knowledge - Change attitudes - Convince project is justified - Persuade
Mobilization	- Social marketing	- Change behaviors Encourage taking action - Change habits

In this regard, there would be two types of consultations:

- Consultations to prepare the framework (preliminary exploration) and during the development of the detailed SESA, initiated with the promoter. This part is integrated into aspect 1b of the R-PP which indicates the R-PP consultation plan as well as the post R-PP consultation plan, and,
- Consultations initiated by ONE with CTE during the assessment phase of the detailed SESA.

Madagascar has a well-established regulatory regime³² governing public participation in the process of conducting an environmental impact study of an investment project. This mechanism will be applied when an SESA project is evaluated by ONE / CTE. The procedure will have (i) a phase during which information is provided on the issue, and on the procedures for public consultation; (ii) an actual consultation phase to collect opinions of the public concerned, and finally (iii) a phase related to taking the conclusions of the public consultation into consideration in environmental and social decision-making. The decision on what form public participation will take in the assessment of the SESA (consulting the document, a public inquiry or a public hearing) will be established by ONE / CTE.

³² Order no. 6830/2001 of June 28, 2001 establishing the methods and procedures for public participation in environmental assessment, in application of the MECIE decree and the Environmental Charter.



Two aspects must be included simultaneously in each type of consultation:

- Institutional consultation, which plays a very important role in SESA procedures, and thus is best conducted during the study preparation phase (Prefeasibility)
- Community consultation, to collect opinions and community needs

H. SESA terms of reference

Studies will be conducted by national consultants supported, on a case by case basis, by an international consultant, in close collaboration with governmental and non-governmental institutions. The three terms of reference below describe the 4 major phases of the SESA, namely:

- Framing the SESA, which is a preliminary exploration;
- Conducting the detailed preliminary SESA;
- Finalizing the SESA;
- Adjusting the REDD plus strategy based on the SESA.

Terms of reference for framing the SESA

Objectives

The objectives of this preliminary exploration are to determine the potential impacts on the environment (biophysical, social and economic) of the REDD plus strategic options established in aspect 2b. This phase is not yet a quantitative assessment of the environmental and social impacts of the interventions.

Scope of services

For these purposes, the consultants should (i) identify and assess the direct and indirect results of the implementation of the REDD plus strategy being developed and (ii) consider to what extent these results could have an impact on one or another of the environmental elements (biophysical, social, economic). In general, the consultants should know the potential direct and indirect results of the activities set forth in aspect 2b:

- ✓ The manner in which these results interact with the environment; the nature and scope of these environmental interactions;
- ✓ The attenuation of negative environmental effects;
- ✓ The overall potential environmental effects of these interventions which remain after the measures for possible attenuation have been incorporated.

Following these analyses, the consultants should:

- Conduct inventories and an analysis of the stakeholders directly or indirectly impacted by the activities associated with the REDD plus strategy and how it is implemented.
- Establish a detailed plan for consultations to begin during the SESA process, so that these consultations are effective and have a real influence on the decisions. Highlight the process of integrating the results of the consultations into the SESA ;
- Clarify and confirm the objectives of the SESA (and its content); establish the methodology used to assess the potential impacts, taking into account World Bank procedures; and establish the temporal and spatial aspects of the study;
- Initiate consultations with the stakeholders so as to obtain their opinions and concerns regarding the areas of activity, as well their environmental and social impacts; Incorporate the results in the adjustment of the terms of reference of the detailed SESA and the plan for consultations;
- Draw up a detailed plan for completing the SESA and the process of incorporating the results of the study into the strategy development process;
- Make use of existing data and information (document R-PP, pilot projects, information on the protected areas, results of different studies and analyses in Component 2a, 2b and 2c) related to the concerns of parties potentially impacted in the environmental and social areas in which they are involved.

Deliverables

- The preliminary exploration report, containing the expected outcomes described in the “scope of service”
- The terms of reference adjusted for the detailed SESA
- The detailed consultation plan for the SESA phase
- The SESA implementation plan

Terms of reference for implementing the preliminary detailed SESA

Goals

- Establish the aspects relevant to environmental and social situations, and the probable evolution in the absence of the REDD plus strategy. The outcome of this demarche can add to the factors that must be taken into account in establishing the reference basis and scenario (Component 3), and vice versa.
- Identify, describe and assess the impacts on the environment (including the social aspects) which could result from the REDD plus strategy and which should be taken into account when it is prepared, and when it is implemented.
- Propose realistic measures to manage or lessen these impacts.
- Support the Forest Ministry to incorporate these measures in the REDD plus strategy of the Government of Madagascar.

Scope of services

- Establish a benchmark situation (so as to establish the future changes brought by REDD plus) by describing the environment and the social aspects affected by REDD plus (including future activities and projects) taking as the basis the activities and the other studies and analyses conducted in Components 2a, 2b et 2c, as well as the phase 3 benchmark scenario, so as to present all the benchmark data related to the current quality of the environment and the socioeconomic status of the impact zone before the REDD plus strategy is implemented. Present the probable evolution in the absence of REDD plus and highlight the environmental and social characteristics of the area that could be impacted in a significant way.
- Establish an analysis of the legislative and regulatory framework (environmental aspects including international conventions such as the CDB, etc.), the socioeconomic and environmental developmental institutions and policies related to, or influencing, the root causes of deforestation and forest degradation, or the areas of REDD plus
- Confirm that the tools (political, legislative, technical, structural and organizational) are adequate for the sustainable management of forests and the environment (including the social aspect) and to meet World Bank safeguard procedures, particularly in the areas of environmental assessment, natural habitats and biodiversity, native populations, the displacement or delocalization of persons and forests.
- Initiate the identification and assessment of the environmental and social opportunities and constraints. The environmental and social resources and factors which can affect (positively or negatively) the effectiveness, efficiency and sustainability of the REDD plus strategy, for each area of activity proposed.
- Initiate an analysis of the significance of the possible environmental and social effects (including the secondary effects in the short, medium and long term, permanent and temporary, positive and negative) for each scenario. Take into consideration the possibility of cumulative effects, the intersectoral aspect of the REDD plus initiative, the capacity of the environment or institutions to react to the effects stemming directly or indirectly from this initiative.
- Perform an analysis to determine the compatibility of each of the activities and initiatives proposed in the REDD plus with the use of the land
- Highlight the expected environmental consequences as they relate to the various sectoral policies, the desired change and the economic and social competencies.
- Identify and assess the notable effects, and the environmental and social risks and impacts, which could result from the implementation of the REDD plus strategy for each scenario identified (at the national level as well as in REDD plus areas (current and future). Similarly, identify and assess the environmental factors which effect REDD plus objectives, and the other framework priorities (at the national level and also in REDD plus areas (current and future). (OMD, strategy for the reduction in poverty ...). The significant impacts should particularly take into account the viewpoints and interests of those concerned, the socioeconomic consequences (specifically for the

populations that depend on the forests, native peoples, vulnerable and minority groups) and the implications for sustainable development. This assessment will also apply to the management structures and/or the implementation of REDD plus (including implementing and monitoring the attenuation and mitigation measures which have been identified in the SESA).

- Evaluate the causes of deforestation and degradation, including forest fires, referring to Component 2a on land use, forest policy and governance.
- Assess the co-benefits of REDD plus and the benefits affected by the proposed strategic options.
- Establish the environmental and social management framework for the REDD plus strategy so as to define the environmental and social assessment process for future REDD plus initiatives, projects and activities. This process should (i) take into account the laws of Madagascar, most specifically the MECIE decree, the environmental, social and forest aspects as well as the World Bank protection policies, (ii) propose a categorization of types of necessary and applicable environmental assessments for each project / activity of the strategy and (iii) identify the charters of responsibility of the various stakeholders to make this environmental assessment process effective. The consultants could later develop environmental prescriptions for certain types of projects / activities specific to the REDD plus strategy. Similarly, they will highlight the process for implementing protection policies (while taking into account aspects of economic feasibility).
- Evaluate and propose measures which aim to avoid, reduce and to the extent possible compensate all significant negative impacts on the environment and in social areas. These measures should be realistic and economically effective and affect not only the coordination and implementation aspects of REDD plus, but also the implementation of each initiative, project or activity envisaged by REDD plus. Develop a plan to implement these measures as well as a description of the measures and indicators which will be monitored. These measures will be consistent with national laws and in line with World Bank procedures. Highlight the potential overall environmental effects of the REDD plus strategy which will remain after possible attenuation measures have been incorporated.
- Conclusions and recommendations: This Component will summarize the main environmental and social issues, the constraints (political, institutional...), the challenges and principal recommendations. Highlight the scenario, activities and measures selected (including preventive measures and those aimed at lessening the effects mentioned above) and describe the way in which the selection was made, including all problems encountered. Similarly, highlight the measures and action plan for optimizing the strategy and the necessary strengthening of institutional capacities.
- As SESA is an integral part of the REDD plus strategy development process, the consultants during their mandate should take into account all the approaches, methodologies and results of analyses and studies triggered by the other aspects of the R-PP and specifically aspects 2a, 2b et 2c following the synoptic scheme. They will also conduct consultations and hold discussions with the promoter of the study, as well as with all the other service providers involved in the studies and analyses mentioned above.
- Highlight the possible environmental impacts of other sectors directly or indirectly dependent on REDD plus: (i) Expected environmental consequences with regard to these other sectoral policies, (ii) desirable changes, (iii) economic and social consequences.
- Highlight: (i) the specific environmental implications of REDD plus, (ii) institutional capacities and the legal framework allowing relations between REDD plus and the other sectors to be managed appropriately, (iii) the “environmental” relevance of REDD plus indicators.

Deliverables

- Concrete measures with clear institutional responsibilities which will be incorporated into the REDD plus strategy or into other REDD plus related policies.
- A preliminary strategic document on environmental and social assessment to be validated by ONE, and including a non-technical summary.

Terms of reference for finalizing SESA

Following the assessment of the preliminary SESA by ONE, the consultants will incorporate the recommendations of this assessment in the final report. This report will highlight:

- The key impacts of each activity,
- Stakeholder / actor group concerns and questions, as well as the ways in which stakeholders will be kept informed of how the recommendations are implemented.
- A summary note on the demarche, the issues, the main concerns of the stakeholders. The factors which favor one of the areas of activity will be indicated and submitted to the REDD plus platform.

G. Alignment of REDD plus strategy

The purpose of the SESA is to align, to the extent possible, the REDD plus strategy with the best current practices in the area of combatting deforestation and degradation, with a minimum of negative impacts, and optimizing the positive effects, including the co-benefits.

This adjustment of the strategy does not depend on the SESA process, but on the general strategy formulation process.

To harmonize the SESA and the REDD plus strategy, the latter will be aligned based on recommendations validated during the preliminary study and the finalization of the study, dealing with the environmental and social recommendations and prescriptions, as well as with the consultation activity during the entire REDD plus process, based on SESA environmental and social recommendations and prescriptions. Also, adjustments will have to be made to REDD plus activities.

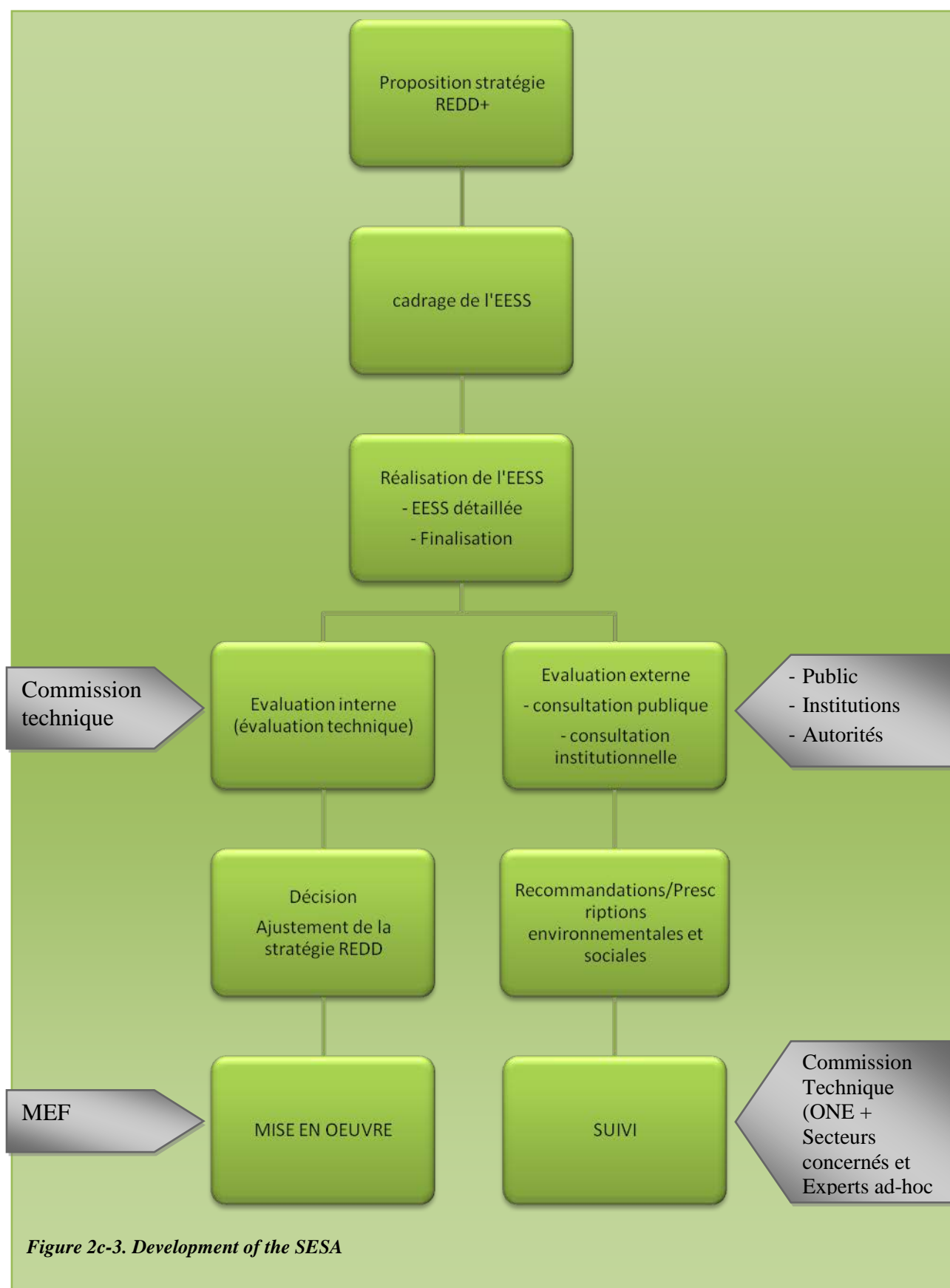


Table2d-3: Summary of activities and budget on social and environmental impacts

Main Activity	Sub-Activity	Estimated cost in US \$			
		Year 1	Year 2	Year 3	Total
Develop SESA tools for REDD plus	Develop an SESA guide for REDD plus	13 250			13 250
Strengthen capacities of stakeholders	Train stakeholders in central offices	20 499			20 499
	Train stakeholders regionally	22 750			22 750
Design SESA framework	Develop terms of reference	17 799			17 999
	Preliminary exploration	11 000			11 000
	Adjust terms of reference	1 000			1 000
Complete ESEA	Analyze environmental and social impacts with regard to the REDD plus strategy	26 147			26 147
	Formulate detailed SESA and validate the study	8 000			8 000
	Finalize the SESA		4 000		4 000
Assess SESA dossiers	Conduct technical evaluation (ONE/CTE)		7 000		7 000
	Conduct public evaluation		32 000		32 000
	Conduct institutional evaluation		12 500		12 500
	Prescriptions and recommendations		3 250		3 250
	Submit results		9 000		9 000
	Total 2D	120 644	67 749		188 392
	Government				
	FCPF	120 644	67 749		188 392
	Other funders				

COMPONENT 3: DEVELOPING A NATIONAL REFERENCE EMISSION LEVEL (REL) FOR FORESTS AND/OR A NATIONAL REFERENCE FOR FORESTS (RL)

Madagascar has subscribed to the fourth decision of Annex 2 of the Copenhagen Agreement of December 2009 which invites the signatories to refer to the directives contained in the Annex of decision 2/COP.13, particularly paragraphs 7 and 11. The issue is to identify the determining factors of deforestation and forest degradation from which the emissions originate, determine the means of remediation, identify related activities and finally, put in place, according to the situation and capacities of each country, solid and transparent national systems for monitoring the forests. Issues related to the time or chronological baseline of emissions which will establish a reference scenario will be treated in this Component 3. This will serve to refine the REDD plus strategy and be a base for establishing, in a consistent manner, the MRV system (see Component 4)

1. Framework documents and approach adopted

1.1. Framework documents

Development of the REL/RL will be based on various framework documents:

- The best practices guide for the land-use sector, changes in land and forest use (LULUCF), GIEC, 2003;
- Guidelines for national inventories of GES in the agriculture, forest and land-use sectors, (AFOLU), GIEC, 2006 ;
- The most recent version of the methodological guide “REDD Source book” updated each year by the Global Observations of Forests and Land Cover Dynamics Network (GOFC/GOLD)
- Jurisdictional and Nested REDD plus (JNR) Requirements, VCS 2012 (v 3. October 1-8, 2013)³³
- Methodological framework of the “Carbon Fund” - Forest Carbon Partnership Fund (FCPF) – Preliminary design of September 5, 2013

1.2. Approach adopted

A workshop devoted to establishing the REL/RL and deploying the Madagascar MRV system was held in Antananarivo in March 2011. At its conclusion, it was decided that these activities must be based on the following principles:

- Step by step progression, based on continuous improvement;
- Begin simple with experiences, data and existing capacities;
- Learn by doing;
- Conduct no-regret activities, meaning activities that go beyond REDD plus (i.e. forest inventories, socioeconomic studies, etc.)

Additionally, another workshop was organized in June 2012, mainly devoted to interconnected approaches and on that occasion a decision was made to develop the “jurisdictional and nested” REDD plus approach (JNR)³⁴; it was introduced by the Verified Carbon Standard which will be deployed progressively up to the national level by incorporating, one by one, the different ecoregions

³³ *Jurisdictional and Nested REDD+ (JNR) Requirements*. VCS version 3. 8 October 2013, v3.1

³⁴ <http://v-c-s.org/JNRI>

of the country, beginning with those which present the greatest REDD plus potential. It should be noted that the VCS has on several occasions shown an interest in supporting Madagascar in this endeavor³⁵.

Since that date however, it should be pointed out that at the end of 2013 the Forest Carbon Partnership Fund (FCPF) also disseminated a preliminary design of a methodological framework intended to support the infra-national approaches which will be eligible for funding from the carbon fund of the FCPF. It is therefore in the interest of Madagascar to remain flexible in terms of these two options for a methodological framework and/or funding the REDD plus mechanism.

Therefore, whatever the methodological/funding medium adopted, the final objective is the same; namely to complete a historical analysis of emissions (and absorptions) of GES related to REDD plus activities and key carbon reservoirs in Madagascar at the most appropriate level of precision³⁶ and establish REL/RL, taking into account national circumstances. Capacities will be enhanced and experiences acquired by the various actors and organizations in Madagascar that are already engaged in the conservation and sustainable management of forests, in particular those involved in REDD plus pilot projects. All competencies on the subject will be brought together, and the technical group known as GT-REL/MRV/SIS will carry out the work under the coordination of the Methodology Office within the BNC-REDD plus. (See §1a).

The choice of the level of precision will be determined by an effectiveness criteria, in other words by the importance of an activity or a carbon reservoir for REDD plus, and the costs required to arrive at a certain level of precision.

2. The Current Situation

2.2. Available data on activities and corresponding capacities

2.21. At the national level

Several studies have already been conducted at the national level (see table 3-1) to determine the historical rates of deforestation for the various forest formations in Madagascar. When these studies were carried out, the ability to process and analyze Landsat imagery had been developed in the following institutions: MEF, ONE, FTM, CI and MNP.

Table 3-1: Studies on historical national deforestation conducted by national institutions

Study	Source	Date and quality of images analyzed	Date produced
Change in natural forest cover in Madagascar	MEF, ONE, CI, FTM, MNP	2005-2010 : Landsat TM	2013
Change in natural forest cover in Madagascar	MEFT, USAID, CI	1990, 2000, 2005 : Landsat TM	2009
Assessment of land use (environmental dashboard)	ONE	1990, 2000, 2005 : Landsat TM	2010
National ecological forest inventory (IEFN 0 and IEFN 1)	MEF	1990 (IEFN0) 1995 (IEFN1) Landsat TM	1996 (IEFN0) 2000 (IEFN1)

³⁵ Two meetings and a joint side-event were organized with the VCS, during the CoP 17 and 18

³⁶ The levels of precision of the GIEC: Tier 1-3 for the emissions factors and approach 1-3 for activity data.

Other studies have been conducted to determine the forest cover in Madagascar (see Component 2a) and they give a good idea of the deforestation which has occurred in Madagascar over the past fifty years.

Madagascar can also rely on the solid scientific skills of its university laboratories: IOGA, ESSA and DBEV. All these entities are currently joined within the National Remote Sensing Committee³⁷. In La Reunion recently, some representatives of this Committee were trained in handling very high resolution imagery using Monteverdi software.

In addition, in 2013 ONE and the MEEF (DGF) benefited from capacity enhancement offered by the Helvetas/Cirad Consortium. The sessions dealt with the historical analysis of deforestation by remote sensing in accordance with the two methods used by the PHCF (open source tools³⁸) and CI (ERDAS, with funding from the French Development Agency). Significantly, this work led to an updating of the 2009 MEFT, USAID, CI study covering the years 2005-2010 (see table 3-1 above).

It should be emphasized that these studies were not initially intended for the REDD plus process, and that they are not necessarily usable under current conditions to establish a national reference level or benchmark, mainly because most of them used a definition of forests that is incompatible with REDD plus (i.e. surface > 2 hectares). On the other hand, they provide a good basis for initiating discussions and analyses that are more consistent with REDD plus requirements.

2. 1.2. The Projects

Using their own background and expertise, all projects have conducted separate historical analyses of deforestation consistent with the adopted REDD plus methodologies.

Table 3-2: Studies of historical deforestation by project

Projects	Date and quality of images analyzed	Production date
MAKIRA (WCS)	1995-2000-2005-2010 / Landsat TM 2010-2012 / Landsat TM	February 2012 November 2012
CAZ/COFAV (CI)	1990 – 2000 - 2005/ Landsat TM/ETM	2007
FORECA (GIZ-IC)	1990-2000-2005 / Landsat TM	2008
PHCF (GP-WWF)	2000-2005-2010 / Landsat TM	2011
HONKO (BV) ³⁹	2000-2006-2010 (Ambanja - Ambaro Bay) 2000-2006-2011 (Mahajamba Bay) Landsat TM/Etm+	2012

Whether at the national level or within each project, it should be noted that none of these studies focused on detecting degradation. In terms of the increase of forest carbon stocks, multi-year data exist at the DGF concerning the changes in forestation (reforestation) of exotic species (i.e. *Pinus*, *Eucalyptus*, etc.) but this data must be further developed, particularly in terms of spatialization. A study especially dedicated to this issue will be conducted.

³⁷ CIT internet site

³⁸ [R. GRASS GIS, Quantum GIS](#)

³⁹ Work supplementing the 2008 Gira study: Mangrove forest distribution and dynamics in Madagascar (1975-2005)

- 2.2. Available emissions factors and corresponding capacities

- 2.2.1. At the national level

- Above-ground biomass

Different allometric models have been developed in the country within the framework of the PHCF and in partnership with the CIRAD (Vieilledent 2012⁴⁰). In addition to its local interest, this work demonstrated that the generic Brown models significantly overestimate the carbon stocks of the biomass while the Chave models include wood diameter, height and density (Chave 2005⁴¹), which could be used for the different forest formations in the country⁴².

These are the models which have been used to process the data of the IEFN 0 (1966) and arrive at the following results:

Table 3-3: Carbon stocks of above-ground biomass by type of forest formation (Inventory analysis IEFN-0 by ONE and DGF/MEF, 2012)

Type de Forest (IEFN classification)	N	Average (tC/ha)	Minimum (tC/ha)	Maximum (tC/ha)	Confidence interval (95%)
Low altitude wet forests	133	152.3	11.8	337.3	141.7 - 162.9
Medium altitude wet forests	286	134.8	24.6	332.5	128.3 - 141.4
Western dry forests	157	63.5	4.7	276.4	55.6 - 71.4
Southern dry forests	57	16.0	2.7	48.0	13.1 - 19.0
Southern xerophilic thickets	59	18.2	1.0	43.2	15.8 - 20.6

It should also be noted that the [Woods Hole Research Center](#) (WHRC) has published a map of the biomass in pan-tropical zones⁴³ based on land inventories, LiDAR (ICESat) data and satellite imagery (MODIS) but it only covers a part of the country south of the Tropic of Capricorn, and when given an initial cursory appraisal did not seem to be very precise.

Finally, national capacities concerning the assessment of the biomass are already quite strong and need mainly to be harmonized from the point of view of the measuring protocols to be used, and the information disseminated at the regional/local levels.

It should be remembered that in 2013 ONE and MEF benefited from capacity building programs which included the measurement and analysis of biomass and soil carbon stocks.

Soil carbon

Tier II mapping is available at the national level for this compartment (Grinand 2009⁴⁴). This work relies in particular on the vast IRD soil database which should soon be transferred to the LRI. This University of Antananarivo laboratory has significant competencies and advanced equipment in this area: infra-red spectrometers (static and mobile) with which measurements can be multiplied, thereby reducing considerably the costs of analysis.

- 2.2.2. At the project level

As Table 3-4 shows, the REDD plus projects have incorporated the various carbon compartments in their analyses in different ways.

⁴⁰ Vieilledent2012: [A universal approach to estimate biomass and carbon stock in tropical forests using generic allometric models](#). Ecological Applications

⁴¹ Chave2005: Tree allometry and improved estimation of carbon stocks and balance in tropical forests. Oecologia

⁴² The Chave models, which include diameter, height, and density of wood, slightly under-estimate the biomass, but remains conservative

⁴³ <http://www.whrc.org/mapping/pantropical/carbonmap2000.html>

⁴⁴ Grinand 2009. Studies of carbon stocks in the soil of Madagascar. Study and management of soil, Vol. 16,1, 2009 – pages 23-33

Table 3-4: Compartments taken into account by project, and average corresponding carbon stocks (tC/ha⁴⁵)

Projects	Above-ground biomass	Underground biomass	Soil Carbon	Litter	Dead wood	Wood Products *
MAKIRA						
Strata 1 (0-800m)	107	26			16	
Strata 2 (800-1800m)	166	40			15	
CAZ	157	29			14	
COFAV	215	38			11	
FORECA						
Wet forests **	54 à 128					
Dry forests	46					
Thorn forests	12					
Mangroves	11					
Tapia (<i>UapacaBoier</i>)	9					
PHCF⁴⁶						
Wet forests	90	22	241 (1m)	17		X
Thorn forests	16	4,5	61 (1m)			X
AT ONE/DGF***		1996 IEFN strata				
	95	1. Coastal forests				
	158	2.Low-elevation dense wet evergreen sempervirens forest				
	45	3.Low-elevation dense, wet, degraded sempervirens forests				
	142	4. Dense wet moy sempervirens forests. Elevation.				
	48	5. Dense, wet moy sempervirens forests. Elevation, degraded				
	110	6. Dense mountain sclerophyl forests				
	46	8. Western medium-elevation dense sclerophyl forests (<i>Tapia</i>)				
	60	10. Dense, dry forests (in <i>Dalbergia</i> , <i>Commiphora</i> et <i>Hidegardia</i>)				
	51	11. Dense, dry, degraded forests (in <i>Dalbergia</i> , <i>Commiphora</i> et <i>Hidegardia</i>)				
	18	12. Dense, dry forests (in <i>Didieraceae</i>)				
	20	14.Southern xérophil thickets				
	12	15. Southern, degraded xérophil thickets				
HONKO⁴⁷						
Dense Mangroves	85	60	238 (1m)			
Open Mangrove woodlands	22	25	241.5 (1m)			

* Results of study not yet available

** Group together different rainforest facie, on an elevation gradient

*** Calculation based on 1996 IEFN data

Above-ground biomass:

In addition to the work carried out by REDD plus projects which led to the above-cited outcomes, other inventory data could be developed: JariAia, COGESFOR, MNP (Mantadia), MBG, TGRN data, PK32 project, etc.

⁴⁵ Multiply figures by 3,67 to obtain CO₂ values

⁴⁶ Asner2012 : [Human and environmental controls over above-ground carbon storage in Madagascar](#). Carbon Balance and Management

⁴⁷ Jones et al. 2014 : *Ecological Variability and Carbon Stock Estimates of Mangrove Ecosystems in Northwestern Madagascar*

Underground biomass:

Here the projects used the GIEC (Tier 1) default expansion factors, but there are ad hoc studies which have led to the development of allometric models (Tier III) for this compartment (Razakamanarivo 2009⁴⁸, Razakamanarivo 2005⁴⁹).

Soil carbon:

A Tier III cartography (including modeling) is available at the regional level (Andohahela Park, Grinand 2010⁵⁰).

Preliminary models of post-deforestation carbon loss have been established within the framework of the PHCF, in both wet forests and thorn forests (Fort-Dauphin region) and have been supported on the VM0009 methodology project⁵¹ which was validated by VCS. These initial programs are currently being further developed by Etc Terra and LRI Laboratory.

• 2.3. Available socioeconomic data

2.3.1. National / regional level

All the available data is described in Component 4 (see § 2.4) but it is appropriate to indicate here certain data produced by INSTAT⁵² and by ONE

- General Population and Habitat Census (RGPH) of 1993 – INSTAT;
- Commune surveys conducted in 2001 (INSTAT-FOFIFA) and in 2007 (FID);
- Census mapping produced at the *fokontany*/commune level for the years 2004 to 2009 – INSTAT ;
- Profile of the economy published quarterly– INSTAT;
- Profile of the environment developed at the regional/national level and updated every five years.

2.3.2. Project level

All pilot projects have worked out the most relevant variables at their level to explain and predict deforestation in relation to their respective project/reference areas. These are demographic variables (population density), socioeconomic variables (use of forest products), and physical variables (slopes, elevations, distance to rivers, distance to villages, etc.).

⁴⁸ Razakamanarivo 2009: *Potential for stocking carbon in the plant-soil system of eucalyptus plantations in the Madagascar highlands (thesis)*.

⁴⁹ Razakamanarivo 2005: *Study on dense dry forest carbon stock. Kirindy Forest. Central Menabe Forest (DEA)*.

⁵⁰ Grinand 2010: *Development of a spatialization method for soil carbon stocks at the regional level, (master's thesis, SILAT, 47p)*

⁵¹ [Methodology for avoided deforestation](#) - developed by Wildlife Works

⁵² [INSTAT](#) website

3. Methodological choices

Given the great diversity of methods and tools which have already been used by the various REDD plus stakeholders in Madagascar, the MEF, supported by the Environmental Programs Coordination Unit (UCPE) organized a workshop in December 2013 on harmonizing methods and instruments to be implemented at the level of the country's wet forest ecoregion. This initiative is part of REDD plus and the Additional Funds for the Environmental Program III (FAPE3) which in 2014 is funding the development of a Reference Emissions Level (REL) dedicated to deforestation for this ecoregion. This work is currently being conducted by a consortium composed of WCS, ONE, MNP and Etc Terra.

Most of the methodological choices presented hereafter were discussed at the above-mentioned workshop.

3.1. Establishment of REDD plus activities to be considered

Given the difficulties of precisely assessing the vast degraded areas and the increase in stocks of forest carbon, an initial decision was made to concentrate on developing a Benchmark National Emissions Level (REL) limited to the reduction of emissions as a result of deforestation.

Even if it is shown to be very relevant, monitoring forest degradation and the increase in forest carbon stocks runs up against two major constraints, as is the case everywhere in the world:

- No clear definition of these phenomena in international standards;
- Serious technical problems in quantifying these phenomena using remote sensing over vast areas. (Angelsen 2009⁵³, FAO 2011⁵⁴, GOFC-GOLD 2012⁵⁵). In view of the rapid regrowth of vegetation in damp tropical environments, it is necessary to:
 - Repeat the observations on a very regular basis, ideally every year;
 - Use Very High Resolution images (< 1m) which are difficult to obtain and are expensive

On this delicate subject, technology is changing quickly and the recent addition to the internet of the geographic information site Global Forest Change⁵⁶ is part of this dynamic. However, use of this data concerning degradation and increasing stocks still requires caution and must receive prior validation by international bodies (GIEC, UNFCCC.⁵⁷ Some of the questions we addressed directly to the author have thus gone unanswered, particularly those involving the method used to distinguish the height of forest formations, which, for example, is a crucial step in defining the increase of stocks. Other critiques are also made: for example, the great confusion between natural forests and industrial forests in Indonesia.

At the end of 2012, Astrium and ONF International had also launched a tool called "Go Monitor Forest," which is intended to provide the same service using very high resolution optical images (SPOT 5 to 2m50 and Pléiades to 0m50). However, using this system, which requires payment, appears more appropriate at the project level and remains generally prohibitive for use nationally.⁵⁸

At one or several pilot areas, the alternative would therefore be to acquire and directly analyze SPOT 5 imagery (2m50-10m) which should be made available without payment via the SEAS-OI project (Satellite Assisted Environmental Surveillance in the Indian Ocean– See Annex 3-1); Pléiades imagery was not acquired by the SEAS-OI project and was much too expensive to purchase.⁵⁹

⁵³ Angelsen 2009 : *Faire progresser la REDD. Enjeux, options et répercussions*, 206p

⁵⁴ FAO 2011 : *Mesurer la dégradation forestière*, *Unasylva*, vol 62, n° 238, 76p

⁵⁵ GOFC-GOLD 2012 : *REDD sourcebook*, *GOFC-GOLD Report version COP18*

⁵⁶ *Global Forest Change*

⁵⁸ EUR 9000 for an analysis on two separate dates covering 100 000 hectares

⁵⁹ 17€/km² purchase, and EUR 10/km² archives

Possibilities offered by Sentinel satellites 2A and 2B should be explored. They will be launched in 2015 and are equipped with a “red-edge” channel which is particularly interesting for detecting changes in vegetation. In addition, this data (10m of spatial resolution and 290 km of imaging swath) will be made available free of charge, based on the current Landsat system.

Without waiting for the results of these experiments to directly measure degradation using remote sensing, there is a plan to use funding of FAPE3 to deploy a permanent network of plots which should allow evaluations of the impact of these phenomena, through measurements at regular intervals (e.g. every 5 years), using the “stock variation” approach (GIEC) or the “indirect” approach (GOFC-GOLD). If these direct measuring experiments are inconclusive, Madagascar would still possess data produced directly from the field; this network could also be used for monitoring other environmental and/or social data (no-regrets activity).

In the medium term, (from 5 to 10 years), Madagascar should be able to have a National Reference Level (RL) for all activities and compartments deemed relevant.

3.2. Definition of Forest

Whether at the national level or the project level, there is much heterogeneity in the definitions adopted by the various studies conducted in the past.

3.2.1. Studies conducted at the national level

Several prior studies have adopted quite different definitions of forest, and this has led to significant variations in the assessments of forest areas in Madagascar, as shown in table 3-5.

Table 3-5: Forest area over three periods according to definition adopted⁶⁰

Source	Definition		Forest area 1990	Forest area 2000	Forest area 2005
CI	H ≥ 5m, Cov. ≥ 80%, Surf. ≥ 2.5ha		10 507 347 ha	9 755 305 ha	9 294 237ha
ONE	H ≥ 5m, Cov. ≥ 80%, Surf. ≥ 1ha			10 950 786 ha	10 737 367 ha
IEFN ⁶¹	All vegetation combined ≥ 5 ha		12 671 980 ha	13 895 135 ha	

3.2.2. Studies conducted at project level

For various reasons, REDD plus projects implemented in Madagascar have also adopted different definitions of “forest” as table 3-6 indicates.

Table 3-6: Definitions of “forest” adopted by various REDD plus projects⁶³

Projects	Definition: wet forest	Definition: thorn forest	Definition: <i>Tapia</i> * forest (Foreca) / Mangroves (HONKO)
MAKIRA (WCS)	H ≥ 5m, C. ≥ 30%, S. ≥ 1 ha		
CAZ/COFAV (CI)	H ≥ 5m, C ≥ 80%, S ≥ 2 ha		
FORECA (GIZ-IC)	C. ≥ 10-20%, S. ≥ 0,1 ha	C. ≥ 10-20%, S. ≥ 0,1 ha	C. ≥ 10-20%, S. ≥ 0,1 ha
PHCF (GP-WWF)	H ≥ 5m, C ≥ 10%, S ≥ 0,36 ha	H ≥ 2m, C ≥ 10%, S ≥ 0,36 ha	
HONKO (BV)			C ≥ 30%, S ≥ 1 ha

3.2.3. Discussion

In this context, the REDD plus definition of forest, and particularly the definition of height criteria, has for years been subject to debate in Madagascar.

If the criterion was defined as 2m, it was argued, for example, that this criterion would inevitably lead to the undesirable monitoring of shrub formations such as stands of *Psiadia altissima* or *Dingadingana* (> 2m), which are widespread in the wet ecoregion. On the other hand, if the height criteria was set at 5m, it was regularly argued that this would lead to the exclusion from REDD plus of

⁶⁰ Mapping Madagascar ecosystems (Annex 3-3)

⁶¹ Forest areas in the first column come from IEFN 0 (in 1996) and those in the second column come from IEFN 1 (in 2000).

vast areas of forest formations of limited size, such as certain faciès of *Tapia*, mangroves or thorn forests (also called xerophillic thickets).

On this issue, the work conducted in the context of ONE/MEF/MNP technical assistance has been unequivocal: all forest formations considered in the National Forest Ecological Inventory can reach heights above 5 meters, including stands of *Tapia*, thorn forests and mangroves. 62 percent of the trees (of DHP > to 5 cm) are over 5 m in the *Tapia* stands and mangroves, while in the thorn forests the proportion is 54 percent.

This study is therefore likely to greatly facilitate the choice of the REDD plus definition for Madagascar and it is now possible to bring together the REDD plus and MDP definitions of forest (i.e. H>5m, S>1ha, Cover > 30 percent). Moreover, this is the choice that has already been made for wet forests within the framework of the REDD plus part of the FAPE3 and which must still be validated by the MEEF for all other types of forests in the country.

This being said, it should be kept in mind that precisely distinguishing the height of ecosystems is not technically possible using only optical satellite imagery analysis, even if the resolution is very high. The same is true for the fine distinctions of forest cover, equally difficult using this technology. Although the PHCF has benefited from SPOT-5 imagery at 2m50 of spatial resolution at all of its activity sites, it actually has encountered serious difficulties in distinguishing these criteria in a sufficiently robust manner, whether in wet forests or thorn forests. Distinguishing the height of forest formations over vast areas requires working with other remote sensing tools or products. This is especially the case with LiDAR technology, carried by satellites but unfortunately ICESat, the only satellite capable of providing such data free of charge, has been out of service since 2010 and the launch of ICESat-2 is planned for the beginning of 2016.⁶² Concerning this technology, a PhD under the co-sponsorship of the Universities of Antananarivo and Paris-Est – Marne is currently planning on analyzing the ICESat-1 data to assess the height of vegetation in Madagascar. The results could certainly be used to distinguish the forested lands from the other land uses and also to evaluate the level of biomass (see § 4).

3.2.4 Definition and demarcation of ecoregions

In the end, a proposal was made that only the following four ecoregions be adopted:

- The eastern rainforest ecoregion
- The western dry forest ecoregion
- The southern thorn forest ecoregion
- The mangrove ecoregion

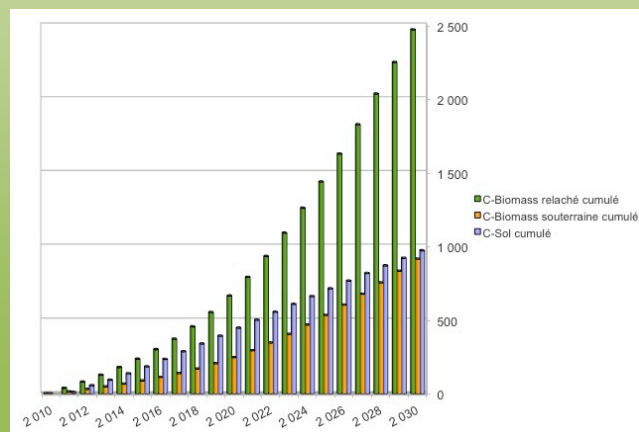
The demarcation of the eastern rainforest ecoregion will be conducted within the framework of the REDD plus part of FAPE3 which could also be an opportunity to discuss the demarcation of the of the mangroves is less subject to debate.

⁶² <http://icesat.gsfc.nasa.gov>

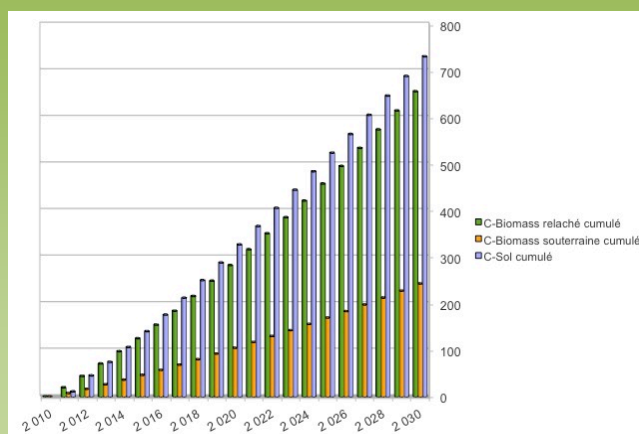
3.3. Choice of carbon compartments

Figure 3-1: Projections of CO₂ emissions by compartment–Fort-Dauphin region (Source: PHCF)

PHCF site – Wet forests (53,600 ha)



PHCF site – Thorn forests (127 700 ha)



As mentioned in table 3-4 (§ 2.2.2), it is interesting to note that each of these compartments has already been specifically researched at least once, and it is possible to base the choice of the compartments to be considered on these studies. Concerning long-lasting wood products, it should also be emphasized that the study of this compartment is now imposed at the project level by the standard VCS, but this measure is not applied at the national level.

Beyond the unavoidable fact of the above-ground biomass, Madagascar will incorporate in its calculations the underground biomass by default application of the GIEC factors.⁶³ Studies that could be conducted on this subject at a later date (parallel scientific research) will be developed.

Soil carbon will also be very carefully examined as Madagascar has numerous resources in this area (see § 2.2.1).

As is seen in figure 3-1 to the left, taking into account soil carbon would appear to be particularly relevant for those forest formations having low stocks of above-ground biomass. In thorn forests, it is thus interesting to note that it is soil carbon that constitutes the most significant factor in GES emissions.

Litter can also be incorporated in these approaches to soil carbon.

As for dead wood, it will not be incorporated, a priori, because the data obtained from the Makira, CAZ and COFAV projects, all located in rainforests, indicate a minor amount of stock (25 tC/ha for Makira) which is not enough to be generalized to all ecosystem types in the country.

Finally, above-ground and underground biomass will thus be accounted for initially, prior to the subsequent accounting of soil carbon and litter, on the basis of the latest GOF-C-GOLD recommendations; this accounting can be differentiated based on the types of forest formations.

O

⁶³ NB: The list of GIEC expansion factors shows an error that was corrected in the most recent REDD of the GOF-C-GOLD sourcebook.

4. Establishing the factors of emissions

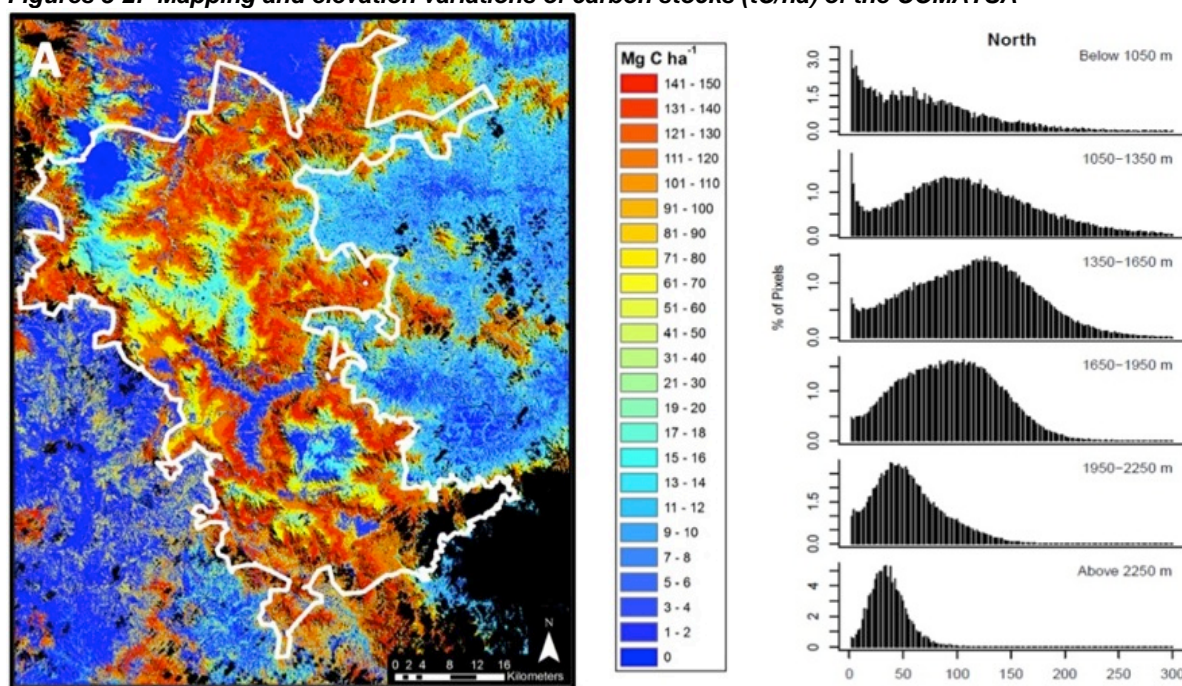
In the short term, Madagascar intends to concentrate on the factors of emissions corresponding uniquely to deforestation and to the following three compartments:

4.1. Above-ground biomass

At least in terms of the wet forests ecoregion, mapping of carbon stocks in the above-ground biomass will target Tier III (pixel level values), similar to what has already been produced by the PHCF in partnership with the Carnegie Institute (Asner 2012⁶⁴) which shows among other things the extent to which elevation is a major determinant in the variability of stocks (see figures 3-2 below).

This mapping will rely mainly on existing inventories (see § 2.2.1 and 2.2.2) and those to be conducted in 2014 within the framework of the REDD plus part of FAPE3. In this regard, it should be noted that the JNR framework documents stipulate that these inventories must have been completed during the ten years preceding the establishment of the REL/RL. These inventories will be subject to the recommendations of the next publication of Chave *et al.* with the aim of improving the generic allometric models currently being used.⁶⁵

Figures 3-2: Mapping and elevation variations of carbon stocks (tC/ha) of the COMATSA



For this research site located in the high mountains of northern Madagascar, it is interesting to note that the highest levels of carbon stocks are found at an elevation of about 1300m; these stocks decrease significantly above an elevation of 1950m, and the original human-induced degradation occurs below 1050 m, leading to a very heterogeneous distribution of carbon stocks.

For the other ecoregions, Tier II could be targeted first, based on the existing, above-mentioned inventories and on a stratification of the spaces being examined. As such, in 2014 CIRAD is planning to publish an initial national mapping of carbon stocks.

In the medium term, enriching the network of plots within these ecoregions will provide new field data which will certainly allow production of a new Tier III map for the entire country, based on the above-mentioned CIRAD mapping.

⁶⁴ Asner 2012 : [Human and environmental controls over above-ground carbon storage in Madagascar](#). Carbon Balance and Management.

⁶⁵ Improved pan-tropical allometric models to estimate the above-ground biomass of tropical forests. Chave *et al.* In press

4.2. Underground biomass

For this compartment, the expansion factors recommended by the GIEC will be applied (Tier I). It would be best, however, to ensure that this choice is consistent with the JNR framework documents which align exactly with the default incorporation of data in the REL/RL. Actually a Tier II approach is recommended but it seems rather unrealistic to be able to obtain such data for this compartment.

4.3. Soil carbon

Since soil carbon is not fully and suddenly released into the atmosphere after deforestation, (Don et al. 2011⁶⁶), establishing the factors of emissions for this compartment signifies developing carbon-loss models of post-deforestation soil.

During the preparation phase, it will therefore be necessary to work on two complementary areas in a study especially dedicated to this subject:

- Refining the national mapping of carbon stocks with the aim of reaching Tier III and concentrating on the following priorities i) wet forests, ii) dry forests, and iii) thorn forests/mangroves;
- Consolidating/improving the previously established preliminary models for wet and thorn forests (see § 2.2.2) and developing new models for dry forests and mangroves. This will allow a determination to be made on the relevance of incorporating or not this compartment by type of forest formation. Modeling these losses should take into account the principal determinants of soil carbon stocking: type of forest, type of degradation/deforestation, degree of degradation, effects of elevation and climate, etc. Note that this consolidation of existing models for wet forests is already being done by Etc Terra and the LRI and that these programs will be extended within the framework of the REDD plus part of FAPE3.

Prior to this empirical démarche required by the VM0009 methodology and validated by the VCS, the dynamic of post-deforestation soil carbon will be analyzed employing the Rothamsted Carbon model (RothC), a model widely used to simulate the changes in the stocks of this compartment at the national or regional level, a model which responds to climatic characteristics or to changes in land use. (Xu *et al.*, 2011⁶⁷). The goal will then be to inventory all the specific data indispensable to its operation (history of land use, quantity of vegetal litter-restitution, soil, climate, etc.) and to develop scenarios for changes in post-deforestation land use.

Based on these programs, factors of emissions related to the degradation and increase of forest carbon stocks could also be established through new research programs which would benefit from exchanges and discussions with international experts who specialize in these issues.

5. Projection of activity data

It should be noted here that the determination of the REL/RL will be established due to:

- Projecting activity data based on historical observations and the corresponding explanatory factors;
- Consolidation and adjustment to specific regional circumstances;
- Combining this projection of activity data with previously described factors of emissions (see § 4).

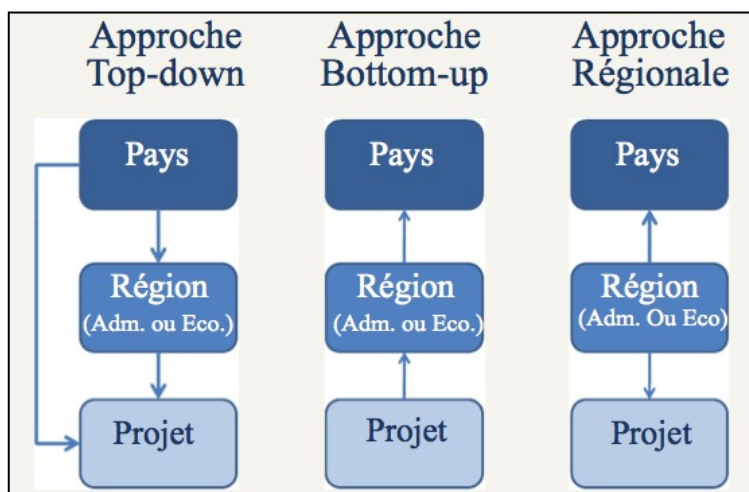
In the short term, as previously indicated (see § 3.1), a benchmark emissions level (REL) dedicated solely to deforestation will be developed at the national level by aggregating the different

⁶⁶DON *et al.* 2011: *Impact of tropical land-use change on soil organic carbon stocks... Global Change Biology*

⁶⁷Xu, *et al.*, 2011: *Modeling the change in soil organic carbon of grassland in response to climate change: Effects of measured versus modelled carbon pools for initializing the Rothamsted Carbon model. Agriculture, Ecosystems and Environment*

projections which will be produced for each of the four ecoregions. This corresponds to the “regional approach” described in figure 3-3 below which summarizes the 3 possible nested approaches.

Figure3-3: Possible approaches for establishing interconnected REL/RL (Pedroni 2011)



It is also appropriate to point out here that although Madagascar has opted for a national approach, it was adopted with the intent of achieving implementation of an eco-regional approach with priority given to an ecological demarcation⁶⁸ of its “jurisdictions” based on the different ecoregions of the country, rather than administrative demarcations; this choice was authorized by both the JNR and FCPF schemes.

The choice was then made to initially concentrate on those rainforests of the country which offer the greatest potential for REDD plus and which bring together most of the REDD plus projects and protected areas managed by MNP.

In the process, the three other ecoregions (western dry forests, southern thorn forests and mangroves) will benefit from the same programs, and in the medium term the other activities (degradation and increase in stocks) which could be incorporated to constitute the national RL. However, it should be noted that at the present time the JNR framework documents require that Deforestation REL and Degradation REL be geographically separated⁶⁹.

5.1. Historical activity data

Given all the elements presented above (see § 2.1 in particular), it is useful to review the historical deforestation analyses that have already been conducted, and adhere to:

- The JNR framework documents:
 - o 3 dates observed over the last 10 years with a minimum separation of 2 years between each date; the last date studied serves as a benchmark map;
 - o Minimum Mapping Unit (MMU) < 1ha; this threshold could reach 3ha for “unmanaged”⁷⁰ forests with a low probability of deforestation;
 - o Natural/artificial regeneration is not taken into account in calculating rates of deforestation.
- And/or FCPF framework documents:
 - o Date of the end of the benchmark period corresponding to the most recent date prior to 2011;
 - o Date of start of benchmark period preceding the end date by about 10 years.

⁶⁸ This demarcation has not yet been made and must be officially adopted by the MEF.

⁶⁹ As degradation often precedes deforestation, this measure makes it possible to avoid double counting the reduction in emissions for these two activities.

⁷⁰ “Unmanaged” forests are located more than 50 km from a road, a navigable waterway or a segment of a forest that has been previously cleared (JNR framework documents).

In line with the recommendations of the GOFC-GOLD sourcebook, Landsat type imagery will be used; for the wet forest ecoregion the years studied will be 2005-2010-2013; it is understood that FCPF validation for the inclusion of 2013 will be appropriate (included subsequent to announced limit of 2011).

Analysis of these high resolution images will be of the following type: “pixel level supervised classification” and will rely on the support and experience of previously described competencies, whether at the national or project level (see § 2.1). Subject to the availability to REDD plus project participants of new and more powerful software programs / algorithms, the R software program and the *Random Forest* algorithm will be used.

This analysis could also use a limited number of very high resolution images (THR) to ensure the calibration (upstream) and/or validation (downstream). The intergovernmental body “*Group on Earth Observations*” actually advocates using carefully selected THR images for monitored areas covering a surface of about 1600 km². Acquiring these THR images (i.e. SPOT-5 – 2m50) is already possible through the SEAS-OI project (see § 3.1 and Annex 3-1).

In addition, similar to the use already made by certain REDD plus projects in Madagascar, and subject to their availability, Google Earth VHR images will also be widely used to conduct these calibration/validation segments.

In the end, Madagascar will have an updated study of historical deforestation in the rainforest region before the other forest formations in the country are covered by the same operational method. These programs could be compared with the dataset made available by the Global Forest Change Project; the producers of this data appear to welcome feedback from practitioners from around the world to improve the work that they have already accomplished.

5.2. Projection activity data

On this point, the work to be carried out in Madagascar will be consistent:

- With JNR framework documents:
 - o 5 to 10 year projection;
 - o Obligation to develop two historical approaches: projection of average historical rate or projection of historical trend;
 - o Possibility of developing alternative modeling approaches;
 - o Obligatory spatialization of future deforestation (§ 3.11.11/3)
- And/or with FCPF framework documents:
 - o Obligatory historical approach; no modeled approach is possible since “the reference level cannot go beyond the average annual emission levels during the reference period.”

While waiting for a level of harmonization to occur among the various methodological frameworks, Madagascar will develop 3 different models for the rainforest ecoregion; 2 historical approaches and 1 modeled approach which will be based on explanatory factors best describing past deforestation, both in terms of quantification and location. The work to be carried out for the three other ecoregions could then be based on the expected harmonization of methodologies and on experience acquired during work devoted to the rainforest ecoregion aimed at establishing the most appropriate model.

5.2.1. Quantification of deforested areas

This work could be based on, among other things, different scientific studies which have demonstrated that at the present time population density in Madagascar rainforests constitutes the most

important factor in determining the intensity of deforestation (Gorenflo et al 2011,⁷¹ Agarwal et al 2005⁷²). This is not surprising if one considers the high rate of population growth⁷³ and the fact that many of those involved in causing deforestation rely on subsistence agriculture for their own consumption; this form of agriculture constitutes one of the principal direct factors of deforestation (see Component 2a).

The situation is different in the other forest formations in Madagascar, which, given their greater complexity, could be potentially subject to other pressures: commercial agriculture, production of charcoal, harvesting timber etc. (see Component 2a). Accordingly, the corresponding deforestation models should probably incorporate other economic variables subject to quantification of their impact.

5.2.2. Locating deforested areas

This localization could rely on the experiences of REDD plus projects in Madagascar, which, depending on the regions of intervention, have already identified the most explanatory variables.

As Table 3-7 shows, we see here: a) landscape factors (elevation, forest fragmentation, distance of the forest perimeter, distance to recently cleared parcels), b) transportation factors (distance to roads, distance to populated areas), c) socioeconomic factors (population and poverty density) and d) land use regulations (especially protected areas).

Table 3-7: Tools and factors selected by REDD plus projects to model future deforestation

Projects	Model	"Quantification" Factors	"Localization" Factors
MAKIRA (WCS)	LCM (Multilayer Perceptron Model)	Historical deforestation linear regression	Trails/roads, recent deforestation, slopes, protected areas
CAZ (CI)	LCM (Multilayer Perceptron Model)	Average of historical deforestation	Access (trail road), market (village, district, commune), elevation, slope, waterway
COFAV (CI)	LCM (Multilayer Perceptron Model)	Average historical deforestation	Access (trail, road), market (village, district, commune), elevation, slope, waterway
FORECA (GIZ-IC)	Projection of deforestation observed (3 dates) with linear or exponential model.	-	-
PHCF (GP-WWF)	Linear models and logistic regression (production of a phcfM package especially developed under R)	Population density compared between 1993 (RGPH) and 2005-2008 (INSTAT census mapping)	Fragmentation indicators, distance to previously cleared parcels, elevation, distance to forest perimeter, population density, distance to roads, protected areas, etc.
HONKO (BV)	LCM (Multilayer Perceptron Model)	At this time, only preliminary models have been completed. (work to continue in 2013)	

Whether for the quantification or localization of deforested areas, the experience of various REDD plus projects shows that it would certainly be useful to develop several different models within the same ecoregion to take into account the specific local characteristics of the agents/factors of deforestation. As with historical deforestation, the software program R and the *Random Forest*

⁷¹ Gorenflo et al. 2011: *Exploring the Association Between People and Deforestation in Madagascar*. Cincotta, RP and Gorenflo, LJ (eds.)

⁷² Agarwal et al. 2005: *Tropical deforestation in Madagascar: analysis using hierarchical, spatially explicit, bayesian regression models*. Ecological Modelling.

⁷³ Approximately 3.5 percent / year for the period 1993-2008 (future CIRAD and INSTAT programs are coming on this subject)

algorithm will be used, unless new, more powerful software / algorithms are made available to the REDD plus projects.

In developing these projections, data and tools that are already available or are currently being developed could be used:

- INSTAT census data mapping produced between 2004 and 2009 covering the entire country, at the commune and *fokontany* level, could be widely used and compared to the RGPH (General Census of Population and Housing) of 1993, similar to what was done within the framework of the PHCF in partnership with CIRAD (Vieilledent et al. 2013⁷⁴);
- The National Land Use Plan (SNAT) is currently being developed and is using a number of SRAT (regional land use plans) which have been validated;
- Regional Development Plans which are available for all the regions of Madagascar; A Global Optimization Model such as “GLOBIOM”⁷⁵ developed on the scale of the Congo Basin and allowing quantification of this area, based on supply and demand equilibrium maximizing the benefits to the different economic actors involved.

5.3. Consultation and adjustment to specific regional circumstances

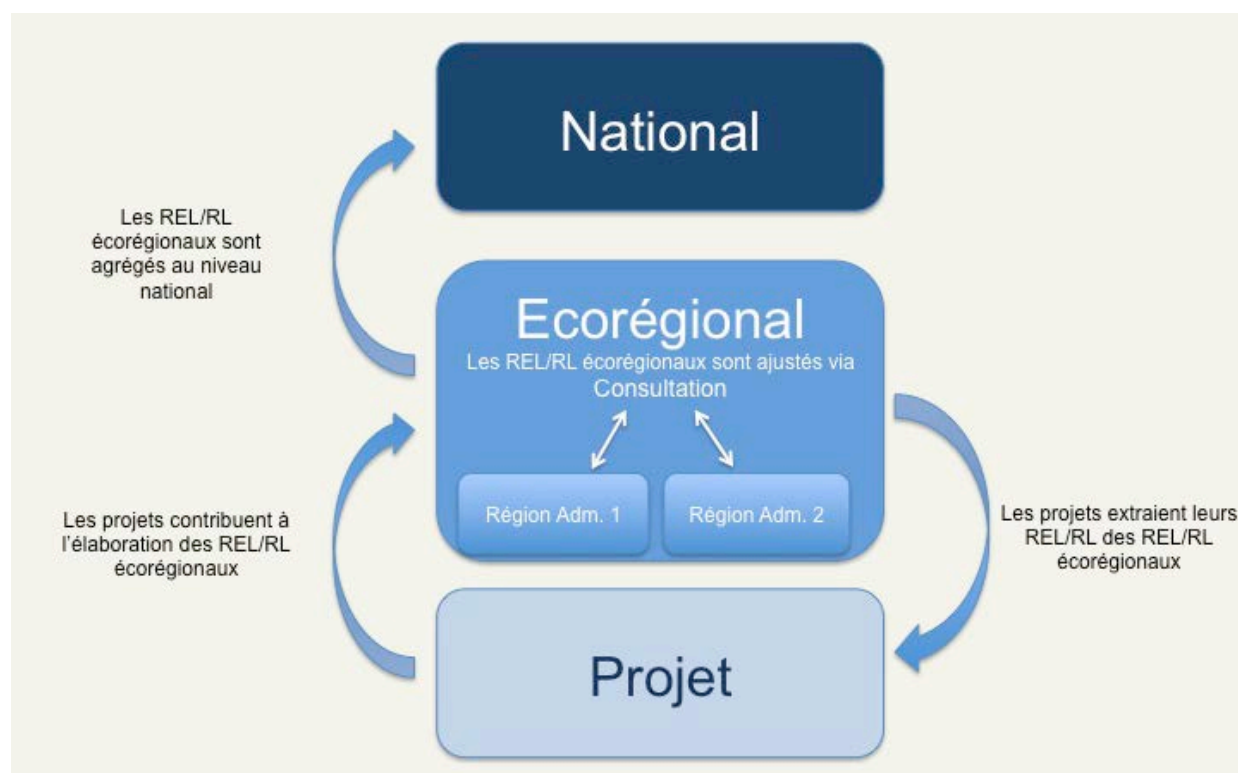
In the end, the outcomes will be communicated to the ecoregions (by informing the different administrative regions concerned by these ecoregions) so that such consultation will lead to adjustments in projections based on specific circumstances which are not necessarily quantifiable but which nevertheless influence the quantification and localization of future deforestation/degradation: regional governance, operational capacities of regional institutions, development plans, special migrations, etc.

These adjusted projections will be used by the projects to “cookie-cut” those parts of the REL/RL which interest them, and will be aggregated at the national level to form the national REL/RL over the medium to long term.

⁷⁴ Vieilledent et al. 2013 : *Forecasting deforestation and carbon emissions in tropical developing countries facing demographic expansion: a case study in Madagascar*

⁷⁵ <http://www.iiasa.ac.at/web/home/research/modelsData/GLOBIOM/GLOBIOM.en.html>

Figure 3-4: Process for establishing and using the REL/RL



6. Building Capacity

Given the time constraints for meeting the REL/RL development requirements and deploying the MRV system, everything needed in terms of developing the corresponding capacities are described in Component 4.

7. Work Plan and Budget

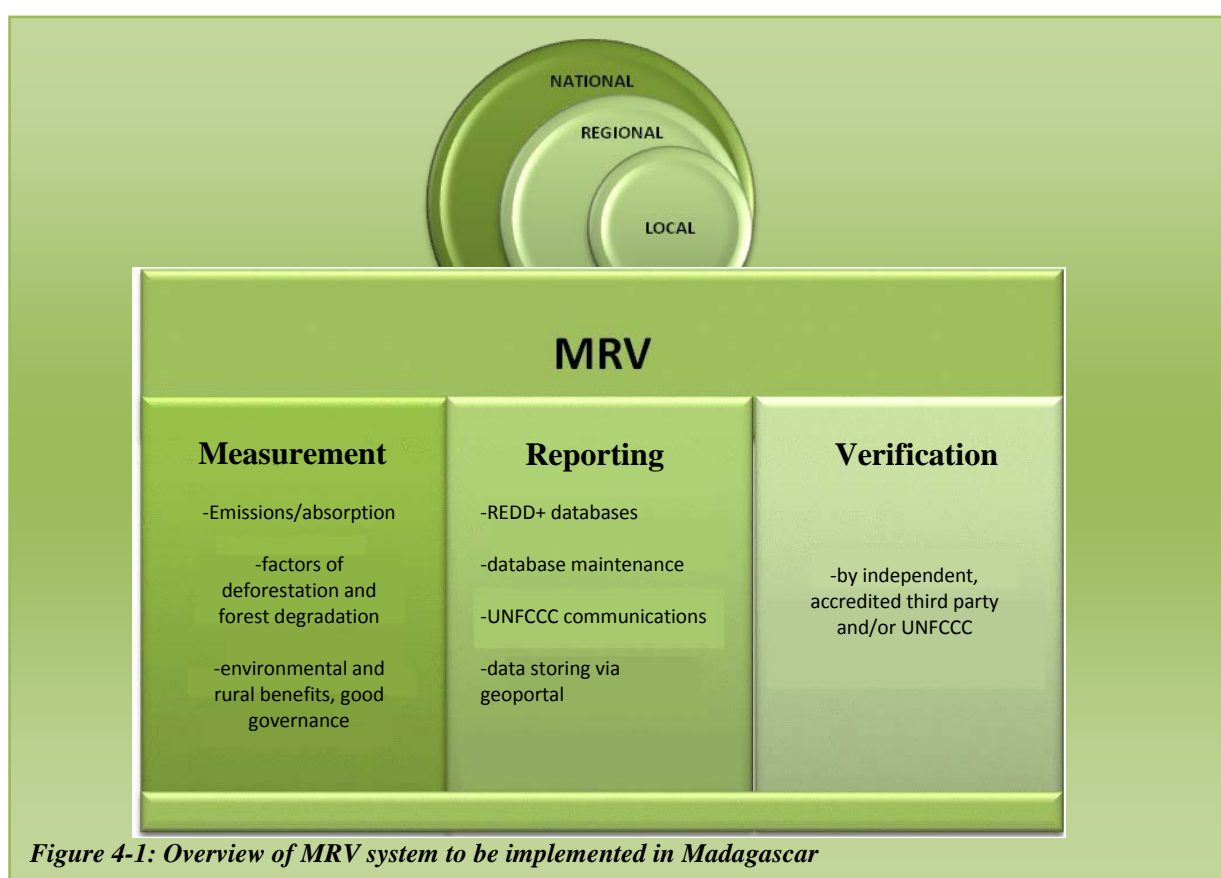
The work plan and budget described in table 3-8 also indicate the activities funded previously within the framework of the REDD plus part of the Additional Funds for the Environment Program (EP III - World Bank).

Table 3-8: Summary of REL/RL Activities and Budget

Main Activities	Sub-activities	Estimated cost in US \$			
		Year 1	Year 2	Year 3	Total
Initiate institutional arrangement and operation	Set up and oversee operation of GT-REL/MRV/SIS	10 000	10 000	10 000	30 000
	Conduct national workshops for consolidation/dissemination of results	8 000	8 000		16 000
	National coordinator (also mobilized under component 4)				
Establish delimitation of eco-regions	Conduct sessions for exchange of information and data collection	20 000			20 000
	Present the final delimitation by eco-region	8 000			8 000
Determine historical activity data for all eco-regions	Acquire, process and analyze satellite images	60 000	90 000		150 000
Determine factors of emissions for wet forest eco-regions (aerial biomass and soil carbon)	Establish forest inventories : installation of network of plots, including practical training of DREFs and COBAs	450 000	300 000	150 000	900 000
	Produce national map of aerial biomass	15 000	30 000		45 000
	Improve the soil carbon map (including acquisition of material)	207 000	207 000		414 000
	Improve and develop models of soil carbon loss (including with the use of international expertise)	18 300	104 400		122 700
Conduct a study on the integration of degradation and growth in forest	Study the possibility of implementing these two activities through targeted studies on regions of interest	80 000			80 000
Establish models of activities and project estimates of future emissions	Develop the deforestation model by eco-region (with quantity and location), including training of national actors	54 000	150 775		204 775
	Adjust eco-regional RELs by carrying out consultation in administrative regions	40 000	40 000		80 000
Strengthen Capacity	Cf. Budget Comp. 4				
	Total 3 SR	970 300	940 175	160 000	2 070 475
	Government	952 300			952 300
	FCPF	18 000	582 400	10 000	610 400
	Other donors		357 775	150 000	507 775

COMPONENT 4 : DESIGN SYSTEMS FOR NATIONAL FOREST MONITORING AND INFORMATION ON SAFEGUARDS

This component on the MRV system will focus on the mechanism to be established in Madagascar for determining the level of carbon credits that may result from REDD+ Strategy implementation. There are three main dimensions to the system: carbon (emissions/absorption), the factors of deforestation/degradation, non-carbon benefits and governance. The system will also involve data reporting and verification of the validity of results. It will be implemented at three levels: national, regional and local.



The MRV/REL/SIS Methodological Unit of BNC-REDD+ (cf. § 1a), comprising the ONE and DGF, will be responsible for coordinating the design and development of the national MRV system. Independent and accredited third parties will be involved during the notification and verification stages, as will CCBS⁷⁶ or VCS⁷⁷, for ensuring compliance with international standards for projects and jurisdictions (the eco-regional approach) and the UNFCCC at the national level.

By common agreement and in light of the experience and expertise acquired in the monitoring and management of environmental information, the ONE will participate with the DGF in the MRV/REL/SIS Unit. A Protocol of Agreement between the two entities, defining their respective roles and responsibilities in the development and implementation of a national MRV system is currently being finalized.

⁷⁶ Climate, Community and Biodiversity Alliance: CCB standards. Rule for the use of climate, community and biodiversity standards

⁷⁷ Verified Carbon Standard

4a: National Forest Monitoring System

1. Overall Agreed Approach

This system is closely linked to the development of the REL/RL described in Component 3. Its objective is to regularly quantify the emissions and absorption of GHGs in order to compare them with REL/RLs in order to gauge the impact of strategic REDD+ options deployed within the country (expressed in teCO_2/yr). However, Decision 1/CP.16 of UNFCCC also provides that this system may be implemented on an interim basis at the regional level. This will be of particular interest to Madagascar, which has opted in favor of the stepwise development of REL/RLs at the eco-regional level (cf. Comp. 3).

In order to arrive at this assessment, one may compare the same type of information, i.e. activity data (expressed in ha/yr) and factors of emission (teCO_2/ha).

The development of the national MRV system will be coordinated by the MRV/REL/SIS Methodological Unit of the BNC-REDD+ (Cf. § 1a), in collaboration with GT-REL/MRV/SIS, to ensure consistency in the methodology between REL and MRV.

The principles of the MRV system are the same as those defined under Component 3: that is, a stepwise approach, beginning with simple “no-regrets” activities, building on existing structures in a process of continuing improvement. The objective is to accept a lower level of precision in the monitoring of “non-managed forests.” However, a quick study should help to determine whether such forests do exist in Madagascar.⁷⁸

Another important principle is to ensure maximum participation of all actors in the MRV system at the local and national levels. In view of the expertise required, the monitoring of activity data will be carried out essentially at the national level, but will be focused on monitoring the drivers of deforestation/degradation and factors of carbon emission. The principle of subsidiarity (decentralization) will be observed: data collection will begin at the grassroots and go up to the national level (local → regional → eco-regional → national), following standardized methodologies to be deployed progressively, as capacity is strengthened.

Data collection will be coordinated at the national level with the creation and updating of a central database. Monitoring at the national level will be complemented and improved with more specific data collected from REDD+ projects (the nested approach).

Data collection and processing will be conducted through a transparent and easily replicated process, in accordance with clearly defined procedures. The information will subsequently be validated internally and by third parties (UNFCCC, VCS ...) before being disseminated to all stakeholders, following a transparent procedure.

⁷⁸ So called “non-managed forests” are forests located at a distance of more than 50 km from a road, a navigable waterway or a previously cleared parcel of forest land (JNR Requirements).

2. Monitoring Activity Data

2.1. Agreed Approach

In accordance with IPCC recommendations, the divisions of land use may be classified into six categories, as follows: forest lands, cultivated land, grasslands, infrastructure, wetlands and other lands.

The IPCC has also defined three possible approaches for estimating activity data:

- Approach 1: estimates are made only of the total surface area at a given date, without prior knowledge of changes between categories of land use or of the location of the classified areas;
- Approach 2: information is available on the surface area by category, as well as on the surface area of land converted from one land use category to the other, without the categories (converted or not) being subject to spatial delimitation. Such data may be obtained through statistical analysis, using the sampling method;
- Approach 3: in addition to the information obtained using the second approach, the land use categories are subject to spatial delimitation. These data are obtained through an exhaustive or “wall to wall” analysis of the territory.

On the basis of the data, existing tools, (cf § A.3) and taking into account the expertise available in the country, Approach no. 3 will be implemented in Madagascar.

In accordance with the option chosen under Component 3, this approach will focus first on monitoring, deforestation and subsequently, on the activity data regarding the conversion of “Forest Lands” in favor of other types of land use.

Once the RL has been established, the following corresponding activity data will need to be monitored: degradation and the increase of forest carbon stocks, in forest lands that have remained unchanged, as a result of reforestation or through natural regeneration and other types of land use (e.g. grasslands, cultivated land, and other land).

2.2. Institutions that may be mobilized

The institutions that may be mobilized for this exercise are described in paragraph 2 of Component 3.

2.3. Deployment of the activity data monitoring system

Three possible technical options may be envisaged to ensure monitoring of deforestation in Madagascar, depending on the quality of Satellite images as well as the suppliers of such images:

- High resolution optical imagery (30m): the Landsat system is managed jointly by NASA and USGS, which is still the main supplier of these types of cost-free images. The Landsat 8 Satellite (or Landsat Data Continuity Mission) launched in February 2013, has corrected the shortcomings of Landsat 5. The launching of Landsat 9 is scheduled for 2015. In a few years’ time, Madagascar could also benefit from Aster images, under a Japanese cooperation program. However, the technical and financial conditions for accessing these images are yet to be clarified;
- Very high resolution optic imagery (2.5 to 10m): a number of projects currently being implemented in Madagascar already use such images (Spot 4 and 5) that are supplied free of charge by the SEAS-OI project (Satellite Surveillance of the Environment: Indian Ocean – cf Annex 3-1), with a multi-satellite receiving station based in La Réunion. An agreement has already been signed between SEAS-OI and the University of Antananarivo, for the construction of a relay station at Antananarivo. However, funding for this project has not yet

been sourced. Radar images will also be acquired by RADARSAT-2 satellites, while training courses in the use of these images could be included as part of a scientific exchange program already in place between the University of Antananarivo (Madagascar) and the University of La Réunion. The Masters Course in Teledetection and Natural Hazards (TRN) offered by the University of La Réunion may be partially pursued at IOGA. It is expected that this training course could be combined with the Masters degree in Geomatics offered by the University of Antananarivo.

- Very high resolution optical imagery (10m and 20m): this is soon to be acquired by SENTINEL 2A and 2B satellites, originally scheduled for launching in 2013 and 2014 respectively, have been rescheduled for 2014 and 2014-2015 respectively. The images will be freely available at no cost, in accordance with the Landsat policy for the dissemination of data. The technical characteristics of these images are largely sufficient for the detection of deforestation. Their range, which is far superior to that of Spot images (290 km as against 60 km for SPOT images), also makes data processing easier

SENTINEL satellites appear to be the best compromise, including in terms of their potential for detecting degradation/increase in carbon stocks by means of the “red-edge” channel. This, however, remains to be confirmed and depends on the effectiveness of the planned policy for providing data free of cost. Alternatively, if the Landsat system pursues its policy of supplying its images at no cost, the deforestation monitoring system could possibly use medium-resolution images, supported by the acquisition of very-high resolution images for control areas (Cf Comp.3 - § 5.1).

At any rate, negotiations with the owners of satellites will be necessary. The fact is that even if access to the data is free and at no cost (as is the case for Landsat and SENTINEL), the satellites do not systematically capture images of all the areas that they fly over, to avoid saturation of their memory card. They only carry out systematic acquisitions if there is a receiving station, such as SEAS-OI, available in the region. We are aware that negotiations are underway between SEAS-OI and ESA, concerning future SENTINEL images.

Ultimately and even if the comparative analysis of images from different sources, between the REL (Landsat) and the MRV system (Spot or SENTINEL) may cause technical concerns, it may be preferable to opt for higher resolution imagery, as this would have the advantage of extending the monitoring system to take account of degradation and the increase of forest carbon stocks.

In the final analysis, the choice of technology will be made by weighing the advantages and disadvantages of the different options mentioned above, with the logistic (e.g. image transfer) and human constraints (e.g. national data processing capacity)

Procedural manuals and technical guides will be developed, published and distributed to stakeholders involved in choosing the options, with a view to standardizing protocols for measurement and ensuring transparency and quality of collected data. The ONE will begin this task for wet forests, as part of the REDD+ sub-component of the FA PE3.

This monitoring system (acquisition and tracking of data) will be centralized at the national level. As a temporary measure, until the national MRV system becomes operational, data from projects of higher precision/resolution may be used.

The results will be shared by i) making a geoportal available on the internet and ii) producing and distributing paper maps that have been publicized, including at the grassroots level.

If necessary and on condition that the international bodies (IPCC, UNFCCC) approve the use of these data, the MRV system in Madagascar could be based on:

- The “Global Forest Change” project, which provides for the regular updating of data already available for the years 2000-2012

- The AfriGEOSS project, implemented by GEO for Africa and which is preparing a preliminary mapping of land use in Africa, with a frequency of updates that is yet to be determined. It is expected that Madagascar will approach GEO to clearly stipulate its expectation vis-à-vis the new mapping.

2.4. Monitoring the drivers of deforestation/degradation, governance and strategic REDD+ options

A system specifically developed for monitoring these factors will be implemented for optimum speed of response to interventions envisaged as part of the strategic options defined in Component 2.

As the main drivers of deforestation/forest degradation are not the same in all countries, the deployment of a regional monitoring system will be more appropriate for a more accurate analysis of the drivers peculiar to each region, as well as governance-related aspects and the corresponding REDD+ strategies. Monitoring structures and tools are already in place and are described below:

Table 4a-1: Available tools and relevant information

Tools	Lead institutions	Type of data collected	Frequency of collection	Last update	Geographical LOCATION
Rural Information Systems for Food Security (SIRSA)	EPP/PADR	Rural socio-economic data	Specific project 2008- 2011	2011	9 southern regions
Rural Observatories Network (RON) – Rice Observatory (OdR)	EPP/PADR	Price of rice, maize, manioc and PPN	Monthly	January 2012	22 regions / 114 districts
Regional Territorial Planning Network (SRAT)	MDAT	Territorial management	As required	SRAT DIANA August 12	National
Social Dashboard (TBS*)	INSTAT	Socio-economic data	As required	2004	National
Economic Dashboard	INSTAT	Economic data	Quarterly	October 2012	National
Environmental Dashboards (TBE*s)	ONE	Environmental indicators	Progressive update (region by region)		National and Regional

* TBEs and TBS are described in greater detail in Annex 4a-

These tools and structures provide relevant data, which will allow for more effective measures against deforestation and forest degradation, as against combat strategies developed on the basis of national aggregate data. These may not necessarily reveal the real drivers of deforestation/degradation. Regular updating (with the inclusion of indicators relevant for REDD+) with information on the impacts of these drivers, will facilitate the necessary adaptation of REDD+ strategic options.

These regional monitoring systems will be supported by:

- The national forest and bush fire warning system, to be operated by the national monitoring entity, which will analyze regularly acquired medium resolution spatial satellite images (e.g. Modis). Conservation International currently provides this service for a number of countries throughout the world, including Madagascar.⁷⁹ The fire committees, which already exist at the level of the *Fokontany*, and the “chefs cantonnement” responsible for the area will be informed and thus in a position to decide what measures should be taken.
- Data collected by various REDD+ projects implemented on the ground
- Knowledge of local communities, collected on a regular basis by means of participatory rural surveys.

The national database will be fed on the basis of information collected at the local and regional levels.

⁷⁹ Conservation International fire monitoring system

3. Monitoring emission factors

For this activity, one must first define the levels of precision envisaged for each category. The IPCC and the GOFC-GOLD define the three precision levels as follows:

- Level I (high level of uncertainty): use of IPCC default values;
- Level II (average level of uncertainty): use of country-specific data;
- Level III (low level of uncertainty): use of state-of-the-art methods (modeling) and regularly updated country-specific data.

On the basis of the information mentioned under Component 3, Madagascar has chosen to define the precision levels of its MRV system as follows:

Table 4a-2: Choice of precision level by category for short and medium term

Timeline	Above-ground biomass	Below-ground biomass	Soil carbon stocks and humus
Short term (3 years)*	Level II	Level I	Level II
Long term (3-10 years)	Level III	Level I (and II)	Level II (and III)

** Within the framework of FAPE3, level III will be the goal for wet forests*

If, in the long term, emission factors should need to be updated, the monitoring system could rely on the network of observation plots described in Component 3 (cf § 3.1). The location and size of these plots (which are control areas) as well as their type (whether permanent or selected at random) will be determined by the MRV/REL/SIS Methodological Unit, in collaboration with GT-REL/MRV/SIS during the preparatory stage.

As stated under Component 3, this approach will make it possible to take into account emissions/absorptions linked to degradation and the increase of forest carbon stocks. This is a “no-regrets” activity, since in addition to information on carbon stocks, other crucial data will be gathered, such as the volumes of marketable timber (where it exists), as well as other indicators described under Component 4b.

It has already been mentioned that the effective participation of local populations⁸⁰ will be one of the pillars of the MRV system for REDD+ in Madagascar. Local communities will therefore participate in the implementation of MRV systems, although they cannot be expected to learn how to monitor carbon stock trends overnight in the community forests that they manage.

It will be a progressive approach, building initially on the gains of existing monitoring systems, especially participatory ecological monitoring (periodic dendrometric measurements) already implemented as part of REDD+ projects (e.g. Transfer of Natural Resource Management for Makira) or other forest management/conservation projects (Fanamby, Durrell).

Subsequently, and in parallel with the various sensitization campaigns and the progressive strengthening of capacities of local communities, simple tools will be developed. In this way, members of the local communities may be able to collect more complete and reliable data in monitoring the development of carbon stocks. As previously mentioned, this strong commitment to involving local communities could at the outset be enhanced by the expertise of REDD+ permanent staff already working on the ground.

As in the case for activity data, procedural manuals and technical guides will be developed, published and distributed to stakeholders at all levels, in order to achieve uniformity in measurement protocols, transparency and quality of data collected.

⁸⁰ A study carried out in Madagascar, among other countries, has confirmed the importance of such an approach (Danielsen 2010: *At the heart of REDD+: a role for local people in monitoring forests?* Conservation letters).

4. Monitoring Leakages

First of all, it may be recalled that international leaks are not considered and that three types of leaks should be taken into account:

- Leaks caused by changes in the activities of agents of deforestation/degradation;
- Leaks arising from markets;
- Ecological leakage, related exclusively to restoration/conservation activities in wetlands.

According to the JNR framework documents, inter-jurisdictional leakages (i.e. leakages at the eco-regional level) are the ones to be taken into account. However, as a first step, monitoring of leakages at the inter-jurisdictional level could be conducted by the relevant REDD+ projects, using their chosen methodologies. In the short term, it is highly probable that the only activities to combat deforestation/degradation that might give rise to leakages will be those carried out at the project level, unless Madagascar is able to benefit from the FCPF Carbon Fund at the eco-regional level of wet forests.

It would then be a matter of monitoring the leakages from the wet forest eco-region to other eco-regions. Studies should be undertaken to develop a methodology for quantifying and establishing the spatial distribution of these inter-jurisdictional leakages and their corresponding emissions.

5. Reporting and Verification

Pursuant to Decision 1/CP.16 of the Conference of the Parties, which defines the operational framework for developing National Reports and Inventories, the process of forest monitoring should take place at least every four years. Also in accordance with the Decision, reports with updated national inventories of GHGs should be developed and submitted on a biennial basis, once capacity in the country has been sufficiently strengthened to allow for such frequency.

More in-depth studies will be carried out to develop this reporting system. Some key elements are described below.

5.1. Development of databases

Based on the results of the analyses of forest cover trends, TBE and TBS data, as well as data gathered from the monitoring matrix for non-carbon benefits (as described above) should be compiled and updated. A database and meta-database for REDD+ projects should be created. This database, managed by the MRV/REL/SIS Methodological Unit of BNC-REDD+, will be a part of a network, together with other institutions. The data and metadata will collect and cross-check all information from different sectors and levels, including social data (statistics by region, indicators, population growth rate, migration, etc.); environmental (indicators, statistics, etc.); forest-related and thematic (thematic cards not stored at the BDSN- National Statistics Database). They will be shared between the Government and REDD+ project developers. This database will be developed during the first year of the preparatory phase of the REDD+ strategy.

Results of the activities of the projects, such as the “Knowledge Management” component of the UNDP/GEF support project to the PEIII (Environmental Plan III) could be used or promoted during the REDD+ strategy preparation phase.

5.2. Database maintenance

Database maintenance consists of providing hardware and software, coordinating a network of contributors (universities, research laboratories, specialists in forestry, etc.) and making information available for ongoing REDD+ projects, project developers, as well as any other interested structure or entity. Information may be disseminated by means of a digital document accessible via an internet portal or by a DVD. Here again, selection of the institution in charge of database maintenance will be done on a participatory basis and transparency will be of the utmost importance in the management of the data:

All data collected as part of REDD+ projects will include a reference to the measurement protocols, the working hypotheses adopted, dates of data acquisition, observers as well as the accuracy of the data. This information is necessary to ensure transparency of the data and comparability of our results with those of other countries. Free access to data is another guarantee of transparency.

Knowledge of the level of uncertainty inherent in each category of measurement (in the IPCC-2006 recommendations) is, in fact, one of the requirements to ensure the validity of the REDD+ process.

5.3.Verification

The possibility of external verification of data (still the subject to international negotiations) and results is an essential element of the REDD+ mechanism. The verification system to be implemented will comply with CCBA (2010) recommendations. Some highlights of this standard include the publication and dissemination of verification documents, the recruitment of a qualified auditor (national and/or international), public consultations, site visits and the publication of the final verification report. It must also be noted that validation/verification of the envisaged JNR approach should be sought from the VCS, at least for wet forests in the first instance.

As there is currently no national auditor to carry out verification, Madagascar will enlist the help of international auditors in the initial stages; capacity building for national auditors will take place at the same time.

5.4.Communication

Beyond UNFCCC requirements, Madagascar seeks to disseminate the results of its work (including that described in Component 3), as widely as possible. This will be done through:

- The development of a geoportal, accessible internationally as well as nationally to anyone with a suitable connection;
- The holding of regional workshops in all administrative regions involved in the promotion of the JNR approach;
- The production/dissemination of documents/paper maps in regions that are not connected, as well as in the COBAs (Local Grassroots Communities).

6. Capacity building

Several capacity-building activities along the same lines as the activities needed for developing Component 3 have been envisaged. These actions are developed at several levels:

6.1.Overall national needs

- Institutionalization and dissemination of personal knowledge, so that the information may remain in the institutions even after the departure of some key members;
- In-depth REDD+ training for scientists and academics, who will subsequently be responsible for disseminating information at the national level along the lines of the support given by international experts from Conservation International to ESSA-Forests;
- Strengthening of south-south and south-north exchanges among institutions and universities, as promoted by the Sud Experts Plantes – sustainable development (SEP-2D) program -which includes a REDD+ module;
- Capacity building for Forest Administration agents and all technicians from various institutions called upon to play a major role in the roll-out of the national REDD+ system.

6.2. Factors of Emission

6.2.1. Biomass

- National : support for the development of sampling plans, the use of allometric models, the implementation and functioning of the Database, training in techniques for mapping carbon stocks, as identified in Component 3 (cf § 4.1) ;
- Regional / Local: training in conducting inventories at the level of the COBAs and the DREFs, especially in areas not covered by the projects ; support for the management of corresponding databases to facilitate the standardization of data and their aggregation at the national level.

6.2.2. Soil

- National: capacity already deemed sufficient for conducting field inventories and mapping ; training/exchange by/with international experts, especially with regard to post-deforestation soil carbon and including teledetection monitoring of land use to calibrate models ;
- Regional/Local: no specific needs at the regional/local level.

6.3. Activity Data

6.3.1. Historical Deforestation

- National : training in institutions that specialize in the processing and multiple-date analysis of new teledetection equipment (e.g. Spot 5, Sentinel, Radarsat), in order to standardize the methods and skills of Malagasy nationals to be mobilized ; upgrading of data processing equipment of specialized institutions;
- Regional / Local: As teledetection will be centralized at the national level, no capacity building is required for the regions.

6.3.2. Degradation/Increase of historical carbon stocks

- National : training in the use of new teledetection tools currently being developed (in line with the images mentioned above) to monitor the drivers of degradation/increase of forest carbon stocks;
- Regional / Local: Capacity strengthening in teledetection is not required for the regions, as this activity will be centralized at the national level.

6.3.3. Projection of future data

- National : Support in identifying the factors that explain, quantify and identify deforestation and the areas where it (and degradation) occur ; projection (modeling) of future deforestation (and degradation) with adjustments ;
- Regional/local: No capacity strengthening for this activity needed at the regional/local level.

6.3.4. Monitoring the drivers of deforestation

- National: support for the development of the monitoring system to be deployed at the regional level and training in the use of teledetection to develop an early warning/ monitoring system for fires.
- Regional / local: support for the DREFs in the implementation of a regional monitoring system, notably for supervising and/or conducting participatory surveys in rural areas.

6.4. Notification and Communication

- National: support for the development of a geoportal and internet site for sharing and exchanging views on REDD+ in Madagascar.

4b: Designing an information system for multiple benefits, other impacts, governance and safeguards

1. Agreed approach

The implementation of REDD+ will bring substantial positive benefits and impacts other than carbon. Such impacts and benefits should be monitored and evaluated to increase the added value of REDD+. The mechanism will give new momentum to actions in favor of biodiversity conservation in Madagascar and will encourage a more realistic time period for support, including in technical, organization and financial management at various levels, in order to sustain the practices that integrate development and biodiversity conservation. Revenues from the REDD+ mechanism will help to provide support over a period longer than the usual duration of a project. Furthermore, particular attention will be paid to monitoring governance under REDD+; the roles of different institutions and stakeholders, their accountability, the issues of governance and transparency all have to be taken into account in the monitoring system from its inception and throughout the implementation of the REDD+ strategy. This will be the special focus in the deployment of the Safeguard Information System (SIS) described below.

For Madagascar in particular, the following areas stand to benefit most from the positive impacts of REDD+:

Biodiversity Conservation:

As mentioned previously, Madagascar is a country of mega diversity, with remarkable rates of endemism in fauna (15 of 65 of all primate genera in the world are endemic to Madagascar, including all lemurs, etc.) as well as in flora (90 percent of the 12,000 plant species) (MEF, National CDB Report 2009). Madagascar's biodiversity is therefore truly a world heritage. This exceptional biodiversity is mainly terrestrial and to be found in forests. Any action to prevent forest loss will therefore automatically prevent the loss of biodiversity.

However, the wealth of biodiversity is not uniformly distributed among all the forests of Madagascar. During the REDD+ strategy preparation phase, the areas of high biodiversity must therefore be identified and a database developed on the state of biodiversity, the hazards that threaten these areas, etc. This should be done before REDD+ strategy implementation, so as to create a biodiversity baseline for subsequent comparison of similar data following REDD+ strategy implementation.

Sustainability of environmental goods and services provided by the forest:

Ever since the Island was first populated by humans, the forest has provided the goods and services necessary to sustain the livelihoods of the populations living near them (or even of communities living far away from the forests). Water resources are an example of these benefits, since deforestation sooner or later results in the progressive drying up of water sources that feed hydrological networks at the level of the watershed. Prevention of deforestation/forest degradation through REDD+ implementation will therefore help to preserve upstream water resources, with a consequent effect downstream (irrigation of rice fields, fields of cultivation, etc.).

Improving the well-being/livelihoods of populations living near forests

The timber and non-timber products present in forests (silk, honey, medicinal plants, etc.) have for several generations provided a source of social, economic and cultural activities and sometimes even a source of worship (case of the Alafaly: taboo forests) for the Malagasy people. Some of these activities could help local populations improve their livelihoods (through sale of products, handicraft, etc.) with light technical support (capacity strengthening for handicraft, packaging of products, etc.) and support for market access. Therefore, preventing deforestation/degradation through REDD+ will improve the well-being and/or livelihoods of populations living near preserved forests by providing them with additional sources of income.

In summary, implementation of REDD+ will also provide social and environmental safeguards, in addition to carbon.

Madagascar will draw on (and analyze) a number of standards available at the international level (CCBS, VCS, etc.) to develop a matrix of indicators whose (1) elements (indicators) will be incorporated into existing monitoring systems and used and /or (2) the entire matrix will be used to complement existing systems for monitoring non-carbon benefits and impacts, in accordance with specific country characteristics.

Existing tools for this type of monitoring activity, which should be consulted and refined as necessary, in order to understand the dimensions of REDD+, are described below:

2. Existing monitoring tools to be consolidated

The tools mentioned under Component 4a (cf § 2.4) will be enhanced by the outcomes/data obtained from REDD+ implementation and vice versa. The TBEs presented in annex 4a-2 are tools already used at the national and regional levels. The TBEs already monitor environmental (biodiversity, soil and vegetation cover, continental waters...), socioeconomic, climate and physical parameters to assess the state and evolution of the environment and progress in environmental management. Currently, 20 of the 22 regions in the country have a regional TBE. The two regional TBEs that have not yet been developed will be implemented during the strategy preparation phase.

The Social Dashboard (TBS) is the other existing monitoring tool. The TBS utilizes different social indicators, such as the human development index, living conditions of the population, covering various sectors, such as agriculture, population, health, mining, tourism, education, foreign trade, etc. Regional Social Dashboards are already in place, although they need to be restructured to make them more functional.

These tools will be strengthened and used for monitoring other REDD+ benefits and impacts.

At the local level, the extent to which REDD+ impacts the living standards of local stakeholders will be the subject of an entirely independent evaluation (that is, independent of all national REDD+ stakeholders). Impacts on livelihoods will be evaluated by means of participatory rural surveys, along the same lines proposed for monitoring the drivers of deforestation/forest degradation (Component 4a - § 2.4).

Governance

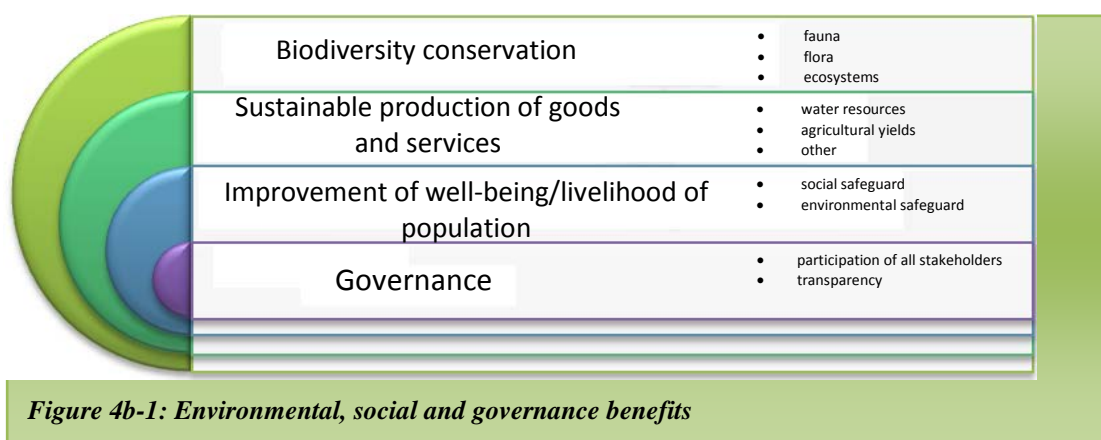
A governance monitoring system will also be set up, building on the gains of the forest governance workshop initiated by the AVG in 2012 and in keeping with the structures identified for implementing REDD+ strategy in Madagascar (cf. component 2c). Four main criteria will be considered in the establishment of the REDD+ governance monitoring system:

- During the preparatory phase, the roles and responsibilities of the various institutions (government and non-governmental) will be identified and distributed. A clear definition of the roles of each institution is a pre-requisite in establishing a functional structure free of ambiguities, with responsible and accountable actors. The REDD+ platform will coordinate the preparatory work.

- The entire process will involve interactive participation, the only kind of participation where everyone (including minority and vulnerable, potentially marginalized groups) will have a say in the decisions to implement a governance monitoring system (Cf. Annex 4b). The involvement of all stakeholders will minimize the risk of weak governance. Special attention will be given to involving civil society in the monitoring process.
- Transparency in the availability of and access to information, as well as in the management of the REDD+ database, will also be ensured.
- Information from existing national anti-corruption structures: CSI-Integrity Monitoring Committee; SAMFIN – Control Unit against Money Laundering and BIANCO – the independent anti-corruption bureau, will be integrated into REDD+.

Following multi-level consultations (national, regional, local) during the preparatory phase (Cf. Component 1b); the matrices of indicators for monitoring and governance will be developed, again by means of a participatory process.

The figure below provides a summary of non-carbon benefits of REDD+.



Safeguard Information Systems (SIS)

For the specific framework of environmental and social safeguards, the development of an information system allows for improved forest governance under the REDD+ mechanism, to provide information on REDD+ safeguards as well as to involve local communities in the process.

The environmental and socioeconomic indicators of the impact of REDD+ activities relate to the integrity of biodiversity and ecosystem services as well as community livelihoods. Through the use of these indicators, it is possible to monitor implementation of the safeguards stipulated in Decision 1.CP16 of the UNFCCC (see Appendix I).

The system, which is modeled off international standards, will be based on the following existing provisions:

- monitoring of the National Strategy for Sustainable Management of Biodiversity (SNGDB), as well as the Aichi objectives
- ecological monitoring of protected areas,
- Protocol developed as part of the PERR-FH project, for monitoring environmental and social impacts
- Experiences and results of REDD+ projects in Madagascar
- TBE (ONE), TBS (INSTAT)
- Green accounting data released by the WAVES program

The entities responsible for these arrangements will communicate the data, in accordance with a prior, agreed methodology.

In addition to the discussions within the GT Safeguard and GT MRV groups during the period of AFD technical assistance, a study is currently underway to define the environmental and social indicators as well as data collection methodologies.

The SIS will target the forest administration and other bodies responsible for forest management, the international community and the purchasers of REDD credit, national REDD+ actors, but especially those local communities living near REDD+ sites, who are the end beneficiaries.

The main activities of the SIS are:

- Development of REDD+ safeguard procedures and activities (consultations, development of the safeguards framework, and identification of safeguard measures...)
- Inventory of the knowledge and rights of local population and building of their capacity (sensitization and training)
- Development and implementation of safeguard measures
- Creation and development of the SIS (architecture, procedures, institutional arrangement, development of indicators and database, data collection tools, processing and dissemination, structuring)
- Development and building of national capacity with regard to REDD+ safeguards
- Implementation and adaptation of the system at the local and national levels (with participation of local communities)
- Monitoring and evaluation of the performance and effectiveness of the system
- Dissemination of the results
- Exchanges with other countries and participation in international discussions and debates

Workplan and Budget

As is the case for Component 3, the work plan and budget provide an outline of the activities planned/funded in 2013 as part of AFD (funded technical assistance) and which currently benefit the ONE and the DGF. It also details the amounts that could be financed under the Additional Fund of Environmental Program III (World Bank).

Table 4b-1: Summary of MRV activities and budget

Main activities	Sub-activity	Cost in thousands of US dollars			
		Year 1	Year 2	Year 3	Total
Monitoring of drivers of deforestation/degradation, multiple benefits, other impacts, governance and guarantees	Develop and adapt the monitoring system, including SIS and the monitoring of strategic REDD+ options	30 000	15 000		45 000
	Revitalize and update existing monitoring systems	47 000			47 000
	Develop the fire monitoring-warning system	28 800			28 800
	Conduct, in conjunction with the SIS, participatory surveys in rural areas	299 867			299 867
	Provide information to CSI/BIANCO	3 199	3 199		6 398
	Integrate REDD+ strategy options into sectoral policies	17 000			17 000
Monitoring of leakages	Conduct a study of the national/eco-regional/project context in line with the JNR and the FCPF	8 000			8 000
Notification and Verification	Develop and implement databases (DBs)	15 000			15 000
	Ensure maintenance of DBs (national and regional)	24 000	24 000	24 000	72 000
	Validation/verification by the VCS of the JNR or FCPF approach	49 400			49 400
Dissemination of information	UNFCCC	9 800	20 000		29 800
	Regional workshops	50 000			50 000
	Production /dissemination of maps/paper documents for the COBAs		30 440		30 440
	Geoportal	15 000	20 000		35 000
Capacity building	Internal dissemination of acquired knowledge	14 597	15 397		29 994
	Training of scientists and members of academia in REDD+, strengthening of south-south and south-north exchanges	50 000			50 000
	Capacity building of national technicians in REL/MRVMSIS (including acquisition of material for the DGF)	51 300	88 200		139 500
	Capacity building of regional/local technicians in REL/MRVMSIS (including acquisition of materials for the DREFs)	50 420	79 900		130 320
	Development of guides/handbooks for MNV system implementations		19 995		19 995
	International workshops	15 300	20 400		35 700
Implementation of Safeguard Information System (SIS)	Identification of environmental and socioeconomic indicators	10 300			10 300
	Development of the environmental monitoring protocol and collection of data for zero state	5 448			
	Development of the socioeconomic monitoring protocol and collection of data for zero state	48 485	48 485		96 970
Implementation of the monitoring and governance system	Development of monitoring protocol and collection of complementary data for zero state	19 999			19 999
	Total 4 MRV	862 914	385 016	24 000	1 271 930
	Government	349 867			349 867
	FCPF	493 048	112 634	24 000	629 682
	Other donors	19 999	272 382		292 381

COMPONENT 5: SCHEDULE AND BUDGET

A. Total budget

US\$ 6.856 million is required for the implementation of Madagascar's R-PP. The country strategy cannot be developed solely on the basis of the funds provided by the FCPF. Madagascar intends to explore other sources of financing, which will depend on the activities to be implemented and the objectives of potential donors. The country has mobilized some available resources, such as the additional PE3 financing, which consists of loans to be repaid by the Government of Madagascar, as well as bilateral funds to be mobilized for pilot projects. The capitalization of the results of these projects will contribute to the building of a national REDD+ strategy. However, for other needed resources in the amount of US\$ 1,235,297, Madagascar has already identified donors, such as UN-REDD, some bilateral funds and funds from the Government of Madagascar itself, among others.

Table 5.1: Total budget for R-PP implementation

Component	Estimated cost (US \$)	Percentage
1a Readiness Management Arrangement	1 705 499	24,2%
1b Stakeholder consultation and participation	963 381	13,67%
2a Evaluation of land use, forest policy and governance	188 129	2,67%
2b Strategic REDD+ options	206 613	2,93%
2c Implementation framework	181 360	2,57%
2d Social and environmental impacts	188 392	2,67%
3 Reference scenario	2 070 475	29,38%
4 MRV : Monitoring, Reporting and Verification	1 271 930	18,05%
6 Monitoring-evaluation of Readiness Implementation	271 552	3,85%
Total cost of the R-PP	7 047 331	100%
FCPF	3 800 000	53,92%
Government	1 679 317	23,83%
Other sources of funding	1 568 014	22,25%

Detailed schedule of status quo activities

The following tables summarize the activities and budget of each component and provide specific detail on the implementation schedule, indicating whether or not activities may be implemented under the status quo (sub-activities or activities are in bold italics).

Component 1a: Readiness management arrangement

Table 5.2: Detailed schedule and budget for national readiness management arrangements

Main Activities	Sub-activities					Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	
Installation of the Program	<i>Launch the project with donor support</i>							
	<i>Installation of materials and office setup</i>	45 000			45 000		45 000	
	<i>Purchase of vehicles, computers, photocopiers and communication equipment</i>	271 815	7 100		286 015	2 750	283 265	
Implementation of personnel management tools	<i>Recruitment</i>	29 900	19 600		49 500		49 500	
	<i>Development of BER management tools</i>	42 859			42 859		42 859	
	<i>Start-up training</i>	19 459			19 459		19 459	
Operations	<i>Office operations : salaries and benefits</i>	89 400	89 400	89 400	268 200	268 200		
	<i>Office operations : charges and services</i>	46 800	46 800	49 200	142 800	106 200	36 600	
	<i>Operation of vehicles (except missions outside of TANA)</i>	37 000	54 000	54 000	145 000		109 000	36 000
Support the BNCR in activity implementation	<i>Management of BNCR operations</i>	85 000	85 000	85 000	255 000		85 000	170 000
	<i>Development of REDD+ implementation arrangement</i>	23 800	41 377		65 177		23 800	41 377
	<i>Communication and relations with sectoral</i>	95 632	95 632	95 632	286 896		78 896	156 000

Main Activities	Sub-activities					Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	
	<i>actors</i>							
	<i>Providing funding for management of PCP-REDD+ and CIME</i>	11 197	12 997	3 400	27 594		27 594	
<i>Management and costs of the Program</i>	<i>Financial and accounting management fees</i>	24 000	24 000	24 000	72 000		72 000	
	<i>Other costs</i>							
	Total Component 1a	821 861	475 906	407 732	1 705 799	3 77 150	924 972	403 377

Component 1b 1c: Consultation and public participation

Table 5.3: Detailed schedule and budget for stakeholder consultation and participation

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Others
1- Inform and sensitize the general public on REDD+, the R-PP, the development of the strategy, its key elements and dissemination of the strategy	<i>Share information on the start-up of (REDD+, R-PP, readiness arrangement, etc.)</i>	91 331	89 771	89 771	270 872		197 601	73 271
	<i>Provide regular information on REDD+ development : communicate the main ideas on the reference level, strategic options, implementation arrangement and carbon governance</i>	54 135	49 564	44 957	148 656		54 135	94 521
	<i>Collect and analyze opinions on the disseminated information</i>	4 500	1 900		6 400		6 400	
	<i>Consolidate communication channels</i>	2 400	2 400	2 400	7 200		7 200	

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Others
	Disseminate the strategy	72 621			72 621		72 621	
2- Carry out consultation to collect elements for each focus area, in order to prioritize them	Collect socioeconomic, political and cultural information on each focus area and reference information at the regional level		45 943		45 943		45 943	
	Collect additional information from various institutions to complement and cross-check information and base data		13 577		13 577		13 577	
3- Carry out consultation to assess the risks of leakage, with a view to feeding the combined focus areas	Collect data and socio-economic, cultural and worship-related data and information underlying the displacement of emissions linked to deforestation and degradation within and around potential REDD+ areas	39 832			39 832		39 832	
4- Conduct dialogue on the pre-finalized strategy	Collect opinions and observations of sectoral decision-makers on the pre-finalized strategy in terms of policies, regulatory text reform, institutional arrangements, programs to be implemented, resources, etc.	43 793			43 793		43 793	
5- Conduct consultation on carbon revenue governance	Capitalize on the experience in forest revenue management to prepare the outline for the overall framework for governance and revenue sharing	3 700			3 700		3 700	
	Promote dialogue and negotiation on the transparent management of revenues “including accountability”	50 295	50 295		100 589		50 295	50 295

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Others
6- Implement detailed SESA	Gather opinions and hear concerns on the strategies as well as their environmental and social impacts		47 188		47 188		47 188	
	Validate the detailed preliminary SESA		59 230		59 230			59 230
	Evaluate the detailed SESA document		17 000		17 000		17 000	
7- Establish the Reference Scenario	<i>Identify the variables that best explain deforestation and degradation</i>	52 785			52 785			52 785
8- MRV : Verification Reporting and Monitoring	Establish basic mapping and national themes. Analysis of code benefits	10 000			10 000		10 000	
	Reference data or REDD projects	4 000			4 000		4 000	
	Image classification methodology				pm		pm	
	Consultation on the monitoring system	20 000			20 000		20 000	
	Total Component 1b	449 389	376 865	137 127	963 381		963 381	

Component 2a: Evaluation of land use, forest policy and governance

Table 5.4: Detailed schedule and budget for land use evaluation, forest policy and governance

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
<i>Assess and classify actors in the timber sector according to their capacity to promote deforestation and forest degradation</i>	<i>Identify and classify the actors according to the extent to which their activities contribute to deforestation and forest degradation</i>	4 000			4 000		4 000	
<i>Analyze spatial distribution of the drivers of deforestation and degradation</i>	<i>Define and identify the most representative areas of deforestation</i>	6 000			6 000		6 000	
	<i>Review and analyze existing knowledge of drivers of deforestation and forest degradation</i>	12 480			12 480		12 480	
	<i>Conduct sampling and surveys at regional and local levels</i>	58 325			58 325		58 325	
	<i>Process and analyze the data, with extrapolations for the national level</i>	4 000			4 000		4 000	
<i>Analyze the political economy of deforestation and forest degradation, in order to define and anticipate main obstacles to the reforms needed for REDD+ implementation</i>	<i>Define the typology of entities concerned with deforestation and forest degradation</i>	1 600			1 600		1 600	
	<i>Carry out review and documentary analysis of the main challenges of deforestation and forest degradation</i>	3 400			3 400		3 400	
	<i>Conduct surveys and research on the ground</i>	51 927			51 927		51 927	
	<i>Analyze data, summarize results and make</i>	10 000			10 000		10 000	

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
	<i>recommendations</i>							
Analyze the economic contribution of the forest sector. This should lead to a comparative analysis of land use and economic impacts.	<i>Review of existing economic studies and compilation of basic elements to make calculations</i>	3 000			3 000		3 000	
	<i>Collect additional information</i>	12 398			12 398		12 398	
	<i>Formulate hypotheses, process data, analyze and interpret results</i>	4 400			4 400		4 400	
	<i>Analyze outlooks and make recommendations</i>	10 000			10 000		10 000	
Summarize knowledge of causes and factors of stagnation in agricultural production	<i>Collaborate with Ministry of Agriculture in analysis of documents and knowledge</i>	6 600			6 600		6 600	
	Total Component 2a	188 129			188 129		188 129	

Component 2b: REDD+ Strategic Options

Table 5.5: Detailed schedule and budget of activities related to strategy options

Main activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
<i>Adjust strategic options and list operational strategies</i>	<i>Refine the list of most promising strategic options with respect to the drivers of deforestation</i>	2 300			2 300		2 300	
<i>Conduct detailed analysis of focus areas</i>	<i>Evaluate the benefits and impacts of the focus areas</i>	41 108			41 108		41 108	
	<i>Evaluate the feasibility of implementing focus areas</i>	9 019	13 189		24 218		24 218	
	<i>Analyze advantages and economic costs of focus areas</i>	6 399	7 160		13 559		13 559	
	<i>Evaluate the sustainability of proposed strategic options</i>		17 177		17 177		17 177	
	<i>Analyze the potential for leakage of strategic options</i>		16 436		16 436		16 436	
	<i>Summarize and compile analyses of focus areas</i>		4 160		4 160		4 160	
	<i>Establish strategy scenarios</i>		3 977		3 977		3 977	
<i>Analyze combinations (scenarios) of focus areas</i>	<i>Analyze costs and benefits</i>	Pm			Pm		Pm	
	<i>Conduct specific studies : collect additional information, SEA integration, sustainability, monitoring system of the mechanism</i>		28 699		28 699		28 699	

Main activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
Develop REDD+ strategy	Develop REDD+ strategies. Formulate spatial distribution strategies. Consultation. Integration of SESA aspects (mitigation, safeguards...). Negotiation at level of decision-makers		34 381		34 381			34 381
	<i>Evaluate national capacity, resource needs, capacity strengthening proposal</i>		14 600		14 600		14 600	
Conduct strategy implementation studies	<i>Establish Development Plan for implementation tools for strategies and reforms</i>			6 000	6 000		6 000	
	<i>Carry out preliminary studies for securing additional resources to fund the REDD system</i>	pm			pm		pm	
	Total Component 2b	58 826	141 787	6 000	206 613		172 232	34 381

Component 2c: REDD+ Implementation Framework

Table 5.6: Detailed schedule and budget for the implementation framework

Main activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
<i>Conduct studies on required institutional and legislative reforms</i>	<i>Analyze the overall regulatory framework for REDD+ strategy implementation. Regulatory analysis. Proposal for necessary reforms. Development of institutional arrangement. TOR 2c.1</i>	25 009			25 009		25 009	
	<i>Conduct a study on prospects for the sustainability of the implementation framework (TOR 2c.1)</i>		17 148		17 148		17 148	
	<i>Develop adapted management tools for implementation at the community level (TOR 2c.2)</i>			15 199	15 199		15 199	
	<i>Explore monitoring and oversight system for the strategies and to analyze variations in drivers of deforestation (TOR 2c.3)</i>	2 000			2 000		2 000	
	<i>Extend support to and negotiate with decision makers to formalize regulatory texts on the new management arrangement</i>			4 000	4 000		4 000	4 000
Conduct studies on carbon governance	Instruct actors on principles of carbon governance: sensitization on principles of governance, publication of communication tools (TOR 2c.4)	13 912			13 912		13 912	
	Obtain feedback on carbon governance based on consultation during the detailed analysis of the drivers of deforestation. Consolidation. Preliminary discussions with key actors.(TOR 2c.4)	12 000			12 000		12 000	

Main activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
	<i>Conduct study on carbon ownership. Proposal. Regulatory analysis for carbon governance as a whole (TOR 2c.4)</i>	18 378	18 378		36 756		36 756	
	<i>Carry out studies to develop revenue sharing mechanism, as part of overall effort to ensure sustainability of the mechanism (monitoring, MRV, etc...TOR 2c.5)</i>	30 169			30 169		30 169	
	<i>Develop a system for the transparent management and monitoring of carbon revenue. Institutional proposal. Regulatory proposal.(TOR 2c.6)</i>		25 169		25 169		25 169	
	Total Component 2c	101 467	60 694	19 199	181 360		181 360	

Component 2d : Social and Environnemental impacts

Table5.7: Detailed schedule and budget for the SESA

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Année 1	Année 2	Année 3	Total	GVT	FCPF	Other
<i>Develop SESA tools for REDD+</i>	<i>Develop SESA guide for REDD+</i>	13 250			13 250		13 250	
<i>Strengthen capacity of stakeholders</i>	<i>Train various stakeholders at central level</i>	20 499			20 499		20 499	
	<i>Train various stakeholders at regional level</i>	22 750			22 750		22 750	
<i>Develop SEA framework</i>	<i>Conduct workshop for development of TORs</i>	17 999			17 999		17 999	
	<i>Preliminary exploration</i>	11 000			11 000		11 000	
	<i>Adjustment of TORs</i>	1 000			1 000		1 000	
	<i>Guidelines</i>							
<i>Implement SEA</i>	<i>Analyze environmental and social impacts of REDD+ strategy</i>	26 147			26 147		26 147	
	<i>Formulate detailed SESA and validate Study</i>	8 000			8 000		8 000	
	<i>Finalize SESA</i>		4 000		4 000		4 000	
<i>Evaluate SESA dossier</i>	<i>Technical evaluation by ONE/CTE</i>		7 000		7 000		7 000	
	<i>Conduct public evaluation</i>		32 000		32 000		32 000	
	<i>Conduct institutional evaluation</i>		12 500		12 500		12 500	
	<i>Instructions and recommendations</i>		3 250		3 250		3 250	
	<i>Communication of results</i>		9 000		9 000		9 000	
	Total Component 2d	120 644	67 749		188 392		188 392	

Component 3: Development of a reference scenario

Table 5.8: Detailed schedule and budget for development of the reference scenario

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
Arrangement and institutional operation	Establish and ensure operation of GT-MRV	10 000	10 000	10 000	30 000		30 000	
	Organize national workshops for consolidation/dissemination of results	8000	8000		16 000		16 000	
	National coordination (also mobilized under Component 4)							
Delimitation of eco-regions	Conduct sessions for information, exchange and collection of data (plans, regional development strategies, etc.)	20 000			20 000	20 000		
	Establish final delimitation by eco-region	8 000			8 000	8 000		
Define historical activity data	Acquire, process and analyze satellite images	60 000	90 000		150 000	60 000	90 000	
Define factors of emission	Conduct forest inventories : installation of network of plots, including practical training for DREFs and COBAs	900 450 000	300 000	150 000	900 000	450 000	300 000	150 000
	Produce a national map of aerial biomass	15 000	30 000		45 000	15 000	30 000	
	Improve soil carbon map (including acquisition of material)	207 000	207 000		414 000	207 000		207 000
	Improve and develop models of soil carbon loss (including international expertise)	18 300	104 400		122 700	18 300	104 400	

Conduct study on the integration of degradation and increase of forest carbon stocks	<i>Envisage the possibility of carrying out these two activities by means of targeted studies on regions of interest</i>	80 000			80 000	80 000		
Modeling of activities and projected estimates of future emissions	Establish a model of deforestation by eco-region (quantification and localization) including training of national actors	54 000	150 775		204 775	54 000		150 775
	<i>Adjust eco-regional RELs, by means of consultation at the level of administrative regions</i>	40 000	40 000		80 000	40 000	40 000	
Capacity building	Cf. Budget Component 4							
	Total Component 3	970 300	940 175	160 000	2 070 475	952 300	610 400	507 775

Component 4: Development of a monitoring system

Table 5.9: Detailed schedule and budget for the development of the monitoring system

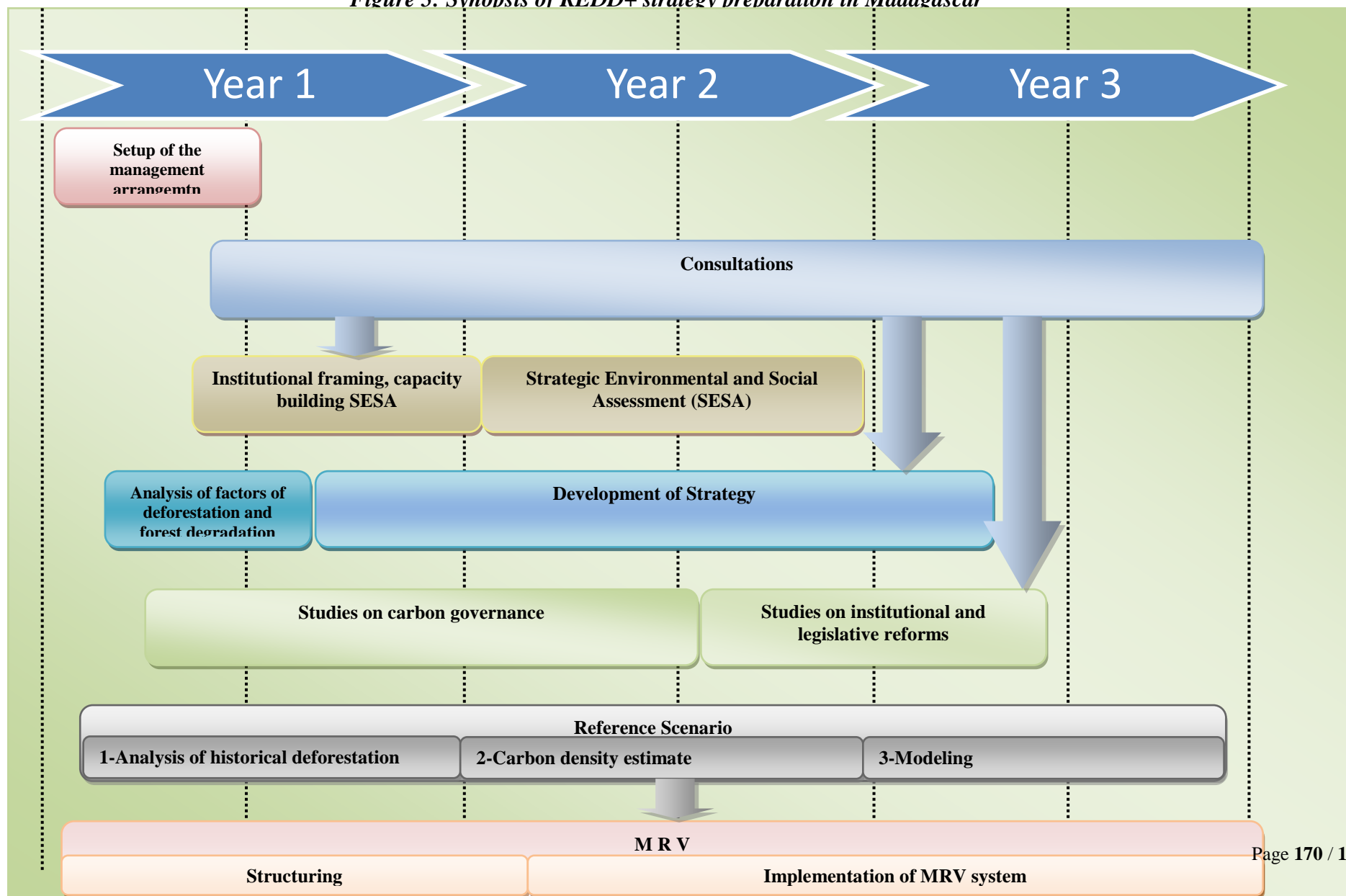
Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
Monitor the factors of deforestation and forest degradation, multiple benefits, other impacts, governance and safeguards 7	<i>Develop and adapt the monitoring system, including the SIS and the monitoring of REDD+ strategies</i>	30 000	15 000		45 000		45 000	
	<i>Re-energize and update existing monitoring systems</i>	47 000			47 000		47 000	
	<i>Develop a fire monitoring and warning system</i>	28 800			28 800		28 800	
	<i>Conduct participatory rural surveys in conjunction with the SIS</i>	299 867			299 867	299 867		
	<i>Inform the CSI-BIANCO</i>	3 199	3 199		6 398		6 398	
	<i>Integrate REDD+ strategic options into sectoral policies</i>	17 000			17 000		17 000	
Monitor leakages	<i>Carry out a study of the national/eco-regional/project context, in light of the JNR framework</i>	8 000			8 000		8 000	
Carry out Notification and Verification	<i>Develop and implement databases (DBs)</i>	15 000			15 000		15 000	
	<i>Oversee database maintenance (national and regional)</i>	24 000	24 000	24 000	72 000		72 000	
	<i>Conduct Validation/Verification by VCS of the JNR approach</i>	49 400			49 400		49 400	
Communicate information	<i>UNFCCC</i>	9 800	20 000		29 800		29 800	
	<i>Regional workshops</i>	50 000			50 000	50 000		
	<i>Produce, disseminate maps/paper documents for the benefit of the COBAs</i>		30 440		30 440		30 440	

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
	<i>Geoportal</i>	15 000	20 000		35 000		35 000	
Carry out capacity building	<i>Internal dissemination of acquired knowledge</i>	14 597	15 397		29 994		29 994	
	<i>Training of scientists and members of academia in REDD+. Strengthening of south-south and south-north exchanges.</i>	50 000			50 000		50 000	
	<i>Capacity building of national technicians on REL/MRVSIS (including acquisition of materials for the DGF)</i>	51 300	88 200		139 500		51 300	88 200
	<i>Capacity building of regional/local technicians on REL/MRVSIS (including the acquisition of materials for the DREFs)</i>	50 420	79 900		130 320		130 320	
	<i>Develop Guides/Handbooks for implementing the MNV system</i>		19 995		19 995		19 995	
	<i>International workshops</i>	15 300	20 400		35 700		35 700	
Implement the Safeguard Information System (SIS)	Identify environmental and socioeconomic indicators	10 300			10 300		10 300	
	Develop the environmental monitoring protocol and collect data for zero state.	5 448					5 448	
	Develop socioeconomic monitoring protocol and collect data for zero state	48 485	48 485		96 970		48 485	48 485
Implement the governance monitoring system	Develop monitoring protocol and collect additional data for zero state	19 999			19 999			19 999
	Total Component 4	862 914	385 016	24 000	1 271 930	349 867	629 682	292 381

Component 6: Development of a monitoring and evaluation framework

Table 5. 10: Detailed schedule and budget for monitoring and evaluation

Main Activities	Sub-activities	Estimated cost (\$US)				Sources of financing		
		Year 1	Year 2	Year 3	Total	GVT	FCPF	Other
<i>Setup of the SEA</i>	<i>Develop the SEA</i>	12 000			12 000		12 000	
	<i>Validate the SEA</i>	5 800			5 800		5 800	
	<i>Deployment for putting SEA into operation</i>	3 436			3 436		3 436	
<i>Carry out monitoring</i>	<i>Collection of data on indicators</i>	14 072	14 072	14 072	42 216		42 216	
	<i>Processing and analysis of data</i>	18 000	18 000	18 000	54 000		54 000	
	<i>Establishment and communication of results</i>	18 000	18 000	18 000	54 000		54 000	
<i>Carry out evaluation</i>	<i>Mid-term evaluation</i>		51 100		51 100		51 100	
	<i>Final evaluation</i>			49 000	49 000		49 000	
	Total Component 6	71 308	101 172	99 072	271 552		271 552	

Figure 5: Synopsis of REDD+ strategy preparation in Madagascar

COMPONENT 6: DESIGN A MONITORING AND EVALUATION FRAMEWORK

Objective

The main objective of the monitoring and evaluation framework in the preparatory phase is to create tools for decision-making and guidance based on an objective assessment of progress made in implementing the activities set out in the R-PP components of REDD-plus and of the outcomes of these activities.

Expected Outputs from the R-PP Monitoring and Evaluation System

The system will provide the following outputs on a regular basis:

- A half-yearly review of the implementation on the ground of each individual component. Monitoring reports on the activities and recommendations for each component.
- An annual review of the implementation on the ground of the components in a given year, to be used as the basis for detailed proposals for the following year. This review will cover:
 - o the level of implementation of R-PP in general and of each component specifically
 - o Stakeholder engagement
- Any adjustments necessary to guide the planning process towards achievement of the established goals

Criteria

The system for monitoring and evaluating R-PP implementation must meet a number of criteria. The first criteria are intended to ensure the effectiveness of the system, which:

- Must provide information necessary for the various components in a timely manner, using the standard reporting system as adopted by all which may be updated.
- Must guarantee the quality and accuracy of the data for each component, in the light of the objectives and outcomes to be achieved
- Shall not adversely affect the proper functioning of the R-PP implementation structures
- Must not only function effectively but also be user friendly so as to ensure maximum take-up.

The criteria below are intended to ensure the relevance of the system, which:

- Must allow for data to be analyzed according to each component and its sub-components
- Must allow data to be analyzed according to specific spatial framework. The implication of this criterion is that the spatial dimension must be accounted for within the system.

Monitoring and Evaluation of Implementation

The main foundation of the system for R-PP monitoring and evaluation is the logical framework. Spelling out as it does the expected outcomes at various stages of the objectives in the form of objectively verifiable indicators, it constitutes the core document enabling monitoring and evaluation of R-PP implementation to take place. The whole monitoring and evaluation system thus depends on this document, focusing most particularly on (i) the process indicators and (ii) the product indicators.

- The process indicators will measure performance in implementing R-PP; they will be determined on the one hand by the resources – be they human or financial - mobilized within the R-PP framework, and on the other, by the state of progress on the activities linked to each R-PP component.
- The outcome indicators will relate to the achievement of the outcomes expected from the preparation process. They will make it possible to assess how close the country is to a state of readiness: extent of deforestation and forest degradation diagnosed, REDD-plus strategy designed, (p 176) reference scenario drawn up, MRV system up and running. These indicators

will also be applied to the process of stakeholder participation and the improvement of governance in general.

Mechanisms

The system will comprise two main mechanisms:

- the steering mechanism
- the operational mechanism

- **The steering mechanism** will rest on two pillars:

- The development of institutional leadership with the aim of ensuring that the institutions involved have the capacity to implement the various mechanisms set up in order for the system to operate. The role of the various institutions involved in the implementation of the R-PP monitoring and evaluation system must be clear as regards the responsibilities of each stakeholder as well as its capacity to manage the indicators and implement measures once these are identified.
- The implementation of R-PP, based on a balanced, diverse and well-structured set of indicators, whose main aim is to provide answers as regards progress made and outcomes achieved in the implementation of the various R-PP components. The relevant institutional arrangements will be set up so as to give rise to a specific independent structure for the monitoring and evaluation of R-PP implementation, as well as internal linkages, links to other institutions and to the central level.

- **The Operational Mechanism** will be based on two separate focus areas:

- Collection of data based on the indicators defined above
- Collation and analysis of data produced by the system, in order to ascertain:
 - the initial status of the components, specifically: the institutional framework, the objectives, the monitoring and evaluation indicators and the schedule of activities; and
 - the status of component implementation monitoring every six months thereafter, i.e. the state of implementation of the indicators for each component

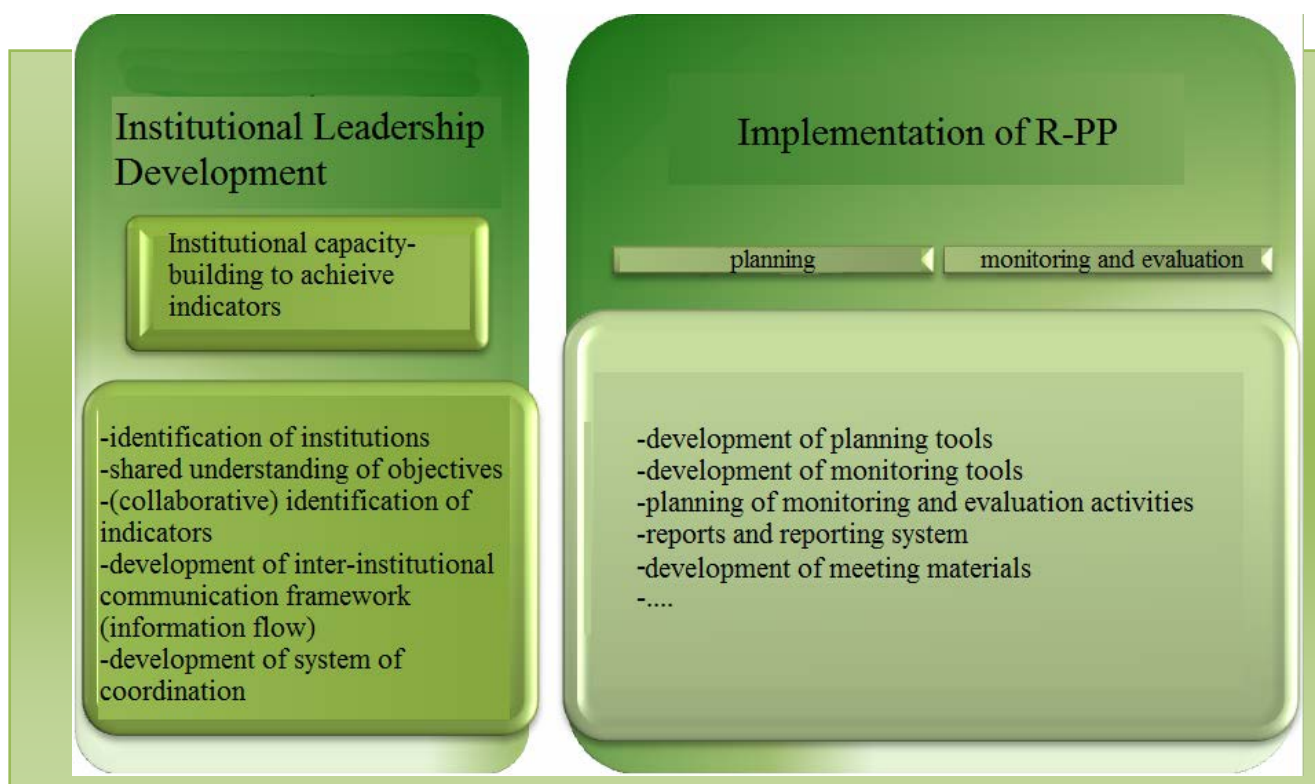


Figure 6: Outline of Monitoring Framework

Phases

Initially, the major milestone will consist of the collaborative development of the monitoring and evaluation system during the first two quarters of Year 1 of R-PP, entailing:

- the design of the system (definition of the indicators, establishment of a record of indicators, computerization of the system, preparation of the instruction manual)
- the validation of the system
- rolling out the system to commence operations

In the second phase, the implementation of monitoring will take the form of collecting data on indicators right from the outset of implementation of R-PP, simultaneously with the activities and the preparation of progress reports.

The third phase – evaluation – will itself be divided into two main phases:

- a mid-term evaluation, at the end of the second year of R-PP implementation; and
- a final evaluation, at the end of the process

Flow of information

All information on the components will be directed to a standing unit charged with monitoring and evaluating R-PP implementation. To this end, focal points shall be designated at regional and eco-regional levels.

Information input shall be provided on a six-monthly basis.

However, a number of field missions will be carried out, planned and steered by the standing unit for monitoring and evaluation, either,

- for the purpose of close monitoring of those components which, by virtue of their complexity, require technical support on a quasi-permanent basis; or
- On request, for those components requiring technical support on an ad-hoc basis to resolve specific problems.

Monitoring and Evaluation Program

An instruction manual on monitoring and evaluation procedures for R-PP implementation will be developed. It will constitute the core element of the monitoring and evaluation system with linkages to all the monitoring and evaluation activities of the various R-PP components.

To this end, it will provide:

- all information necessary for the initial description of each component, including *inter alia* the following elements:
 - o The objectives and elements of each component
 - o The time-frame (covering several months) for each element of each component
 - o The objective for each element and the outcomes expected for each monitoring and evaluation indicator for each element of each component
- The division of labor between the various monitoring and evaluation actors
- The six-monthly schedule for monitoring activities
- The mid-term evaluation and final evaluation schedules

Table 6.1: Monitoring and evaluation indicators

Expected Outcomes (Outcomes and Outputs)	Indicators (with baselines and indicative time-frame)	Means of Verification
Taken from country's output framework or from R-PP components	Taken from Output framework or from R-PP components. Baselines are indicators at start of joint program.	From identified data and information
Component 1: Organization and Consultation		
REDD+ management institutions up and running	PCPR up and running BNCR up and running Regional coordination structures and regional technical committees up and running Conflict resolution body up and running	Order for establishment of PCPR issued TOR for joint technical regional teams ready Technical expert/consultant contracts signed BNCR activity report
Awareness-raising, training and consultation with main stakeholder groups completed	Communication tools ready and disseminated Training and awareness –raising workshops Thematic consultation completed Capacity-building for stakeholders (number of training sessions, number of people reached)	Reports from various workshops Communication tools ready Effective participation of stakeholders in meetings (at all levels) Report on training
Component 2: Preparation of REDD+ strategy		
Drivers of deforestation and forest degradation	Strategic options identified for each region	Reports
Establishment of land-use change monitoring system	SRAT (Regional and communal land-use plan) in place	Reports Monitoring system in place
REDD strategy tools developed	Revenue-sharing mechanism up and running Fund management mechanism up and running SESA completed and ESMF ready	Developed and available tools Developed and available reports
Legal basis for strategy approved	Various types of legislation on REDD+ identified and developed (step-wise adoption)	Legal documents drafted
National REDD+ strategy approved	National REDD+ strategy ready and disseminated	Strategy documents
Baseline scenarios for infra-national and national levels ready	Commitment to reduction of evaluated emissions Information on carbon stock in agri-ecological areas ready	Reports Maps Infra-national scenarios (at least one per agri-ecological area)
Carbon accounting Register	MRV system up and running Information and management platform	National Carbon Register

	ready	
REDD+ costs/benefits evaluated		Matrix

Table 6.2: Summary of activities and budget for monitoring and evaluation

Main Activities	Sub-activities	Estimated cost (US\$)			
		Year 1	Year 2	Year 3	Total
Establish MES	Design MES (monitoring and evaluation system)	12 000			12 000
	Validate SSE	5 800			5 800
	Roll out MES	3 436			3 436
Monitoring	Collect data from indicators	14 072	14 072	14 072	42 216
	Process and analyze data	18 000	18 000	18 000	54 000
	Establish and present outcomes	18 000	18 000	18 000	54 000
Evaluation	Mid-term Evaluation		51 100		51 100
	Final Evaluation			49 000	49 000
	Total 6 MES	71 308	101 172	99 072	271 552
	Government				
	FCPF	71 308	101 172	99 072	271 552
	Other donors				