Forest Carbon Partnership Facility (FCPF)
Carbon Fund

Emission Reductions Program Idea Note (ER-PIN)

Country: Madagascar

ER Program Name:
Testing Emissions Reductions in the rainforest ecoregion

Date of Submission or Revision: September 21, 2015

Emission Reductions Program Idea Note (ER-PIN)

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Guidelines:

1. The FCPF Carbon Fund will deliver Emission Reductions (ERs) from activities that reduce emissions from deforestation and forest degradation, conserve forests, promote the sustainable management of forests, and enhance forest carbon stocks in developing countries (REDD+) to the Carbon Fund Participants.
2. A REDD Country Participant interested in proposing an ER Program to the Carbon Fund should refer to the selection criteria included in the Carbon Fund Issues Note available on the FCPF website (www.forestcarbonpartnership.org) and to further guidance that may be communicated by the FCPF Facility Management Team (FMT) over time.
3. ER Programs shall come from FCPF REDD Country Participants that have signed their Readiness Preparation Grant Agreement, using this ER Program Idea Note ('ER-PIN') template.
4. The completed ER-PIN should ideally not exceed 40pages in length (including maps, data Tables, etc.). If additional information is required, the FCPF FMT will request it.

5. Please submit the completed ER-PIN to: 1) the World Bank Country Director for your country; and 2) the FCPF FMT (fcpfsecretariat@worldbank.org).

6. As per Resolution CFM/4/2012/1 the Carbon Fund Participants' decision whether to include the ER-PIN in the pipeline will be based on the following criteria:

    i. **Progress towards Readiness:** The Emission Reductions Program (ER Program) must be located in a REDD Country Participant that has signed a Readiness Preparation grant agreement (or the equivalent) with a Delivery Partner under the Readiness Fund, and that has prepared a reasonable and credible timeline to submit a Readiness Package to the Participants Committee;

    ii. **Political commitment:** The REDD Country Participant demonstrates a high-level and cross-sectoral political commitment to the ER Program, and to implementing REDD+;

    iii. **Methodological Framework:** The ER Program must be consistent with the emerging Methodological Framework, including the PC's guiding principles on the methodological framework;

    iv. **Scale:** The ER Program will be implemented either at the national level or at a significant sub-national scale, and generate a large volume of Emission Reductions;

    v. **Technical soundness:** All the sections of the ER-PIN template are adequately addressed;

    vi. **Non-carbon benefits:** The ER Program will generate substantial non-carbon benefits; and

    vii. **Diversity and learning value:** The ER Program contains innovative features, such that its inclusion in the portfolio would add diversity and generate learning value for the Carbon Fund.

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1. Entity responsible for the management of the proposed ER Program

1.1 Entity responsible for the management of the proposed ER Program *Please provide the contact information for the institution and individual responsible for proposing and coordinating the proposed ER Program.*	
Name of managing entity	Ministry of Environment, Ecology, Sea and Forests
Type and description of organization	Central Ministry in charge of Environment, Ecology, Sea and Forests
Main contact person	BEBOARIMISA Ralava
Title	Minister
Address	BP 243, Nanisana, Antananarivo, MADAGASCAR
Telephone	+ 261 340530002
Email	beboarimisa@yahoo.fr
Website	ecologie.gov.mg

1.2 List of existing partner agencies and organizations involved in the proposed ER Program
Please list existing partner agencies and organizations involved in the development of the proposed ER Program or that have executive functions in financing, implementing, coordinating and controlling activities that are part of the proposed ER Program. Add rows as necessary.

Name of partner	Contact name, telephone and email	Core capacity and role in the proposed ER Program
Ministry of Environment, Ecology, Sea and Forests	BEBOARIMISA Ralava, Minister of Environment, Ecology, Sea and Forests, beboarimisa@yahoo.fr, +261 3407 931 94	• Minister of the Government that has the power to bind the Government in implementing ER Program activities.
REDD+ National Coordination Office	MAMITIANA Andriamanjato, Coordinator of the REDD+ National Coordination Office, coordonnateur.bncredd@gmail.com / ngamamitiana1010@yahoo.fr, +261 3313 060 17	• Ensures the national coordination of the R-PP implementation, • Contributes to the implementation of sustainable development, in the Republic of Madagascar, • Notifies national authorities and other stakeholders on REDD+ activities and their implementation status.
Ministry of Agriculture	RAMAROSON Lantonirina, Coordinator of the BVPI National Program, cpnbvpi@blueline.mg, +261 3314 550 66	• Responsible for the implementation of the national watersheds and irrigation policy, • Key performer of the ER Program.
Ministry of Interior and Decentralization	MANANJARA Anjara, General Coordinator of the National Office of dialogue on Decentralization, anjaramanantsara@yahoo.fr, +261 3416 973 89	• Responsible for the implementation of the decentralization and deconcentration policy, • Key performer of the ER Program.
Ministry of Energy and Hydrocarbons	LAI-SENG Louis, Projects General Coordinator, cgp@energie.gov.mg, +261 3449 661 68	• Responsible for the development and national implementation of the energy policy, • Key performer of the ER Program.
State ministry in charge of the Presidential Projects, Country Planning and Facilities	CAMARA Jean Ousmane, National Coordinator of the Land Reform Coordination Unit camarapnf@moov.mg, +261 3305 368 58	• Responsible for the development and national implementation of the land policy, • Key performer of the ER Program.
Ministry of Livestock	RAZAIVAOVOLOLONIAINA Helinoro Diamondra, General Manager of the Ministry of livestock, dgelpa.mdg@gmail.com,	• Responsible for the elaboration and national implementation of the livestock policy, • Key performer of the ER Program.

	+26134 05 810 21	
Conservation International	RAJASPERA Bruno, Director of Projects, brajaspera@conservation.org, +261202260979	• Implement conservation activities in selected forests and protected areas, • Support community development, Identification of financing options.
Wildlife Conservation Society	CLAUSEN Alison, Country Director, aclausen@wcs.org, +261328598316	• Implement conservation activities in selected forests and protected areas, • Support community development, Identification of financing options.
European Union	LEEMANS Tom, Chief of Rural Development Section, delegation-madagascar@eeas.europa.eu, +261202224216	• Financing of investments in conservation and land restoration, • Financing of investments on agricultural productivity.
GIZ	FICKINGER Hermann, Technical Coordinator of Environmental Management Support Project, hermann.fickinger@giz.de, +261320542533	• Technical assistance on community development, small scale illegal mining, sustainable wood energy.
UNDP	RAHARIVELO Verosoa, Chargée des Projets Environnementaux, verosoa.raharivelo@undp.org, +261202330092	• Financing of investments in conservation and community development.
World Bank	RUTA Giovanni, Task Team Leader for Environment Projects, gruta@worldbank.org, +261202256014	• Financing of investments in conservation and land restoration, • Financing of investments on agricultural productivity.

2. Authorization by the National REDD+ focal point

Please provide the contact information for the institution and individual who serve as the national REDD+ Focal Point and endorses the proposed ER Program, or with whom discussions are underway

Name of entity	REDD+ National Coordination Office
Main contact person	Andriamanjato MAMITIANA
Title	National REDD+ Focal Point
Address	BP 243 Nanisana, Antananarivo
Telephone	+ 261 3313 060 17 / +261 3405 621 94
Email	coordonnateur.bncredd@gmail.com / ngamamitiana1010@yahoo.fr
Website	ecologie.gov.mg

2.1 Endorsement of the proposed ER Program by the national government

Please provide the written approval for the proposed ER Program by the REDD Country Participant's authorized representative (to be attached to this ER-PIN). Please explain if the national procedures for the endorsement of the Program by the national government REDD+ focal point and/or other relevant government agencies have been finalized or are still likely to change, and how this might affect the status of the attached written approval. ER Program must be located in a REDD Country Participant that has signed a Readiness Preparation grant agreement (or the equivalent) with a Delivery Partner under the Readiness Fund, and that has prepared a reasonable and credible timeline to submit a Readiness Package to the Participants Committee.

The idea note for the proposed ER Program has been endorsed by three Ministers (see Annex 1 for letter of endorsement):

- Minister of Environment, Ecology, Sea and Forests;
- Minister of Agriculture;
- Minister of Energy and Hydrocarbons.

These Ministers, under the guidance of the Prime Minister, have jointly committed to support the implementation of the ER Program. This inter-ministerial engagement reveals that the Government of Madagascar recognizes the multi-sectoriality of avoided deforestation and degradation efforts.

The REDD+ focal point in Madagascar is the REDD+ National Coordination Office or Bureau National de Coordination REDD+ (BNCR), within the Ministry of Environment, Ecology, Sea and Forests. BNCR is submitting this idea note. The national procedures for the endorsement of the Program are expected to remain the same over the proposed ER Program preparation. A Readiness Preparation grant agreement under the Readiness Fund has been signed between the Ministry of Finance and the World Bank.

2.2 Political commitment

Please describe the political commitment to the ER Program, including the level of support within the government and whether a cross-sectoral commitment exists to the ER Program and to REDD+ in general.

This idea note is supported by three different Ministers, the Minister of Environment, Ecology, Sea and Forests, the Minister of Agriculture and the Minister of Energy and Hydrocarbons, under the overarching guidance and leadership of the Prime Minister of Madagascar. This inter-ministerial engagement underpins the very design of the idea note, as evidenced by the watershed approach to avoided deforestation and degradation which encompasses a set of activities touching on community livelihoods, agricultural intensification and energy access solutions. It is expected that this commitment will deepen in terms of quality and increase in scale as new Ministries are involved in Program design. Already, the jointly led Environment/Agriculture program on sustainable agricultural landscapes currently under preparation has the potential to represent not only important upfront investment for the ER Program, but also proof-of-concept of the synergistic benefits of integrated multi-sectoral approaches. Strong personal engagement by the two Ministers and ongoing work by their teams indicate that this intervention could be transformative.

The inter-ministerial engagement represents a decisive turning point from the silos and politicized approach to development programs that prevailed over the political transition period that started in 2009 and lasted until 2013. Madagascar has a long lasting experience with REDD+, as it features some of the most innovative projects in Africa. This work has been made possible by the substantial efforts of international NGOs, who have expended extensive resources in conservation activities, monitoring, reporting and verification (MRV), and marketing of emission reduction credits. The administration's role, owing to lack of capacity and political instability, has been relegated to one of approver, rather than one of strategy and policy setting. Through the identification of the ER Program, as presented in the ER-PIN, this is quickly changing. On Tuesday 18 August, the Minister of the Environment made a formal presentation (*Communication verbale*) in the Council of Ministers, specifically about the proposed ER Program. Throughout the ER-PIN preparation process the technical staff at the Ministries of Agriculture, of Energy, and of the Interior and Decentralization have been actively involved in the Program's idea design. The three endorsing Ministers have also given joint in-person speeches at the opening of a day-long consultation workshop organized with stakeholders from the regions and from Antananarivo to discuss practical aspects about the Emissions Reduction Program.

More generally, the political commitment of the Republic of Madagascar is stated in the recently approved State General Policy (PGE) that seeks to: *"Build a new Madagascar, Madagascar that is strong, and thus bequeath to the future generations a peaceful, united and prosperous country, which has managed to become a worldwide leader in the valuing and preservation of its boundless natural capital based on a strong, inclusive growth to serve sustainable and equitable development of all the territories''.* Through this vision, Madagascar has committed to a green economy and the implementation of its Environmental Policy for Sustainable Development. Moreover, the ratification of several international conventions and agreements, such as UNFCCC, CITES, CBD (The Convention on Biological Diversity), RAMSAR (The Convention on Wetlands of International Importance) etc., shows on the global level a long lasting commitment of Madagascar to conservation, sustainable management of natural resources and the fight against climate change. Annex 2 provides a list of measures, projects and programs implemented in Madagascar that constitute the historic background to the country's forest protection engagement. Key achievements include:

- The establishment of 94 protected areas: the current network of protected areas covers between 65 and 77% of the remaining forest cover;
- The creation of the FAPBM Foundation for contributing to the protection of more than 2 million hectares of protected areas over 5.2 million hectares of the Madagascar Protected Areas System (SAPM);
- The creation of forest corridors, allowing six protected areas to be connected to one another;
- The management of 281 valuable timber species included in CITES Appendix II in March 2013 requested by the General Direction in charge of forests, the CITES Management Authority in Madagascar.

3. STRATEGIC CONTEXT AND RATIONALE FOR THE ER PROGRAM

3.1 Brief summary of major achievements of readiness activities in country thus far

Please briefly provide an update on REDD+ readiness activities, using the component categories of the R-PP as a guide. If public information is available on this progress, please refer to this information and provide a link.

Madagascar has committed itself to the REDD+ process since 2006 through the development of pilot projects that have been intertwined with the process of protected area creation and close involvement of local communities in the management of forest resources. Currently, Madagascar is in the preparation phase (Readiness), but is benefiting from the deep experience gained through the implementation of pilot projects to enhance the national process for emissions reductions from deforestation and forest degradation. Recent milestones include:

- July 2014 : approval for funding from the Forest Carbon Partnership Fund (FCPF);
- May 2015: a grant agreement between the World Bank and the Government of Madagascar to implement R-PP (Readiness Preparation Proposal), a roadmap to REDD+.

Table 1 summarizes the main achievements in the readiness process and their status.

Table 1. Summary of readiness achievements and status

Components	Sub-components	Description of progress	Status
1. Organization and consultations	1A. National REDD+ management measures	- National REDD+ National Coordination Office established (BNCR); - The creation of REDD+ technical committee and evolution into a REDD+ steering committee, including the creation of REDD+ thematic working groups (MRV, safeguards, etc.); - High level national steering committee (CIME) relaunched with strong leadership Min of Environment, Agriculture, and Energy; - REDD+ website for Madagascar created; - Capacity building workshops on inventory and forest carbon quantification, GIS and processing of satellite images;	Work is being initiated.
	1B. Information sharing and initial dialog with key stakeholders	- Forest cover maps produced and shared for all regional Forestry directorates; - Brochures on the impacts of climate change and mitigation measures (including REDD+ related initiatives) produced and distributed at over 100 schools and academic institutions; - 5 awareness raising missions carried out in REDD+ pilot areas with local communities and authorities as well as deconcentrated services; - Consultations in 12 regions with local and regional actors on the factors of deforestation and degradation and an eventual REDD+ strategy; - Training on above ground biomass for regional actors for 35 participants; - National public consultations for needs assessment in the context of the REDD+ implementation.	Work is being initiated.
2. Preparation of REDD+ strategy	2A. Evaluation of land use, factors leading to changes in land use, and forest laws, policies, and governance	- Regional assessments (12 regions) on the factors of deforestation and forest degradation as part of the development of the REDD+ national strategy; - Deforestation and degradation factors study for Eastern Humid Ecoregion and parts of Dry Forest Ecoregion.	Progressing well, further development expected.
	2B. National REDD+	- Strategic options have been identified to address the major drivers of deforestation	Work is being initiated.

Components	Sub-components	Description of progress	Status
	Strategy		
	2C. Implementation framework	- Legal framework diagnostic for REDD+ implementation and roadmap adopted; - Land tenure diagnostic for REDD+ implementation and roadmap adopted; - Benefit sharing mechanisms in place at the project level and being harmonized nationally; - National REDD+ registry system.	Work is being initiated.
	2D. Social and environmental impacts	- Social and environmental (including economic and biodiversity) analysis for Eastern Humid Forest Ecoregion conducted.	Work is being initiated.
3. Elaboration of a national forest reference emissions level		- Delineation of four national ecoregions; - Implementation of the REDD+ Eco-Regional Project in the Eastern Rainforest to harmonize methodologies for REDD+ pilot projects and test a MRV system to an eco-regional scale; - Definition of forest as part of REDD+, developing the baseline scenario and the inventory of the aboveground biomass and ground carbon for the Eastern Humid Forest Ecoregion.	Progressing well, further development expected.
4. Establishment of Monitoring, Reporting, and Verification system (MRV)	4A. National Forest Monitoring System	- Diagnostic on NFMS conducted and roadmap agreed; - Forest Cover Map developed For Eastern Humid Forest Ecoregion; - Monitoring System Developed for Eastern Humid Forest Ecoregion.	Progressing well, further development expected.
	4B. Information system on multiple benefits, other impacts, governance, and conservation	- Definition of non-carbon REDD+ methodology (impact assessment methodology on biodiversity and socio-economics) for Eastern Humid Forest Ecoregion.	Progressing well, further development expected.
Note: color code in "status" column stands for "work is being initiated" (orange); "progressing well, further development expected" (yellow).			

3.2 Current status of the Readiness Package and estimated date of submission to the FCPF Participants Committee (including the REL/FRL, REDD+ Strategy, national REDD+ monitoring system and ESMF)

Madagascar has made significant progress on certain aspects of readiness in one ecoregion, the Eastern Rainforest Ecoregion, where there has been nearly 10 years of experience with REDD+ pilot projects. The country is working to consolidate these experiences beyond projects and consolidate this knowledge.

It is estimated that Madagascar will complete the Readiness Package (including the NRS; MRV system; the RL/REL; safeguards instruments and studies as SESA; design and implementation of the information system, etc.) by early-2017 and the readiness process will be concluded by mid-2017.

The status of the different items of the Readiness Package is summarized in the last column of Table 1.

3.3 Consistency with national REDD+ strategy and other relevant policies

Please describe:

a) How the planned and ongoing activities in the proposed ER Program relate to the variety of proposed interventions in the (emerging) national REDD+ strategy.

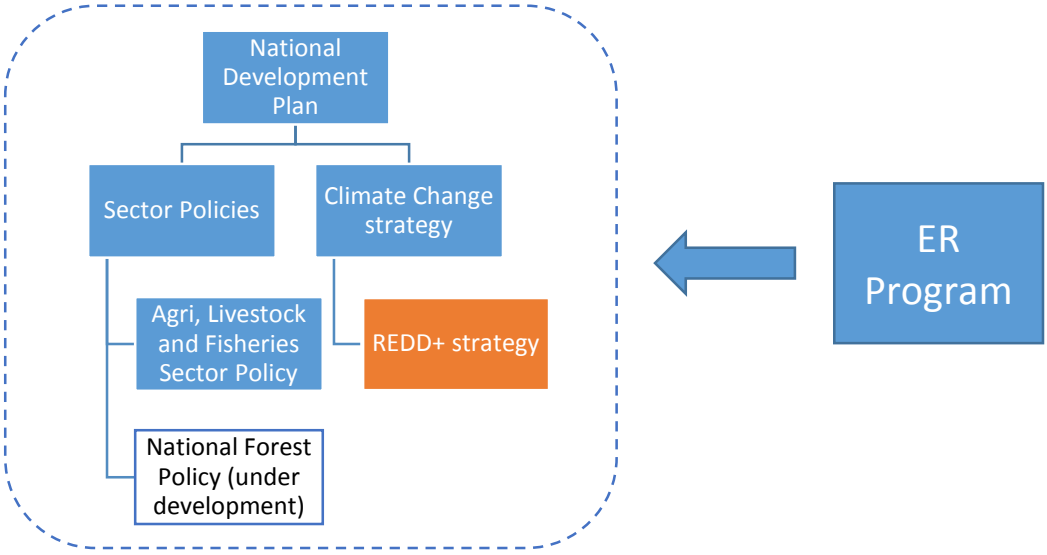
b) How the proposed ER Program is strategically relevant for the development and/or implementation of the (emerging) national REDD+ strategy (including policies, national management framework and legislation).

c) How the activities in the proposed ER Program are consistent with national laws and development priorities.

The planned activities in the proposed ER Program are inscribed in a policy framework that includes, at the highest level, the National Development Plan (Plan National de Développement, PND), at the sector level, the Letter of Agriculture, Livestock and Fisheries Sector Policy and the National Forest Policy (under development), and, at the cross-cutting level, the National Climate Change Strategy, in relation to which the emerging national REDD+ strategy is being developed (Figure 1).

Error! Reference source not found. summarizes the strategy and policy background of the proposed ER Program.

Figure 1: The strategy and policy background of the proposed ER Program



Relation to the emerging REDD+ strategy

The ER Program preparation is of extreme importance to the REDD+ strategy preparation. While the latter is in its early phases, the ER Program preparation is providing useful insights from a strategic point of view.

A total of four REDD+ strategic options have been defined as a basis for the development of Madagascar REDD+ national strategy. Through the implementation of strategic options, Madagascar plans to test the implementation of the REDD+ in terms of costs of implementation / feasibility of implementation / direct benefits of the implementation / other impacts of implementation of the proposed sub-option / sustainability of benefits and positive impacts of implementation / leakage potential of the implementation of the proposed option and its sub options. The proposed strategic options are:

i. Strategic Option 1: Improve the overall policy framework of the forest sector and other sectors related to REDD+;
ii. Strategic Option 2: Create incentives to the sustainable management and efficient use of forest resources;
iii. Strategic Option 3: Strengthen the forest monitoring and control and law enforcement at all levels;
iv. Strategic Option 4: Develop and promote alternatives to deforestation and degradation of forest resources.

Most actions/activities in the proposed ER Program can be mapped to one or more of the strategic options in the emerging REDD+ strategy. The table in Annex 3 provides a detailed mapping. The process of development of this idea note has allowed to identify a number of activities that are not yet explicitly considered within the strategy strategic options (e.g. community based tourism, awareness and family planning campaigns in rural and urban areas). The ER Program preparation process will then provide a space for enriching the strategy formulation process.

Consistency with national laws and development priorities

At the highest level, the proposed ER Program is aligned with the tenets of the National Development Plan (PND). The PND's objectives related to the activities of Madagascar's ER Program include the extension and modernization of intensive agriculture, improved water management, the strengthening of the local economy and the promotion of vocational training. The goal is thus to move the country and its production chains towards a better development and the ER Programs demonstrates that the mechanism of REDD+ is well-suited for this purpose.

In addition, the proposed ER Program is being developed in a way that is consistent and in line with the sector policies for agriculture, livestock and fisheries, forests and land management.

With respect to agriculture, following the 2009 crisis, the "National Rural Development Program" (PNDR) of 2005 evolved towards a "Sector Policy for Agriculture, Livestock and Fisheries" (PSAEP) for the modernization of the agriculture sector but also with the aim to sustainably improve the performance of these three sectors. The PSAEP essentially seeks substantial reduction of poverty and a sustainable and significant increase in economic growth driven by small farmers and the private sector.

With respect to the land policy (under preparation), Madagascar has also initiated a broad program called "National Land-Use Program" designed to resolve land issues. This new land-use policy aims to establish favorable land management for private investment, agricultural production, management and protection and renewal of natural resources, development of decentralized authorities in the provision of territorial and fiscal management tools, and strengthening social cohesion at the local and city level.

With respect to the forest policy (under preparation), a key element lies in the decentralized management of forest activities, including the decentralization of the administration and goal setting according to regions and the involvement of regional and local sectors in managing resources. The meaning and scope of this involvement are specified in the framework of local and participatory management of forest resources: the transfer of all or a part of authority in managing forests to local community for better accountability thereof, which requires building significant capacity in local communities.

The table in Annex 4 shows the link between the proposed activities (which are described in more detail in Section 5) and a group of 4 national framework documents, namely, the REDD+ Preparation Proposal, which contains the key pillars of the REDD+ strategy, the National Development Plan (NDP for 2015-2019), the National Climate Change Strategy and the "Sector Policy Letter of Agriculture, Livestock, Fisheries" soon to be published by the Ministry of Agriculture. This Table highlights the responsibility of different ministries to gradually integrate their work into the REDD+ process.

4. ER Program location and lifetime

4.1 Scale and location of the proposed ER Program

Please present a description and map of the proposed ER Program location and surrounding areas, and its physiographic significance in relation to the country. Indicate location and boundaries of the proposed ER Program area, e.g., administrative jurisdiction(s).

The application area of Madagascar's emissions reduction program is located in the escarpment of the east, lined roughly from south to north until the Antongil Bay (**Error! Reference source not found.**Figure 2). The area implements 14 primary watersheds (each representing an uniform landscape system).

The total surface of this area is 4,777,785 ha (being 8.1% of the total surface of Malagasy territory), out of which:

- A total of 1,540,002 ha of area covered by rainforests considered as intact in 2013 (being 33.5% of the surface of the East rainforest still intact to the scale of Madagascar);
- A total of 1,875,403 ha of surface covered by degraded rainforest;
- A total of 217,419 ha of surface within existing protected areas;
- A total of 655,833 ha of surface within two existing REDD projects (Makira and CAZ);

From administrative point of view, the area covers 171 municipalities essentially distributed in two regions (Atsinanana and Analanjirofo). Despite the fact that some of the municipalities are located also in Sofia and Sava regions, the majority of the municipalities is to be found within the Antsinanana and Analanjirofo regions. Out of these, a total of 125 municipalities have an active communal land titling windows according to the synthetic final assessment report of the land reform in Madagascar in 2011 (Cf. Figure 9 to visualize the cover of the functional

offices within the implementation area). Moreover, the ER Program area covers 3,096,903 inhabitants (approximately 619,381 familiies).

The application area of the program is very significant in terms of biodiversity because it represents the last bastion of rainforests. These forests are the habitat of the majority of animal and plant species of global importance. The outstanding feature of Madagascar on its biodiversity lies on its very high level of endemism: the criterion for defining a biodiversity hotspot is usually 1,500 endemic plants; the flora of Madagascar alone has about 10,000 species of endemic superior plants.

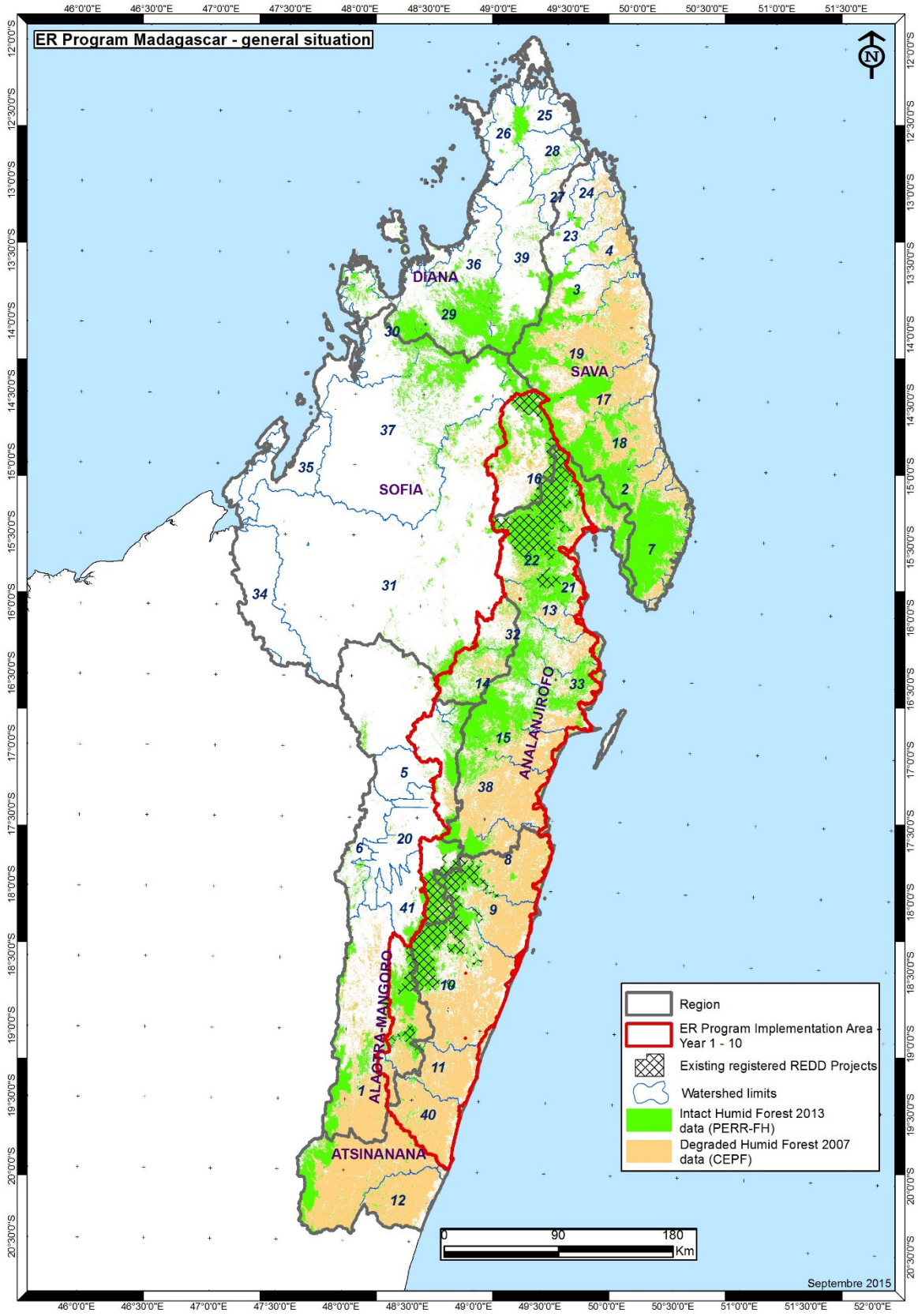


Figure 2: Implementation area of the Madagascar emissions reduction program. This map shows the different primary watersheds (watershed limits) that are integrated within the application area and the administrative divisions of "regions" in which actions are anticipated. Source: CEPF (2007) and PERR-FH (2014 and 2015).

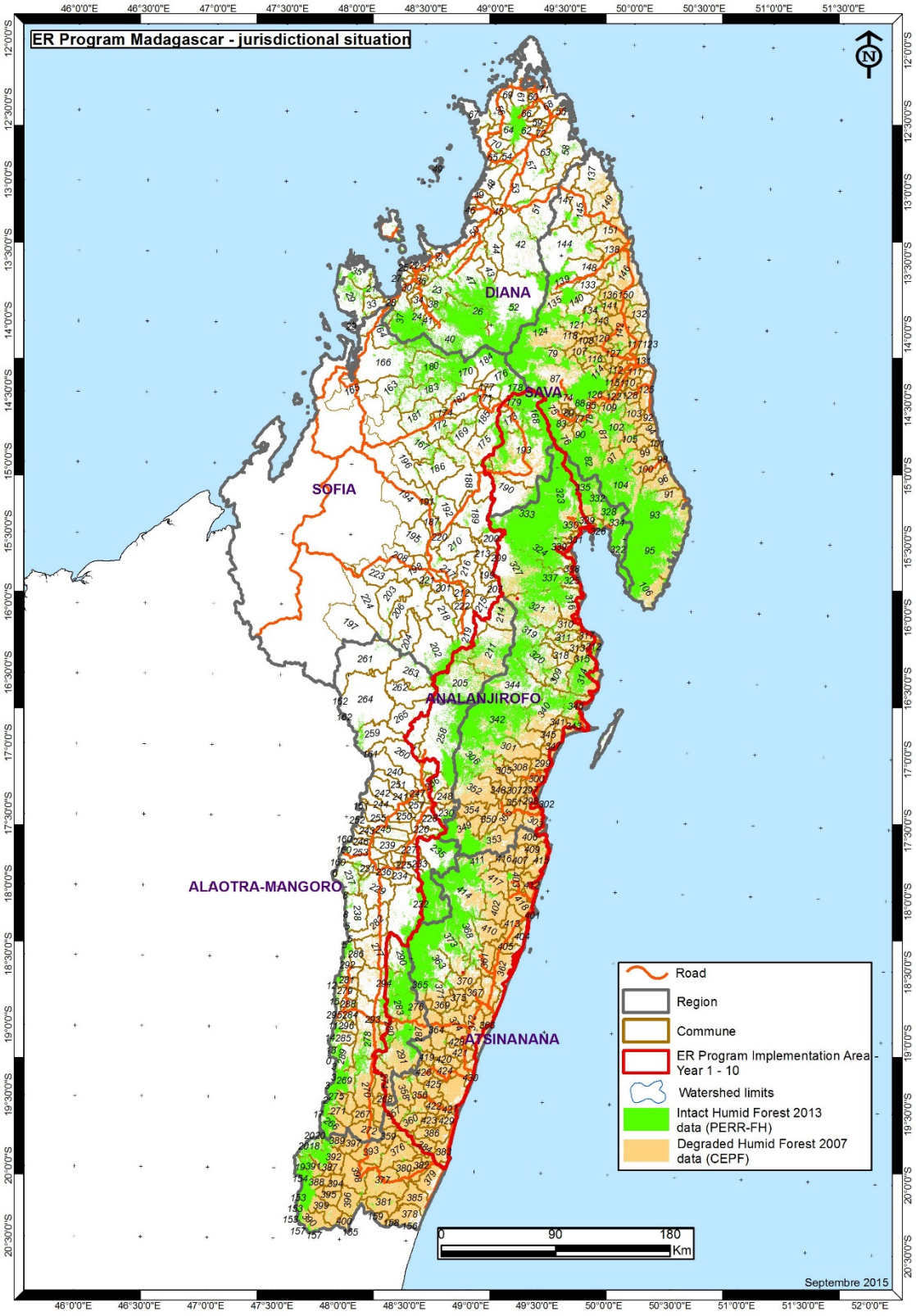


Figure 3: Map of the application area of the Madagascar emissions reduction program. This map shows the municipalities within the application area that will be affected by the program. The implementation area of the program is also shown. Sources: CEPF (2007), PERR-FH (2014 and 2015), R-PP (2014).

4.2 Expected lifetime of the proposed ER Program

Please describe over how many months/years the proposed ER Program will be:

a) prepared; and

b) implemented (including expected start date of the proposed ER Program).

In view of the administrative aspects needed to be clarified and the ability to gather or grow in the emissions reduction program, but also because of the importance of the pre- financing to guarantee the implementation of the ER Program, it is suggested that the program is prepared over a period of 12-18 months to begin in 2016. The preparation period hence is planned from January 2016 to June 2017.

The emissions reduction program will be implemented over a period of 10 years from its start date expected at the latest in 2019.

Moreover, a potential scale up of the program is considered, covering a larger area as well as accounting for a longer time period of 25 years. A period of 25 years is considered wise because it corresponds to the following underlying elements:

- It is the time required for a generation to evolve and grow as a virtuous model of land management. It will sustain the gains letting hope that the generation of children who will succeed them also will benefit from their achievements and their values;
- It is the period required for a forestry short cycle before exploitation. It will ensure support by private investors in this important sector to the fight against deforestation and the development of an original quality lumber industry off natural forest in Madagascar;
- It is also the hope to see that through a 25-year period the effective implementation of REDD across the world and the effective implementation of a sustainable carbon market;
- Finally, the 25-year period is lower than the implementation plans frames of the strategic development Document of the country prepared by the government, which are set on a 30-year term. The period is useful to accompany the government plans.

5. Description of activities and interventions planned under the proposed ER Program

5.1 Analysis of drivers and underlying causes of deforestation and forest degradation, and conservation or enhancement trends

Please present an analysis of the drivers, underlying causes and agents of deforestation and forest degradation. Also describe any policies and trends that could contribute to conservation and enhancement of carbon stocks. Please distinguish between both the drivers and trends within the boundaries of the proposed ER Program, and any drivers or trends that occur outside the boundaries but are affecting land use, land cover and carbon stocks within the proposed ER Program area. Draw on the analysis produced for your country's Readiness Preparation Proposal (R-PP) and/or Readiness Package (R-Package).

Deforestation and forest degradation are the most significant threats to forest cover in the application areas of the proposed ER Program. Drivers can be categorized as direct and indirect. Table 2 below lists the main ones of them (direct as well as indirect) and provides a brief description of their main underlying causes and factors. Table 1Table 2: Direct and indirect drivers of deforestation and forest degradation

Table 2: Direct and indirect drivers of deforestation and forest degradation

	DRIVERS	DESCRIPTION
	DIRECT	
1	**Slash and burn agriculture – "Tavy"**	- The lack of developed farm land and extensive practices as part of the research of more fertile land; - A rugged landscape in the eastern part of Madagascar leading to severe erosion from this practice; - The lack of support for the settlement of farmers; - The lack of new and improved cultivation techniques; - Improper use of agricultural land considered as "stable"; - Land tenure: traditionally, "Tavy" is a way to acquire land; - Lack of income from forestry due to the country's economic situation.
2	**Energy requirements**	- 92% of energy requirements of rural households come from forests – production of fuelwood and charcoal; urban areas also prefer charcoal from natural forests due to increased heat value compared to planation charcoal. - Increasing consumption trends linked to population growth;

	DRIVERS	DESCRIPTION
		- Source of revenue for populations living in forest areas – increased demand – increased income for these populations; - Inefficient practices: A) Production side – inefficient carbonization techniques – low yields of processed wood (<15%) and high level of losses during processing; B) Consumption – inefficient cook stoves (improved cook stoves yield 30% more efficient use of energetic resources); - Alternative sources of energy – solar, wind, bioenergy – too expensive or inaccessible for majority of the population.
3	**Logging**	- Timber and non-timber products used to meet daily needs of population; - Growing population – increasing needs for construction, carpentry, furniture production, other wood products; - Lack of administrative capacities to manage forests; - Limited central control and rule of law – increased level of informal and illegal exploitation of forests, especially illicit trade in precious woods; - Overexploitation of forests - natural regeneration does not keep up; - Inefficient logging practices – losses in yields (only 20% of grow timber arrives in the market).
4	**Mining**	- Most of mineral resources are under forest cover; - Lack of administrative capacities – limited control over practices; - Mining allowances issued even in protected areas; - Two types of mines: 1) large scale – less common, currently being exploited; 2) small scale – bigger threat to forest degradation, mostly illegal, uncontrolled, currently growing – due to poverty, lack of administrative control - Populations surrounding protected areas commonly resort to artisanal mining after the prohibition of forest activities in the areas due lack of alternative forms of livelihoods; - Current governmental priority - develop mining sector leading to further pressure on forest cover.
5	**Pasture**	- Population growth leading to further demand for pasture land obtained by direct burning of natural forests; - Poor management of annual fires regenerating grazing areas and inhibiting young tree growth; - Lack of herd management; - Criminal elements – direct burning of forests.
	INDIRECT	
6	**Agriculture on the "stable" zone**	- Low agricultural performance (due to environmental degradation, use of traditional, ineffective technologies and practices, lack of farm inputs etc.) – necessity to revert to "non soil" livelihoods – forest exploitation.
7	**Population growth**	- Increased pressures on current systems – intensification of above mentioned trends (energetic, agricultural, construction…).
8	**Poverty**	- Increased pressures – especially from populations living close to forests – cheap source of energy, construction materials, source of income, food…
9	**Weak education system**	- Lack of knowledge of sustainable techniques, agricultural operators – continuation of the use of unsustainable practices.
10	**Political instability, failure of governance**	- Since political crisis 2009 – growth in unemployment rates, limited rule of law – increase of illicit activities – trade in precious woods and mining; - Lack of coherence and cooperation between different sectors – especially planning and forest policies (forest zones not included in planning figures); legal and forest policy (unfitted legal and regular framework, insufficient means of administration, weak involvement of local populations, few control in the concerned zones through offences).
11	**Specific economic choices**	- Development strategy – based on agriculture – does not allow increased revenue – solution in forests; - Lack of financial incentives for sustainable use of forests (such as mechanism of Payment Ecosystem Services); - Development of markets for forest products – precious woods especially.

On the whole, these drivers, direct, indirect, and underlying factors meet in the entirety of the application area of the emissions reduction program, but also in a very large way in the whole of the country. Trends in

deforestation and forest degradation occurring outside the boundaries of the proposed ER Program are similar in scale and nature to those within its boundaries. Those outside are not likely to have a particularly strong impact on trends within the boundaries.

5.2 Assessment of the major barriers to REDD+
Please describe the major barriers that are currently preventing the drivers from being addressed, and/or preventing conservation and carbon stock enhancement from occurring.

According to recent related studies within the R-PP and the PERR-FH, the main obstacles that currently prevent the identified drivers to be addressed, and / or prevent the conservation and enhancement of carbon stocks are:

Barriers linked to agriculture

- *High levels of poverty (especially rural)*: The poverty of most rural populations prevents them from investing in more sustainable practices, better equipment and hinders risk-taking related to changes in agricultural practices.
- *Land tenure*: Lack of secure land tenure leads to extensive agricultural practices to claim land through use.
- *Population growth*: Madagascar is characterized by a rapid population growth. This increase in population has resulted in an increased demand for food products, which results in increased slash and burn agriculture (increased need for land and acreage) and/or the reduction of fallow periods.

Barriers linked to energy needs

- *Population growth*: requiring increasing greater supply to meet growing needs.
- *Lack of energy alternatives or efficient technologies:* more efficient fuels are not available or prohibitively expensive or difficultly accessible in rural areas, efficient production practices are not known or the improved technologies require investments that are not accessible to many poor producers; reliance on natural forests rather than faster growing plantations that are sustainably managed.

Barriers linked to logging exploitation

- *Weak enforcement of laws and regulations*: corruption and political influence of local timber operators makes enforcement of logging permit systems very hard, resulting in illegal timber harvesting. Lack of capacity causes lengthy or ineffective processes for management transfers to communities.
- *Lack of adherence to reduced impact logging practices:* Fallow periods are not respected, inefficient transformation and processing

Barriers linked to mining

- *Poor intersectoral cooperation:* Mining permits are provided without regard to forestry or conservation zoning; local residents turn to artisanal mining due to lack of other opportunities if forest access is prohibited; lack of coordinated effort needed to deal with anarchic situations during mineral “rushes”.
- *Opportunity costs:* Mineral deposits are limited to confined locations and sustainable natural resource management does not bring in the same revenues available through mineral exploitation.

Barriers linked to cattle ranching

- *Population growth*: increasing populations in search of new lands for herds burn down forests for agriculture and to create pasture land.
- *Weak enforcement of laws and regulations*: illegal encroachment leads to illicit burning of forests, often by individuals that are not part of the surrounding communities, lack of adherence to agreed feeding ground.

5.3 Description and justification of planned and ongoing activities under the proposed ER Program
Please describe the proposed activities and policy interventions under the proposed ER Program, including those related to governance, and justify how these activities will address the drivers and underlying causes of deforestation and forest degradation and/or support carbon stock enhancement trends, to help overcome the barriers identified above (i.e., how will the ER Program contribute to reversing current less sustainable resource use and/or policy patterns?).

In order to provide a solution to the barriers and failures of previous projects / programs in land and resources management (including ecological services provided by these resources), the approach proposed in the ER-PIN is an integrated landscape approach which targets both existing forests in Madagascar and watersheds. The approach varies from that of major existing projects implemented hitherto in Madagascar because it can achieve multiple objectives in terms of food security, water supply security, biodiversity conservation, and sustainable livelihoods, in a context marked by demographic pressures, previously strong economic growth now weakened by 5 years of crisis, and climate change. The unit of landscape targeted by the program is a “watershed”.

Multidisciplinary approach needed to carry out the activities requires cooperation between various key ministries including the Ministry of Environment, Ecology, Sea and Forests, the Ministry of Agriculture, the Ministry of Decentralization and the Ministry of Energy.

The intervention area of the program represents a potential volume of emissions reductions that would match the capacity of FCPF financing and a testing ground of the proposed concept. It would also enable, after ten years (subject to the security of a carbon market at the end of the contract period with the FCPF) to start a mechanism of auto financing for the expansion of the concept within the general intervention area of the emissions reduction program in Madagascar.

The proposed concept is to use the "start-up" area as a general test of the options, in order to permit on a zone relatively restricted from a point of geographical view (but all the same meaningful on a national scale) to assess the different expected activities and the implementation requirements. The management of the stakeholders and the financial aspects will also be taken into account. This approach is considered as discriminating to align with the REDD+ strategic options mentioned in the R-PP.

In order to palliate the reasons of deforestation and forest degradation identified in the program application area, the proposal of Madagascar will use a multidisciplinary approach the goal of which will be to improve the life conditions of the population and the socioeconomic situation of the country. This proposal is structured in five components of activities: (1) Agriculture, (2) Forest and Energy, (3) Economic, (4) Governance and Territory, (5) Education. A deep description of all these activities planned is to be found in Annex 5.

In order to tackle the direct and indirect causes of deforestation and forest degradation mentioned in the section 5.1, concrete strategies are proposed:

1) Tavy

The above observations suggest that a strategy based on a combination of methods for improving the security of land tenure and agricultural potential could allow a significant reduction in the practice of Tavy. Such strategy could include among others:

- Improvement of the existing agricultural potential in the flat areas through adapted irrigation schemes joined to the rehabilitation of abandoned areas due to lack of structures maintenance.
- The potential creation (based on a prior impact study) in areas with gentle slopes (contours and terraces having on request irrigation), to create further "Table" farmland which will be possible to attribute to marginal farmers in order to encourage them to abandon the forest areas and Tavy practice as well.
- The adoption of new cultivation techniques such as the use of improved seeds, agricultural intensification, organic fertilizers, crop rotation, the introduction of new plants to grow, etc.
- The land tenure security to ensure access to land when the old and new lands are adjusted effectively and so that the new practices are applied.
- The development of industries processing agricultural products and support for producers to generate "no land" jobs for those who do not wish to follow a farming lifestyle.
- Support for targeted policy reforms on land tenure security in a new way, for example related to the reward of virtuous behavior by giving the land title to discourage the Tavy practice.

2) Energy requirements

A strategy based on a combination of methods focused on the energy component could allow a significant reduction in deforestation and promote enhancement of carbon stocks. Such strategy could include among others:

- In the short or mid- term :
    - The creation of alternative afforestation,
    - The sustainable management of degraded forest fallow for stock recovery and sustainable management of the stock,
    - Improving carbonization practices and the development of the briquette to allow wood - charcoal processing yields much higher
    - The dissemination of improved households
    - The development of sustainable created forestation management plans and forest fallow regeneration,
    - Securing land tenure to guarantee the right to accede to created afforestation and to fallow areas in regeneration,
    - The development of a professional sector on wood energy and charcoal, allowing both to create "no land" jobs, regulate and monitor the practices but also introduce predictability of the relationship between supply and demand.
- In the mid and long term:
    - Through demonstration, awareness rising and education, gradual introduction of alternative energy and related packages,

    - In relation to the use of alternative energy sources, promotion and education to saving practices
    - Encouraging, through political reform with the use of alternative energy sources.
- Improvement of agricultural potential existing in the flat lands through irrigation schemes, associated with rehabilitation of abandoned perimeters due to lack of maintenance of the infrastructures.

3) Logging.

Its management capacity is insufficient due to lack of means. It therefore appears necessary to increase the delegation of forest management to professional operators in the private sector (private operators, NGOs, associations) and the Decentralized Territorial Communities, consistent with the state forest policy.

A strategy based on a combination of methods focused on sustainable forest management and restocking from degraded forests could allow a significant reduction of deforestation and promote enhancement of carbon stocks. This strategy could include, among others:

- The creation of alternative afforestation for timber and furniture based on fast-growing species, to provide regular timber stock in both time and template.
- The sustainable management of degraded forest fallow for the recovery and the sustainable management of natural forest stock.
- The agroforestry practice in forest fallows reconstitution, to increase the useful species for households and encourage the development of cash crops that require forest cover.
- The development of created afforestation sustainable management plans and forest fallow regeneration.
- The land security to guarantee the right to access to created forestation and to fallow areas in regeneration according to use planning.
- Control of holdings by a permit system and the implementation of infringements of the law enforcement system.
- The development of a professionalized sector on timber intended for construction and furniture, allowing both to create "no land" jobs, to regulate and to monitor the practices but also the introduction of predictability of the relationship between supply and demand. This sector will also develop the entire transformation process to make it more efficient and reduce losses observed in a significant way.
- Capacity building of the forest administration, essential to improve the management and control of operations. In this issue it is also desirable to further promote forest areas management transfer to communities and to the private sector.
- Strengthening the health sector to reduce household dependence on traditional medicine and the use of resources from forests. This activity would have an additional impact in terms of promoting family planning and general improvement of the health monitoring of the rural population.

According to the R-PP, the specific case of forest degradation (as REDD+) has not been the subject of specific studies in Madagascar. A study by the JariAla project in 2006, however, considered that to cover the annual needs for wood products at the national level, more than 21.7 million m3 of wood must be operated annually. Sustainable production of natural and planted forests for production was estimated at 23.5 million m3, but as needs increase gradually and production forest areas decrease, the study considered that from 2010 the sustainable production is no longer sufficient to supply the needs, leading to increased degradation. We will then attend the development and the degradation -fragmentation-deforestation chain, as degraded forests are generally cleared thereafter.

In view of this argument, and the above discussion relating the problems related to logging, the establishment of communal afforestation allowing common targets to meet their annual requirements for fuelwood and timber appears as a priority. Seeking the support of the private sector for the development of a commercial offer for sale to urban cities would be a sensible approach allowing both to guarantee the purchase of communal woodlots surplus and an offer of additional permanent jobs if these companies start to exploit a group of defined surfaces that could be made available by each municipality based on prior impact studies and management plans.

4) Mining.

A strategy based primarily on compliance with laws and effective monitoring of operations through licensing and enforcement for infringements or illicit practices will probably be the most likely process to succeed. If this policy is coupled with promoting "no land" jobs in the areas of intervention, as previously suggested to address other causes of deforestation, it seems possible to consider that the persons engaged in the illegal operations can be incentives to abandon these practices and retrain in new opportunities provided.

5) The pasture.

These observations above toward the grazing-ground management by the fire for the livestock give to understand that a strategy based essentially on a factor of education, the professionalization of the farming sector (associated to the vet follow up and the development of forage crops), the respect of the law and the efficient control of farmers will probably be the control process the most likely to succeed. If this strategy is combined to the promotion "non-land" use related to the development of a farming sector in the intervention zone, as previously suggested in order to treat the other causes of deforestation, it seems possible to think that farmers could be incited to progressively modify these practices in favor of an intensive and productive efficient and more profitable system.

In addition to the identified direct causes above, it is essential to consider the indirect causes and to take into account several underlying causes related to the situation of the country.

General Acitivities

- A considerable effort must be undertaken to improve the results of classic agriculture, which has to allow to farmers providing for their needs and to allow them to generate surpluses of production that they can sell in order to start a process to get out of farmers households poverty.
- The predominance of rice in a cultivated area must gradually be reduced by the best yield on fewer surfaces, and the prepared land can be exploited for new farming which can progressively introduced. An action of this kind is necessary to set up an agriculture utilizing the set of the annual cycle and to reduce famine periods. The multiplicity of foods will also permit to progressively ameliorate the health level of farmers.
- As soon as the agricultural production increases and allow generating excess, the development of associated fields to the transformation of products and the development of the distribution network must be considered so as to create at the same time « non land » jobs and complementary incomes as well as an adaptation of the production to an offer and demand system. This effort could permit to farmers' households to get out extreme poverty.
- The utilization of water in irrigated zone requires to be more controlled so as to ensure use which limits water extractions and maximizes the product through an irrigation adapted to a farming scale. Some mechanism of payments for ecosystemic services have to be set up in order to provide a value to water and incite people upstream to manage the space so as to perpetuate the resource to the profit of people living downstream.
- An important effort on health and birth control must be committed to the government in order to sensitize households to the utilization of modern medicine (when it is necessary- subject to a compliance with the national health policy) and to incite to reduce the population growth rate, which would allow the future generations not to be much confronted to current problems. Incitement through political reform permitting mindset change could be considered, like Rwanda where the State assumes the responsibility for child schooling regarding the two first children, but the following children become the responsibility of parents, a step touching straight away the problem of population growth and child education.
- It seems important to encourage the policies reform of the sector so as to promote virtuous behavior in offering ways of rewards or advantages for provided services / performances.
- The corruption treatment through practice denunciation and application of the law in that matter seems a critical element to be developed.

5.4 Risk/benefit analysis of the planned actions and interventions under the ER Program
Please explain the choice and prioritization of the planned actions and interventions under the ER Program identified in 5.3 taking into account the implementation risks of the activities and their potential benefits, both in terms of emission reductions and other non-carbon benefits.

Analysis of Risk and Advantages

5.4.1. Advantages

Landscape approach and its implementation
The approach allows addressing sets of landscapes in a holistic and integrated manner, considering both the environment and the inhabitants of the watershed, the well-being of the two elements and the interactions between these elements.

The approach also allows treating upstream- downstream dynamics and the possibilities to develop the payments for ecosystemic services in addition to the carbon aspects.

The implementation planned by a service provider through watershed allows appealing the private sector and NGOs of Madagascar having both a previous experience and a capacity of action demonstrated thus allowing an efficiency since the starting up. The implication of the private sector and NGOs is thus integrated since the starting up. The use of a service provider is as favorable as to the obtaining of the support of the donors during the phase of starting up.

This stake in common of the key activities groups allows retorting in the watersheds as well a stake in common of the training designed to the service providers who will implement programs and its activities within each watershed. This commonality will also reinforce the quality of the monitoring assessment process that will follow while simplifying this process.

In spite of the commonality of the activities in the watersheds, the specific solutions adapted to the local context are also considered in order to guarantee the inclusion of the demands of the communities that will achieve this work. This specificity is considered as essential to guarantee the adhesion and the monopolization of the concept to the local level.

The different surfaces of watersheds are associated to different budgetary envelopes, permitting to make a portfolio of investment solutions. This portfolio allows the investors to make a choice on a specific area according to the financial capacities and the priorities of action.

The lessons learnt from a failure or success of the implementation can immediately be applied during the implementation of a new watershed or in the watersheds which do no have reached yet the same level of development of the program.

A sustainable development centered on the exit of the poverty cycle and the opening of "non land" opportunities

The considered approach supports the exit of the extreme poverty statute and the development of small local savings then with a progressive opening on the regional then on national economy. This approach is centered on a sustainable development through an accompaniment of the households on the long term at an adapted rhythm. Here, it is considered as essential not to repeat the mistakes of the past associated to tentative of exit of the poverty cycle in an accelerated manner, considered as vowed to failure. Even though some tangible profits are aimed in a fast way, the considered accompaniment will be conceived to assure the behavior and its profits on the long term.

A vision on 25 years in 4 “modular” phases permitting the scheduling

The proposed approach integrate on 25 years, what allows a complete generation to grow under a new model of development more virtuous based on the reward of the good behavior and the performance as well as the respect of the environment. This approach is progressively a bet on the future and the new generations and the integration of these young people in this system through new "non lands”opportunities. It is thus a bet on a new vision of the Malagasy society.

The implementation in 4 distinct phases permits to aim a mechanism capable auto to finance itself and to perpetuate the implementation. Moreover, the opportunities portfolio which represents the waterseds of different scales permits to think in a strategic manner about the implementation whether it is merely financial constraints point of view or to stop the induced social phenomena that would not have been glimpsed. The program durability and each of the phases also permits to plan at a long-term the implication of possible investors to a period that will suit their ambitions and in the geographical sector that interests them.

A vision based on the performance reward

The proposed model is founded on the reward of the group on the basis of the virtuous behavior of the group. It is considered as essential so as to permit a new behavior that eliminates the selfish behaviors and encourage a positive collaboration. This approach is considered like an advantage to stop the present problems bound to the corruption and the clientelism.

Enough time to test some solutions

Contrary to the project system, this program integrates in time and offer multiple solutions test opportunities. It is rare to be able to initiate projects in having solutions adapted to the situations met, and a large majority of projects meet some difficulties because of the time constraints that do not permit to adapt the solutions and to make them successful. The proposed approach permits to palliate these problems and to initiate a constant process of options improvement, while adapting them to the local context. It is also possible to consider the abandonment of a solution to the profit of another one in case of need.

5.4.2. Risks

Insufficient financial resources
Neither the GoM nor its development partners are able to mobilize financial resources to the discounted scale and quickly enough to make any changes.

Institutional weaknesses
The exploition of the necessary interdisciplinary approach is too difficult.
The environmental logic of the approach through watershed comes out too different from the existing administrative politico-arrangements to be feasible from the administrative point of view.

Governance failures
The necessary land tenure and forest reforms don't operate.
The forest laws implementation is not improved to a sufficiently significant scale to impact on the ilegal lumber.

Unchangeable traditions
The traditional agricultural practices are not sensitive to the proposed changes
The deep causes of deforestation and degradation have a logic for the poor rural families that is too difficult to dislodge

The domestic incomes not improving
The program activities don't generate enough improvement on the households' incomes to convince the families of the advantages not to erode the forest

The real and potential advantages are elusive
The perspective of future rewards is not a large enough incitement in itself to modify the current practices of deforestation and forests degradation
The profits sharing system proves opened to the various abuses, denying rewards to those that make some changes to their practices of use of lands and forests,

Methodological and technical issues
Too optimistic hypotheses are made since the beginning, on the emissions reduction potential rates,
The scale of the necessary interventions is too large to be managed and coordinated efficiently.
The hierarchy of the interested parts, from the central administration to the decentralized agencies and to the minicipalities, has such interests and different perspectives that a common vision on emission reductions is not reached
The capacities of the components of remote detection of the MRV system are misunderstood on the land and generate the distrust.

Insufficient time to do necessary changes
The expected changes don't have effect, to the scale, in the viability of the program.

6. Stakeholder Information Sharing, Consultation, and Participation

6.1 Stakeholder engagement to date on the proposed ER Program
Please describe how key stakeholder groups have been involved in designing the proposed ER Program, and summarize issues raised by stakeholders, how these issues have been addressed in the ER Program to date, and potential next steps to address them.

At the national level the R-PP was product of extensive consultations at the national and regional levels and the ER Program design is an extension of that process. The national REDD+ processed has been guided by the Technical REDD+ Committee, a multisector platform that has continuously brought together all stakeholders of the REDD+ process in Madagascar since its inception around 2008. This platform is constituted by the sectoral Ministries that are involved in deforestation and forest degradation, technical partners and NGOs working in the field of environment and the conservation of forests, academics, researchers, and society. This platform has been the locus for the organization of thematic groups related to different aspects of the ER Program design since August 2014.

In the context of the ER Program design, meetings between technicians of concerned sectoral ministries identified the various items that can serve as synergies between the future implementation of the ER-PIN and projects already in progress in different sectors. A series of consultations was held form August 10-21 to gather detailed feedback on the proposed ER Program to ensure that the proposed program would effectively address the causes

and factors of deforestation with the participation of local authorities (prefect, head of region, mayors, Regional director of agriculture, and community associations (COBA). This interest was illustrated, among others, by the presence and the stated commitment of all Ministers participating at the consultation meeting of the ER-PIN on August 18, 2015.

At the regional level, forestry commissions have been established and include all entities concerned by the problems of deforestation, such as the decentralized technical services, representatives of the regions and CSOs. Chaired by the heads of the Regions, forestry commissions are both consultative and deliberative bodies addressing issues related to forestry such as land ownership, exploitation or reforestation and have been convened in the regions of the ER Program to discuss how to address factors of deforestation.

Despite the numerous meetings and the willingness of all stakeholders to commit to the preparation and the implementation of ER program, effective intersectoral coordination, deep commitment of all stakeholders and high-level policy actors (Prime Minister, Ministries concerned by deforestation, among others Ministry of Environment, Ecology, Sea and Forest; Agriculture; Land tenure and Planning) were identified as key challenges to advance the REDD+ process in Madagascar. To this end, a communications plan is being developed and the Interministerial Committee (CIME), consisting of various Ministries involved in deforestation, was created on April 17, 2015, following the verbal statement made by Minister of the Environment, Ecology, Sea and Forests.

This Committee, which split into working groups formed by different sectors involved in REDD+, has been meeting and has worked with the participatory and inclusive with the involvement of all sectors and themes such as rural development, forests, environment, ecology, sea, climate change, fisheries, agriculture, mining, energy and decentralization. However, in order to make CIME the most productive possible, its revitalization under new sectoral policies must be undertaken. This must also be translated into strengthened multi-sector coordination at the regional level to address the concern raised about the lack of coordination in the implementation of sectoral policies at the regional and local levels. The strengthening of forestry commissions has been identified as a means for building collaborative platforms during the implementation of the ER Program.

6.2 Planned outreach and consultation process

Please describe how relevant stakeholder groups will participate in further design and implementation of the proposed ER Program and how free, prior and informed consultation leading to broad community support for the ER Program and key associated features, including the benefit-sharing arrangement, will be ensured. Please describe how this process will respect the knowledge and rights of Indigenous Peoples and local communities, by taking into account relevant international obligations, national circumstances and laws.

To find a mutual agreement on the approaches chosen, consultations with all stakeholders is one of the three major components of the strategy of the country in the context of both, the development of the R-PP as well as the ER Program. With this in mind, the consultations for the implementation of ER Program will continue as part of the communication strategy, especially in the region of intervention. Consultations will continue to be primarily conducted in Malagasy to ensure the highest level of understanding and comprehension as well as potential for engagement, while informative materials are prepared in French and Malagasy.

In order to make the consultations as productive and participatory as possible, a strategy of performance consultations will be used. This strategy provides a mechanism for feedback and dialogue as well as a system of information dissemination on the program at all levels in order to strengthen the transparency and equity, which are essential characteristics of REDD+. The communication strategy is be based largely on proposals identified in the development of the R-PP. there will be continued involvement of organizations (governmental, civil society and private sector) so that a broad perspective will be reached in regards to the ER Program. In order to ensure transparency, minutes and written records will be maintained.

Consultations will focus on areas where project activity will be undertaken. It will consist of multiple meetings an initial meeting, design phase meetings, and a final project activity validation meeting. Consultations will encourage local participation in the design phase so that project activities can be tailored to local circumstances. The consultations will focus on answering important questions in the context of the development of the ER Program including the management plan, the institutional framework and strategic measures for the implementation of REDD+, the process of Strategic Environmental and Social Assessment (SESA); and safeguards, the reference scenario, the MRV and monitoring and evaluation

To ensure the participation of vulnerable and marginalized groups and to make their voices heard, a capitalization on existing actions and its reflections taking into account especially the gender aspect and identifying the barriers hindering the participation of vulnerable groups, should be carried out. This to improve the methods, approaches and tools ensuring real participation of vulnerable groups.

In addition to the consultations strategy proposed above, consultations will also be based on autonomous actions (in the context of lobbying, complaints, media campaign, etc.). In addition, tools such as local radio stations, market places, theatre and traditional migrant working groups, posters, village competitions and other vehicles of local and traditional messages will be used for awareness campaigns to inform, react, and search for acceptance and validation. Collaboration with legal and traditional authorities and community leaders will be systematically sought for the identification of the information channels, local resource people and the development and perfection of suitable methods.

7. Operational and financial planning

7.1 Institutional arrangements

Please describe the governance arrangements anticipated or in place to manage the proposed ER Program (committee, task force), and the institutional arrangements among ER Program stakeholders (i.e., who participates in this ER Program, and how, including the roles of civil society organizations and forest dependent communities).

Governance arrangements of the proposed ER Program are organized around three key functions: (i) steering; (ii) coordination and control; (iii) execution.

Two structures will assure steering and guidance of the program: at the national level, the Steering Committee (COPIL), and at the regional level, the Committee for Planning and Monitoring. The Steering Committee is chaired by the Minister in charge of Environment, Ecology, Sea and Forests and will be comprised of representatives from four key departments involved in the implementation of the national REDD+ program: the Ministry of Environment, Ecology, Sea and Forests, the Ministry of Agriculture, the Ministry of Decentralization and the Ministry in charge of Energy and Hydrocarbons. The Regional Committee for Planning and Monitoring will ensure the coordination of the program activities with the development priorities of the relevant regions and municipalities.

Coordination and control will be the responsibilities of the BNCR, at the national level, the deconcentrated services, or Regional Directorates, of the key line ministries, at the regional level, and the Municipalities organized into an Inter-Communal Public Entity (*Organe Public à Caractère Intercommunal*, OPCI). For the proposed ER Program, the OPCI will include 14 watersheds and 171 municipalities, and will span across 3 regions.

Execution will be undertaken by the following agents at the local level: municipalities (in the number of 171), forest dependent communities organized into *Fokontany* (the smallest administrative division in Madagascar) or *Fokonolona* (the traditional structure of governance, built around individuals featuring a common ancestry), other communities in the watershed, but not necessarily directly dependent on the forest, organized into *Fokontany* or *Fokonolona*, Civil Society Organizations and service providers. It is important to notice that while the steering function and the coordination and control function are already receiving financing from the REDD+ readiness activities (e.g. through the FCPF financing) the executing stakeholders will receive financing through the upfront investments and through the benefit sharing mechanism established through the ER Program.

In agreement with the Criteria 1 of the methodological framework of the FCPF, this coherent approach, or programmatic approach, allows for the targeting of:

- The recipients / direct public and private administrators (farmers and living in the farming zones);
- The recipients / indirect public and private administrators (inhabitants of the urban zones who will be able to benefit from an increased and organized access to resources);
- The set of the state organs that will permit the setting up and the implementation of such an approach;
- The private sector and the NGOs which will be in a situation of opportunities to seize and to develop within a programmatic approach providing auspicious conditions.

In agreement with the Criteria 2 of the FCPF methodological framework, from its geographical size, and the nature of the considered surface areas, the Emissions Reduction Program covers a large portion of the Malagasy national territory corresponding to multiple areas where vast designated areas essential for the implementation of the activities by the concerned authorities.

Other entities will participate in the ER Program implementation and Annex 7 provides a detailed map of how each organization enters in relation to the others in the Program's implementation. For example, the Local Development Fund (*Fond Locale de Developpement*, FDL) constitutes the current channel by through which the

central Government transfers resources to Municipalities. In the ER Program it will be the key channel for benefit sharing.

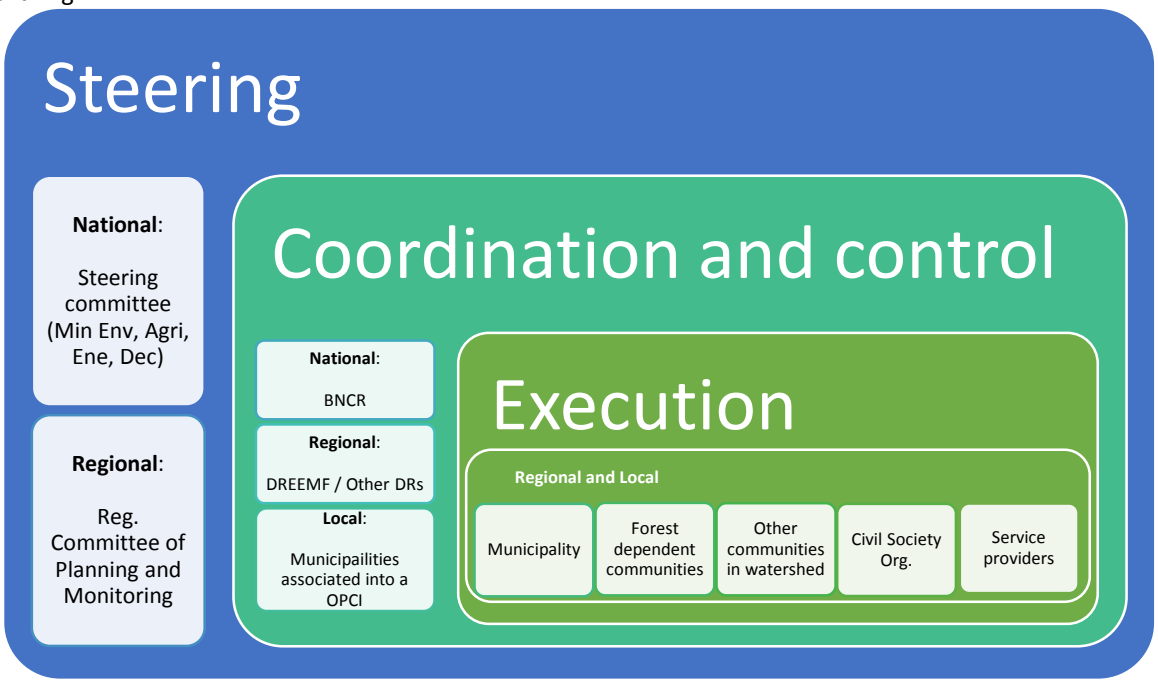


Figure 4: Suggestion of institutional arrangements. Under discussion.

7.2 Linking institutional arrangements to national REDD+ implementation framework
Please describe how the institutional arrangements for the proposed ER Program fit within the national REDD+ implementation framework.

The institutional arrangements of the ER Program are based on REDD+ institutional arrangements at the national level. However, compared to the institutional arrangements of REDD+ in general, these also incorporate actors and stakeholders at the regional level. In addition to traditional actors, the ER Program also involves members and actors of civil society, NGOs, the private sector and members of local communities. As a result, the participation of marginalized and vulnerable groups is even more assured and much more representative.

The regional level of the ER Program is built on intersectoral cooperation, not yet present in the context of REDD+. Moreover, cooperation between the representatives of different Ministries on the regional level, representatives of Decentralized Territorial Communities (CTDs) and Decentralized Technical Services (STD) represents an innovative tool of institutional work at national level.

7.3 Capacity of the agencies and organizations involved in implementing the proposed ER Program
Please discuss how the partner agencies and organizations identified in section 3.1 have the capacity (both technical and financial) to implement the proposed ER Program.

Table 3 below presents the structures and organizations identified for the implementation of the Emissions Reduction Program and their current capacity for implementation.

Table 3: Agencies and organizations involved in the ER Program

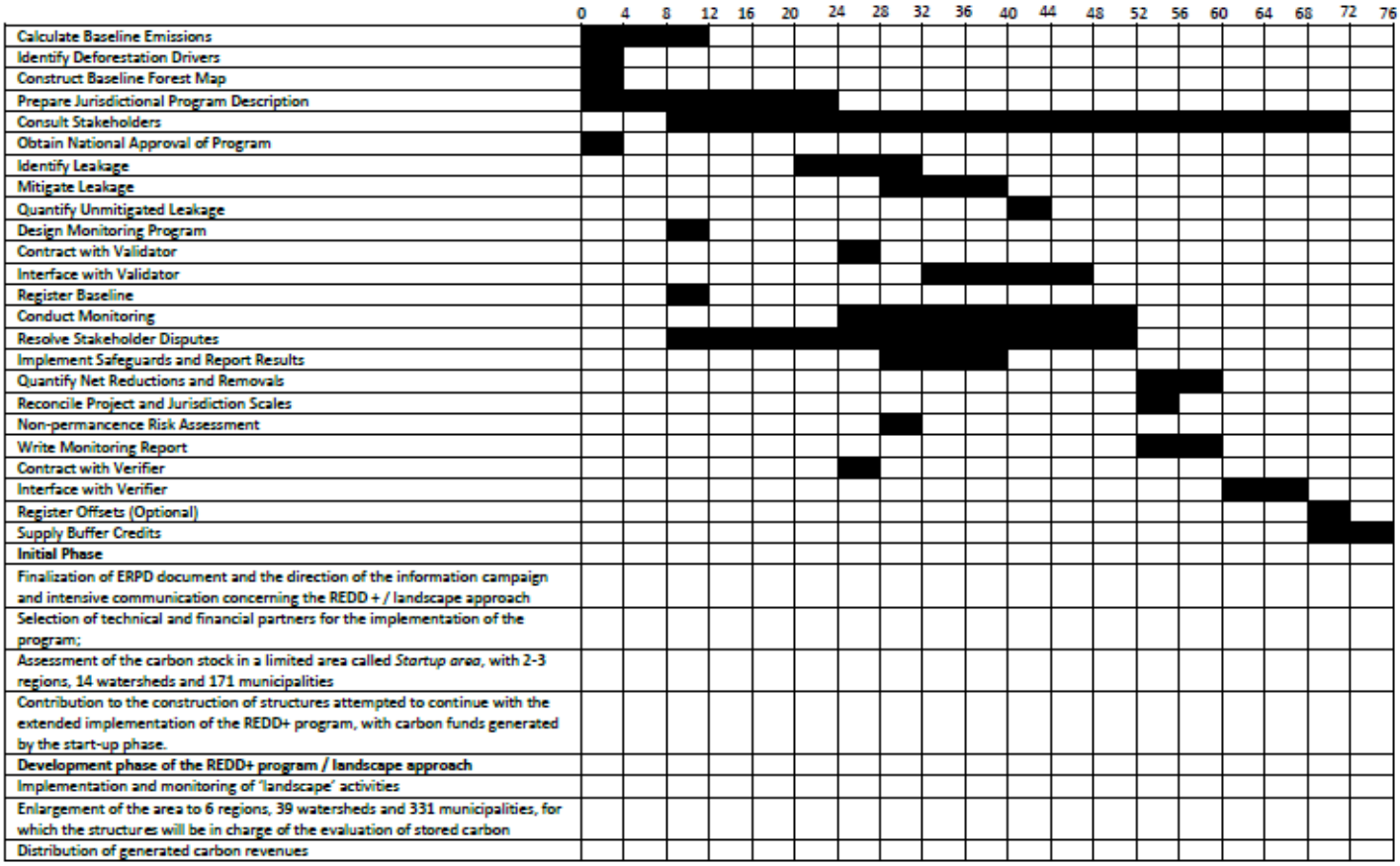
Structure	Role identified	Technical capacity	Financial capacity	Expected
National Office of Coordination REDD+ (BNCR)	Coordination of the implementation of REDD+ in Madagascar and its effective integration in all sectors of administration. The BNCR will also implement the REDD+ public geo-portal and REDD+ registry	The BNCR exists and incorporates agents trained and competent, however in an insufficient number. Work premises and the means of action must be adjusted depending on expected demand.	Capacity for the time being limited to the funds received for the implementation of REDD+. Financial capacity must be increased and made sustainable.	Increase the number of agents to allow continuous and effective monitoring within different administrations. Provide additional training on the implementation of REDD+ and its consideration within all complex administrations should be integrated. Complementary training should be assured.

Unit of remote sensing of the BNCR	All aspects related to the measurement of surfaces in the various forms of land use.	The unit remains to be creates. Trained agents are available, however they must be assembled and assured of their jobs within this unit.	NA – to be created	Additional training to update skills where appropriate and continuous training throughout the process. Purchase and maintenance of equipment.
Regional monitoring cell of the safeguards within REDD+ of the BNCR	All aspects related to the establishment of the follow-up on the safeguards system and its regular monitoring as the program proceeds.	The regional cell remains to be created. Trained agents are available and must be gathered in this cell and secure in their job within the cell.	NA – to be created	Additional training to update skills where appropriate and continuous training throughout the process. Purchase and maintenance of logistical means and equipment.
General Directorate for Forests	Realization of forest inventories for emissions and absorption factors measures. Analysis of results and presentation within reports.	The structure disposes of trained technical staff who can be mobilized. However, the ability to mobilize the teams and the equipment on the ground or analyze the situation is not sufficient or obsolete	Financial capacity is primarily related to ongoing projects. This ability needs to be made permanent.	Additional training to update skills where appropriate and continuous training throughout the process. Purchase and maintenance of logistical means and equipment.
General Directorate for the Environment	Realization of greenhouse gas inventories other than CO_2 necessary for the measurement of total emissions and absorption factors. Analysis of results and presentation within reports.	The structure disposes of trained technical staff who can be mobilized. However, the ability to mobilize the teams and the equipment on the ground or analyze the situation is not sufficient or obsolete.	Financial capacity is primarily related to ongoing projects. This ability needs to be made permanent.	Additional training to update skills where appropriate and continuous training throughout the process. Purchase and maintenance of logistical means and equipment.
National Office for the Environment	Independent auditor of the results obtained by BNCR.	Good capacity based on previous experience both in the MRV (remote sensing and measuring aspects of emission factors) and monitoring safeguards of the REDD + Competent. Staff is competent, trained and available.	Financial capacity primarily related to ongoing projects. The fact that ONE is able to deal directly with the private sector is a good sign and way to sustain the structure.	Additional training for the measurement of emissions of greenhouse gases other than CO_2, and the processing of such data. Training in the used technology to be provided throughout the process. Purchase and maintenance of logistical means and equipment.
Municipalities	Ensure compatibility of ER Program with local development plans. Execute a portion of the activities in the ER Program.	Mixed capacity depending on the existence of development programs in the commune. A large portion of communes in the intervention area are equipped with a commune land tenure window. The existence in the law of the Inter-Communal Public Entity (OPCI) is a strength to the ER Program, as it will allow to create an association of municipalities in charge of managing the program at the local level.	Poor, owing to the political crisis. However, the existence of the Communal Development Fund, by which the Treasure transfers resources to Municipalities, is an important element for ER Program implementation.	Additional training to update skills where appropriate and continuous training throughout the process. Purchase and maintenance of logistical means and equipment.
Local communities and civil society organizations	Manage sustainable forested areas: ecological monitoring,	Mixed, depending on the historic involvement	Financial capacity is very limited owing to the high level of	Continuous application and strengthening of the

	patrolling, and ecotourism activities. Provide labor for cash-for-work programs with conservation dimension. Participate in rice intensification programs, education, capacity building and awareness campaigns.	in development programs. Notably, Madagascar is one of the first countries in the southern hemisphere to have put in place a legal framework for community based NRM. Thus the country counts with long lasting experience on the engagement of local communities on NRM.	poverty characterizing local communities in rural areas.	community-based NRM law. Additional training to update skills where appropriate and continuous training throughout the process.
Service providers for the implementation of activities on the ground	Implementation of activities within watersheds according to the proposed approaches. This structure will be most importantly a service provider selected for its capacities in the implementation of expected activities as well as thanks to its experience with the work in Madagascar on the topic concerned. This provider could be an NGO, private consulting firm, or even a specific governmental structure that dispose of the expertise required.	To be defined. Potential service providers will be selected based on their implementation skills and their experience on Madagascar on the topic concerned. The profile of key personnel will be evaluated case by case.	To be defined. An intrinsic financial capability will probably be one of the criteria for the selection of these structures.	Skills deemed as missing at the end of the selection process will be provided during a period of initial training of selected providers and through a mechanism of continuous training and accompaniment during the first 5 years of the program development. Purchase and maintenance of logistical means and equipment.

7.4 Next steps to finalize the proposed ER Program implementation design (REL/FRL, ER Program monitoring system, financing, governance, etc.). Provide a rough timeline for these steps

Table 4 below presents the implementation timeline of the ER Program



7.5 Financing plan (in US$ million)

Please describe the financial arrangements of the proposed ER program including potential sources of funding. This should include both near-term start-up cost and long-term financing. If the proposed ER program builds on existing projects or programs that are financed through donors or multilateral development banks, provide details of these projects or programs, including their financing timeframe. Use the Table in Annex I to provide a summary of the preliminary financial plan.

The budget for implementation of the activities planned for Madagascar emissions reduction program has been evaluated in several stages:

- Following the description of activities contained in section 5.3, an indicative type of budget for each of these activities has been compiled;
- A budget combining these activities in an integrated form in a watershed 'way' was then proposed to define the cost to assist in implementing effective and sustainable program for this type of scale, and thus derive an average cost of implementation by ha. On the basis of this work, the average cost per ha to develop necessary activities for the implementation of the emissions reduction program represents a minimum investment of USD 6.32 per ha for 10 years. A detail of the costs by budget line type appears in Table 8;
- Based on this average cost per ha, a simple estimate was extrapolated to other watersheds using their respective area;
- The budget for implementation was then calculated by selecting the group of watersheds that is necessary to be implemented according to the suggested stages of development.
- At this stage, the budget is calculated only for information – no inflation adjustment has been integrated into the implementation;
- The budget does not include any potential revenue from taxes on products generated or derived from the activities that will be undertaken. At this moment it is not yet possible to make an assessment of this type, especially without any further information on taxation schemes that can be implemented over the duration of the program;
- The budget is also not adjusted for potential profits that would be linked to the implementation in such scales;
- The proposed budget is therefore only a general idea in order to imagine financial implications of the concept envisaged by Madagascar.

Table 5: Cost details by budget item to develop a watershed type I with a surface area of 420 000 ha and 8 municipalities, with about 31 300 families (5 people per family).

Budget items (10 years)	General cost for the watershed (10 years)	Cost per ha (10 years)	% of total cost
1. Total Human Resources	$ 920,842.86	$ 2.19	3.47%
2. Total Sector Development	$ 1,200,000.00	$ 2.86	4.52%
3. Total Equipment, material and supply	$ 1,532,906.78	$ 3.65	5.77%
4. Total Activity	$ 19,295,692.95	$ 45.94	72.64%
5. Total Local office	$ 79,294.00	$ 0.19	0.30%
6. Total Additional costs and services	$ 2,629,968.57	$ 6.26	9.90%
9. Provision for additional long term expenses for years 6 to 10 (2% of total 8)	$ 513,174.10	$ 1.22	1.93%
11. Management and follow-up costs by supplier for the long term period: years 6 to 10 (1.5% of total 10)	$ 392,578.19	$ 0.93	1.48%
Total	$ 26,564,457.45	$ 63.25	100.00%

A representation of the overall budget appears in the Table 6 below, and indicates potential sources of financing. It is really complex to define at this stage the activities already supported by donors as the majority of ongoing projects will be closed at the end of fiscal year 2015 or 2016, but also due to the fact that the perspective projects remain at a preliminary definition level. This last element represents an advantage because it will allow the Government of Madagascar to guide development towards activities planned. Two significant funding opportunities are currently being developed and could be implemented in the startup area:

- BVPI phase 2 of the World Bank, consisting of a mixture of donation and loan that could probably finance an envelope of USD 40 million;
- Project PRAESEPE North of the European Union, representing a financial envelope of EUR 50 million, which will be implemented in the Analanjirofo region.

On the basis of expected revenues from the sale of credits related to verified emissions reductions and financing expected from development agencies, the current results of the program development represent:

- A deficit of USD 14.9 million at the end of 5 years;
- A deficit of USD 10.5 million at the end of 10 years;

It is important to note that in this budget, additional revenues from taxes on revenues generated by agriculture and other developed sectors, such as tourism, are not recorded in the application area. Hence, there exists an increased possibility to overlap with the investment over a shorter period. For example, using projections proposed in the section of co-benefits to the increase of the agricultural potential, and by projecting a taxation of 10% per annum on agricultural production, it seems possible to rely on an income taxes of the order of us 20 million USD per year from year 5 of the implementation of the program.

Table 6: Financing plan (in USD Millions) over the 25 years of the program of emission reductions of Madagascar.

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	2016 - 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Details of implementation											
Nb of watersheds implemented		0	0	0	0	0	0	0	0	0	0
Nb of watersheds being implemented		14	14	14	14	14	14	14	14	14	14
ERPAA's total development - watersheds		14	14	14	14	14	14	14	14	14	14
1. Investment budget required (M USD)											
Total budget - starting area - initial watersheds		$ 59.9	$ 44.9	$ 44.9	$ 29.9	$ 29.9	$ 29.9	$ 15.0	$ 15.0	$ 15.0	$ 15.0
Costs durability for watersheds implemented											
Total:		$ 59.9	$ 44.9	$ 44.9	$ 29.9	$ 29.9	$ 29.9	$ 15.0	$ 15.0	$ 15.0	$ 15.0
2. "Non carbon" sources of incomes (M USD)											
2.1 Financing sources ongoing - end of financing for the period 2016 - 2018 - activities helping to implement the reducing emissions programme											
Donations											
European Union 1 - biodiversity projects - East	$ 3.9	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AFD 1 - holistic conservation project for forests	$ 3.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
World Bank 1 - REDD readiness Grant / FCPF	$ 3.8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.2 Financing sources being planned - shaded areas shows period of application for financing - details are not available for now											
Donations											
European Union - PRASAEPE-North	$ 50.0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
European Union 3 - Agriculture growth + land management	$ 5.5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
World Bank 2 - Ethanol cookstove promotion	$ 1.0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Loans											
World Bank 3 - BVPI 2	$ 40.0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.3 Incomes from activities required for the REDD+ programme											
Item non recorded		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3. Carbon sources of incomes (M USD)											
Source: initial watersheds		$ -	$ -	$ 31.6	$ -	$ 50.5	$ -	$ -	$ 36.0	$ -	$ 56.2
Total		$ -	$ -	$ 31.6	$ -	$ 50.5	$ -	$ -	$ 36.0	$ -	$ 56.2
3.1 Incomes from emission reductions selling (with contract)											
FCPF sales - base of 60 M USD		$ -	$ -	$ 34.4	$ -	$ 25.6	$ -	$ -	$ -	$ -	$ -
3.2 Incomes from emission reductions selling (without contract)											
Other sales - carbon markets		$ -	$ -	$ -	$ -	$ 24.9	$ -	$ -	$ 36.0	$ -	$ 56.2
Makira carbon project		$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4	$ 0.4
4. Net income expected (without taxes and loans) in M USD											
Total sources - total investment cost	$ 107.7	$ -59.5	$ -44.5	$ -10.1	$ -29.5	$ 21.0	$ -29.5	$ -14.6	$ 21.4	$ -14.6	$ 41.7
Deadline 5 years: Sources - investments						$ -14.9					
Deadline 10 years: Sources - investments											$ -10.5

8. Reference Level and Expected Emission Reductions

8.1 Approach for establishing the Reference Emission Level (REL) and/or Forest Reference Level (FRL)
Please briefly describe how the REL/FRL for the proposed ER Program has been or will be established. Describe how the approach for establishing the REL/FRL is consistent with UNFCCC guidance available to date and with the emerging Methodological Framework of the FCPF Carbon Fund, and with the (emerging) national REL/FRL (or with the national approach for establishing the REL/FRL).

The proposal of Madagascar focuses largely on increasing carbon stocks in degraded humid forests that will be managed to let stocks recover naturally within specifically selected areas. The related activities include i) the protection of natural areas and degraded forest in order to maximize the available resources and to assure the natural regeneration of these resources through management plans; but also ii) active restoration of degraded forests, through plantation of native species and stimulation of their natural regeneration; iii) raising awareness of the communities for undertaking preventative measures (e.g. fire lanes); but also iv) to reinforce the management structures of the protected areas.

No REL exists yet at the national level in Madagascar; and despite the fact that REL already exists for the humid forests ecoregion (of which the ER program is part), it only took into account the intact forests; therefore, no data exist yet on the evolution of the stocks in the degraded forests, which account for a big part of the ER program. The overall estimate on the carbon stock increase thus needs to be established in more details, on the basis of the available information and the processing of satellite images. This dimension will also involve the definition of a forest degradation rate and the related emission level.

As mentioned above, REL work has already been established for intact forests for the humid ecoregion; i) building on that existing REL, and extending to include degraded forests, before an upscaling at the national level, ii) on the basis of the guidelines presented in the RPP and iii) the recommendations issued by the UNFCCC and a panel of local, regional, sub-national and national studies, conducted in Madagascar as part of smaller projects, programs, the following will form the basis of the REL establishment:

- The definition of forest, adopted by Madagascar (Cf.Annex 8);
- Both intact and degraded humid forest strata (Cf. Annex 8);
- In compliance with both the UNFCC and FCPF guidelines (Cf. Annex 8), Landsat images at three dates will be used, with the reference periods 2005-2010-2013 (with 2013 requiring the validation from FCPF);
- The REDD+ eligible activities proposed under the ER PIN are deforestation (measured on the monitoring of forest cover loss on a yearly basis via satellite imagery analysis) increase of carbon stock (measured using field inventory in both intact and degraded strata);
- Above ground biomass and below ground biomass, and soil carbon will be considered as carbon pools. Moreover, as data on below-ground carbon biomass is absent, the IPCC tables will be used. Studies will be carried out on this carbon pool during the implementation of the REDD + readiness, however it is unlikely that these studies will be conducted before the emission reduction program is implemented. The necessary adjustments will be made upon completion of the work.
- The expected Tiers for both the emission factors and the activity data are described in Annex 8;
- The risk of reversals are expected to be about 10%, and the uncertainty in calculations of emission reductions of 4% on the basis of the description in Annex 8.

Work already undertaken related to REL in Madagascar
In 2014, under the PERR-FH project, Madagascar already has established a sub-national REL for the whole humid forest ecoregion (which comprises the entire area of the ER Program). The work that established this jurisdictional REL for the humid forest is summarized as follows:

- The focus of the work was the establishment of REL from deforestation of intact humid forests (canopy cover >75%);
- REL was established for the 2015 to 2024 period;
- Forest carbon stock map established using field inventories (with a total of more than 500 permanent plots set up in the field);
- Soil carbon map established via a combination of samples collected from 4 representative zones within the ecoregion. The samples were collected at different depths (0-10 cm; 10-20cm; 20-30cm) and laboratory analyses (soil carbon content; apparent density, etc.) were conducted for estimating the soil carbon stock;

we have included soil carbon because of the exceptionally detailed work on this already conducted during the PERR-FH study.

- Analysis of past deforestation using Landsat images with 2005-2010 and 2013 as reference periods. Detection of deforestation is based on the IPCC categories of land uses and their changes from forest to any other type of land use from one date to the other.
- Projection of future deforestation (rate and location) based on the combination of the analysis of the main causes and drivers of deforestation (helps predict the location of future deforestation), the historic deforestation trend (helps predict the deforestation rate) from the analysis of past deforestation, and the then current carbon stock in the forest (helps predict the related carbon loss from deforestation). Two types of scenarios were developed: one is linear, based on the past average annual evolution of forest loss (2 points: average 2005-2010 and average 2010-2013); and the second is based on the historic average of annually deforested area for the entire reference period (2005-2013).

8.2 Expected REL/FRL for the ER Program

Please provide an estimate of the REL/FRL for the proposed ER Program area. Even a very preliminary estimate would be helpful.

8.2.1. Calculation of the reductions of emissions from deforestation.

On the basis of prior work conducted at the ecoregional level in Madagascar for the above-ground biomass soil carbon; and the IPCC estimates for below-ground biomass, Table 7 below summarizes the estimated carbon stocks from all the carbon pools considered in the ER program:

Table 7: Available figures on the determination of the biomass carbon in Madagascar humid forests.

Land use	Carbon pool	Biomass: T C / ha	Source of information
Intact forests	Aboveground biomass	122.70	PERR-FH (2014)
	Below-ground biomass	0.23 x aboveground biomass	IPCC (2006)
	Soil carbon (1 m – forest zone)	183.67	PERR-FH (2014)
Degraded forests	Aboveground biomass	39.49	Asner and al. (2012)
	Below-ground biomass	0.20 x aboveground biomass	IPCC (2006)
	Soil carbon (1 m – forest zone)	183.67	PERR-FH (2014)

For estimating the expected REL/FRL related to the ER Program, the following hypotheses are used:

- To establish a common reference level, deforestation is calculated in terms of intact forest area lost by municipality between 2005 and 2013 images. The figure comes from the analyses of the Landsat satellite images conducted by PERR-FH (2014). An analysis of the watersheds affected by the implementation period of the emission reduction program shows that deforestation in the humid forests in Madagascar is progressing at an average rate of 695 ha per year (standard error = 172), . Depending on the evaluated watersheds, this figure varies between 0 (no deforestation) and 4930 ha per year (per watershed). The median of the deforestation is 345 ha per year. Once this figure is established, a summary for each region involved in the emission reduction program will be carried out in order to have an assessment of the deforestation rate and emission reference for the 2005-2013 period;
- The deforestation process is considered to continue at the same rate (annual rate) in the intact forests and the degraded forests at the municipal level; this figure cannot be verified at this stage;
- A deforested area is an area that lost its forest cover and the soil carbon loss graph established by PERR-FH (2014) is used to illustrate carbon losses from these lands (see Annex 9).
- Deforestation is reduced by 15% compared to the reference period 2005-2013 during year 1 to 5 of implementation of the emission reduction program; then by 27% from year 6 to 10. The overall objective is then to reduce deforestation by 21.1% from year 1 to 10;
- The calculation is related to the program area for the 10-year period of its implementation.

8.2.2. Preliminary assessment of the rate of deforestation and annual emissions by region - Estimated reference emissions level related to deforestation of the intact humid forests in Madagascar.

As mentioned above, this calculation is a synthesis of the assessments made under PERR-FH at the sub-national (regional) level on the basis of the individual municipalities involved in the current emission reduction program proposal. The regional figures presented in Table 8 below presents aggregated figures of the area of the municipalities involved in the ER Program, by region and size of the intact humid forests.

Table 8: Aggregated figures of the area of the municipalities involved in the ER Program.

Regions covered by the reducing emissions programme in 25 years of implementation	Surface area of the communes concerned (ha) per region by the PERR-FH analysis	Area of remaining rainforests in 2005 (ha)	Area of remaining rainforests in 2010 (ha)	Area of remaining rainforests in 2013 (ha)	Forest loss between 2005 and 2010 (ha) - 4 years period	Forest loss between 2010 and 2013 (ha) - 4 years period	Average deforestation rate per year between 2005 and 2010 (%) for remaining rainforests	Average deforestation rate per year between 2010 and 2013 (%) for remaining rainforests	Average above-ground biomass (AGB) of remaining rainforests (T C)	Biomass stock of remaining rainforests in 2005 (T C)	Biomass stock of remaining rainforests in 2010 (T C)	Biomass stock of remaining rainforests in 2013 (T C)	Annual emissions between 2005 and 2013 (T C) for remaining rainforests	Annual emissions between 2005 and 2013 (T CO2 eq) for remaining rainforests (T CO2 Eq = 3.67 x T C)
ALAOTRA MANGORO	2,632,644	563,225	535,293	515,942	-27,932	-19,351	-1.30%	-1.25%	122.70	69,107,708	65,680,451	63,306,083	-828,803	-3,041,709
ANALANJIROFO	2,192,367	1,049,455	1,027,054	1,002,666	-22,401	-24,388	-0.55%	-0.81%	122.70	128,768,129	126,019,526	123,027,118	-820,144	-3,009,930
ATSINANANA	2,110,314	364,297	354,791	343,412	-9,506	-11,379	-0.67%	-1.10%	122.70	44,699,242	43,532,856	42,136,652	-366,084	-1,343,529
DIANA	1,906,362	450,984	440,867	429,807	-10,117	-11,060	-0.57%	-0.86%	122.70	55,335,737	54,094,381	52,737,319	-371,203	-1,362,313
SAVA	2,403,917	814,708	805,227	794,460	-9,481	-10,767	-0.29%	-0.45%	122.70	99,964,672	98,801,353	97,480,242	-354,919	-1,302,551
SOFIA	3,109,675	678,025	668,976	645,796	-9,049	-23,180	-0.34%	-1.20%	122.70	83,193,668	82,083,355	79,239,169	-564,928	-2,073,287
Total	14,355,279	3,920,694	3,832,208	3,732,083	-88,486	-100,125	-0.58%	-0.89%		481,069,154	470,211,922	457,926,584	-3,306,081	-12,133,319

Source: PERR-FH

Biomass stock of remaining rainforests in 2005 (T C)= Average AGB * area of remaining forests in 2005.

Biomass stock of remaining rainforests in 2013 (T C)= Average AGB x area of remaining forests in 2013.

Annual emissions between 2005 and 2013 (T C) for remaining rainforests= Average total forest area lost between 2005 and 2013 (7-year period) * AGB/ha

8.2.3. Calculation of emission reductions (removals) related to the increase in carbon stocks.

Table 9: Available figures on the increase in carbon stocks in Madagascar.

Land use	Source of information	Annual growth of biomass in T C / ha
Degraded forest	IPCC (2006)	2.20
Degraded forest	Asner and al. (2012)	2.25

For estimating the emission reductions from removals, the following assumptions are used:

- At the scale of the implementation area, it is assumed that in their current state, the degraded forests do not regenerate, or are undergoing a situation of aggravation of the degradation process. This situation is linked to the frequent conversion of degraded forest areas to slash and burn agricultural lands that require regular rotation of cultivated plots, as well as constant fuelwood and timber extraction. As it is not possible to calculate the extent of degradation on the basis of the available information, the status quo assumption is used in the current proposal, i.e.:
  - Because of the almost constant use of degraded forests during the reference period, the increase in carbon stocks between 2005 and 2013 in these forests is regarded as zero;
  - Degraded forests are considered as having been degraded to a stage that the "forest" definition may still apply but the level of biomass for this forest type is considered to be the lowest possible. The figures suggested by Asner and al. (2012) for a degraded forests, after 5 years of fallow (39.49 T C/ha) is considered appropriate to apply for the current proposal and considered to be representative of the carbon stock associated with the likely average cycle of these degraded forests, namely:
    - Degradation and opening,
    - Farming associated with timber extraction during 2-3 years,
    - 5-10 years of fallow,

    This hypothesis remains to be verified during the preparation of the ERPD;

  No data is available to show the evolution of degraded forest land between 2005 and 2013; thus, it is assumed that the area has not changed significantly between the two dates of the reference period:
- This hypothesis remains to be verified during the preparation of the ERPD;
- The figures of annual increase in aboveground biomass for degraded forests, established through information in Asner et al. (2012) is considered as the reference value for the rainforests of Madagascar.
- The proximity between the 2 figures listed above in Table 9 is due to the fact that the figure derived from Asner et al. (2012) publication provides a first approximation to a national figure of natural increase in carbon stocks in degraded forests in Madagascar; it is recommended to use this figure. Moreover, this figure is conservative for tropical humid forests, under a heavy rainfall regime like the East coast of Madagascar. Finally, in a context of degraded forest, for which the canopy has been largely eliminated, the abundance of light predicts a high regrowth rate with biomass potential increase greater than the proposed figures here;
- The area of degraded forests in the area of interest was extracted from the geographic information system layers of the CEPF (Critical Ecosystem Partnership Fund) Madagascar from 2007 (publicly available data on http://www.vegmad.org/datasets.html). Indeed this mapping represents the vegetation of Madagascar sets adjusted for this year after a phyto-sociological classification validated by ground-truthing. This work has provided a cartographic representation of “degraded humid forest” that is considered adequate to extract the extent of the degraded humid forests in the area of implementation of the emission reduction program;

- The natural increase of carbon stocks within degraded forest stands is assumed to be possible within a sector representing 15% of the total area of degraded forests in the program area. This value of 15% is considered adequate after evaluation of the available area in the lands with slopes > 10% that are less suitable for agriculture within the program area. Indeed, these lands represent almost 48% of the considered area (2.3 million ha), and therefore the implementation of a measure aiming at increasing natural carbon stocks on an area of 281'310 ha scattered across such a surface appears to be an acceptable ambition;
- The calculation is related to the program area for the first 5 years, then for the 10-year period.

The reference level for carbon stock increase in the degraded humid forest in Madagascar between 2005 and 2013 is thus preliminarily established as shown in Table 10 below.

Table 10: Preliminary and hypothetical calculation (based on the assumptions taken) of the reference level of removals associated with increases in carbon stock in the humid degraded forests within the different regions.

Regions covered by the reducing emissions programme in 25 years of implementation	Surface area of the communes concerned (ha) per region by the PERR-FH analysis	Surface area of degraded rainforests in 2007 (ha) - source: CEPF (http://www.vegmad.org/datasets_gis.html)	Annual average of carbon stocks growth between 2005 and 2013 (%) for degraded rainforests	Average aerial biomass (AGB) of degraded rainforests (T C)	Biomass stock of degraded rainforests in 2005 (T C)	Biomass stock of degraded rainforests in 2013 (T C)	Annual average growth between 2005 and 2013 (T C) for degraded rainforests	Annual average growth between 2005 and 2013 (T CO2 eq) for degraded rainforests (T CO2 Eq = 3.67 x T C)
ALAOTRA MANGORO	2,632,644	384,720	0.00%	39.49	15,192,602	15,192,602	0	0
ANALANJIROFO	2,192,367	759,178	0.00%	39.49	29,979,930	29,979,930	0	0
ATSINANANA	2,110,314	1,567,490	0.00%	39.49	61,900,198	61,900,198	0	0
DIANA	1,906,362	14,155	0.00%	39.49	558,969	558,969	0	0
SAVA	2,403,917	881,230	0.00%	39.49	34,799,786	34,799,786	0	0
SOFIA	3,109,675	133,304	0.00%	39.49	5,264,194	5,264,194	0	0
Total	14,355,279	3,740,078	0.00%		147,695,679	147,695,679	0	0

The reason for the zero values in the last 2 columns is that some sectors will see loss, whole other will see growth, and we have no data to measure this at the concept stage, thus, we use the 0 growth/0 loss assumption as a result. It is quite likely that there will be a continuous degradation process of the already degraded forest and that in fact the reference level should highlight a negative value or a carbon loss. As a result we have placed a zero value in these columns; but ground-truthing will be conducted to verify this hypothesis.

8.2.4. Calculation of afforestation-related emissions reduction (removals).

Madagascar's emission reduction program also plans to put under forest status a significant part of the municipalities' territory to develop private and/or community afforestation for lumber and especially fuelwood for energy. It is also under reflection to involve private forestry companies to establish plantations for energy, timber and pulp wood. These activities remain difficult to quantify at this stage of the concept without more advanced consultation on the energy needs of households, as well as the private sector ambitions. A complementary work to contact the private sector is under way on this topic to determine the potential interests of this type of partners in this sector; as well as the surface areas that they would need to operate on to ensure economic viability and sustainability of the activities. There is therefore an emission reduction potential associated with these activities, which cannot be established for the time being.

9. Forest Monitoring System

9.1 Description of approach and capacity for measurement and reporting on ERs

Please describe the proposed approach for monitoring and reporting the emission reductions attributable to the proposed ER Program, including the capacity of the proposed ER Program entities to implement this approach.

The MRV system lies upon three main dimensions: carbon (emissions/removals), deforestation/degradation drivers, governance and other benefits than carbon. The system will be developed in order to regularly quantify emissions and removals of GHG and to compare them with REL.

The ER program's MRV system will be consistent with the national MRV system (described in Figure 5 below). In fact, data collection conducted within the program contribute to feed the development of the national system. Monitoring tools will be developed under the ER program (monitoring of activity data, emission factors, leakage, and governance). Data collection and their analysis will be conducted in a transparent and replicable way, following determined procedures. Then, information will be validated internally, by independent entities before they are transparently disclosed to all stakeholders.

One key aspect of the approach is to involve all stakeholders, from local to national level, in a participatory way in the development and implementation of the MRV system.

The activity data monitoring will be conducted at the national level, given the competences it requires; however, the monitoring of deforestation/degradation factors will be based on the subsidiarity (decentralization) principle: data collection will come from the smallest local level to the national level.

A more detailed description of the approach to be found in Annex 11.

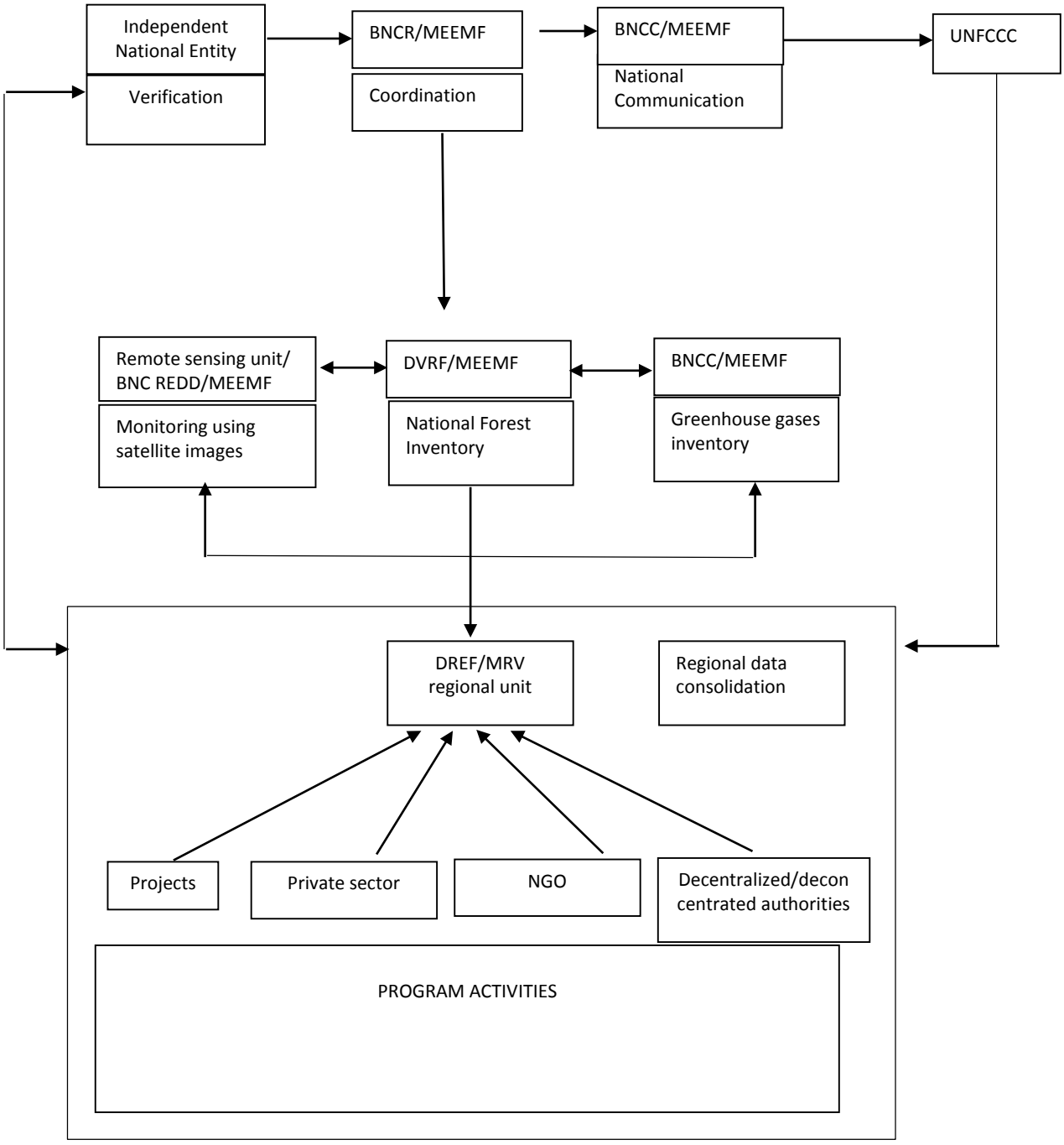


Figure 5: Suggested MRV system in the ER Program

9.1.2. Description of the existing capacity for forest monitoring

The following Table 11 summarizes the capacity (existing and future) of the different stakeholders that will be involved in the ER Program:

Table 11: Existing and future capacities of ER Program stakeholders.

ENTITY	TASK	TECHNICAL CAPACITY	TO DEVELOP
Remote sensing under BNCR (REDD+ National coordination Office)	- Measurement of surfaces in the various forms of land use.	- Civil servants that are expected to become members of the unit are already present and trained in the techniques of analysis of remote management; - By the end of 2017 – these servants are expected to receive additional trainings to	- Unit to be created; - Acquisition of tools and equipment for unit's activities; - Development of geo-portal;

		update their knowledge and to become familiar with the national methodology finally chosen to then develop it.	- Set-up of the automatic "backup" mechanism of the portal.
Regional monitoring unit for REDD + safeguards under BNCR	- Monitoring on the safeguards issues under BNCR.	- Civil servants that are expected to become members of the unit exist, however they still should be trained in monitoring of social and environmental safeguards techniques by the end of 2017; - these trainings will include regular updates and aiming to make the civil servants familiar with the national methodology finally chosen	- Unit to be created - Acquisition of tools and equipment for unit's activities;
General Directorate of Forests (DGF) and regional forest directorates	- Realization of forest inventories for emissions and absorption factors measures; - Analysis of results and presentation within reports.	- Structures already exists; - Personnel qualified, competent, able to carry out necessary measures for planned forest inventories;	-Additional training for the personnel needed to assure their mastery of specific monitoring methods, forest inventories and data analyses under REDD+; - Investment in modern equipment needed – transportation means, tools and equipment to undertake data analysis and reporting; - Additional budget for regional offices needed to cover running costs – allowing them to implement inventory campaigns.
General Directorate for the Environment (DGE)	Realization of greenhouse gas inventories other than CO2 necessary for the measurement of total emissions and absorption factors. Analysis of results and presentation within reports.	- Structure already exists; - Personnel qualified.	-Additional training on the measurement of greenhouse gases according to a methodology that will allow to achieve Tier; - Acquisition of the equipment.
ONE	Independent verification body	Personnel existing and capable to perform necessary verifications for forest inventory and remote sensing analysis.	-Additional training in greenhouse gases verifications is necessary; -Additional budget to carry out field verifications should be provided.

9.2 Describe how the proposed ER Program monitoring system is consistent with the (emerging) national REDD+ monitoring system

The reduction of emissions monitoring system proposed under the emissions reduction program complies with the national monitoring of emissions for REDD +. This system was proposed in the R-PP and is now being put in place. This system is based on the four classic pillars of MRV that allows to put in place a national forest monitoring system; namely:

- Pillar 1: measurement of activity changes through remote sensing,
- Pillars 2 & 3: measurement of the emission factors and removals through forest inventories and inventories of greenhouse gases other than CO_2,

- Pillar 4: implementation and monitoring of the environmental and social safeguards associated with REDD +.

The four pillars above are well represented in the proposed approach for the emission reduction program of Madagascar; initially at a regional scale and then at eco-regional scale by the implementation, over a 25 year period.

In addition, according to the Madagascar R-PP document, the national forest monitoring and safeguards information system will rely on three main dimensions: carbon (emissions/removals), deforestation/degradation factors, as well as benefits other than carbon and governance. The system will also report data and check the validity of the results. It will revolve around three levels: national, regional and local.

All the aspects considered in the context of the reflections leading to the R-PP document are reflected in the emissions reduction program proposal. Indeed, the three main dimensions, as well as links between the three levels mentioned above are present in this proposal. The proposed implementation is ultimately on the basis of an eco-regional approach, but which builds upon lessons learned from existing REDD projects, on a local scale to develop the regional and national framework.

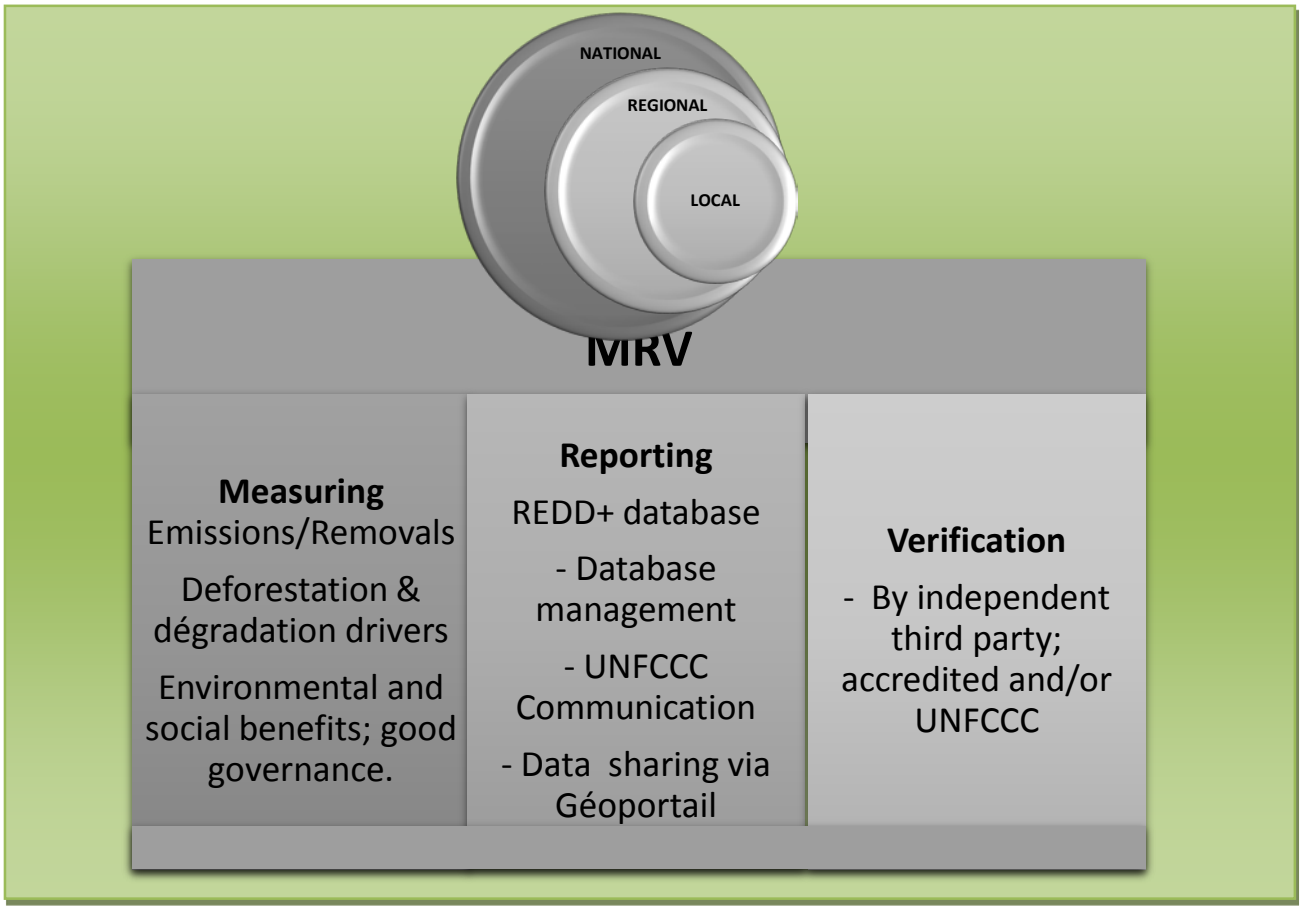


Figure 6: Synoptic chart of the MRV system to implement in Madagascar. (Source: R-PP).

It is obvious that the ecoregional approach in the implementation of the emission reduction program allows to make the link between existing projects' approach (3 REDD + projects within the area of application); to collect results at local level and feed implementation and accounting at the national level.

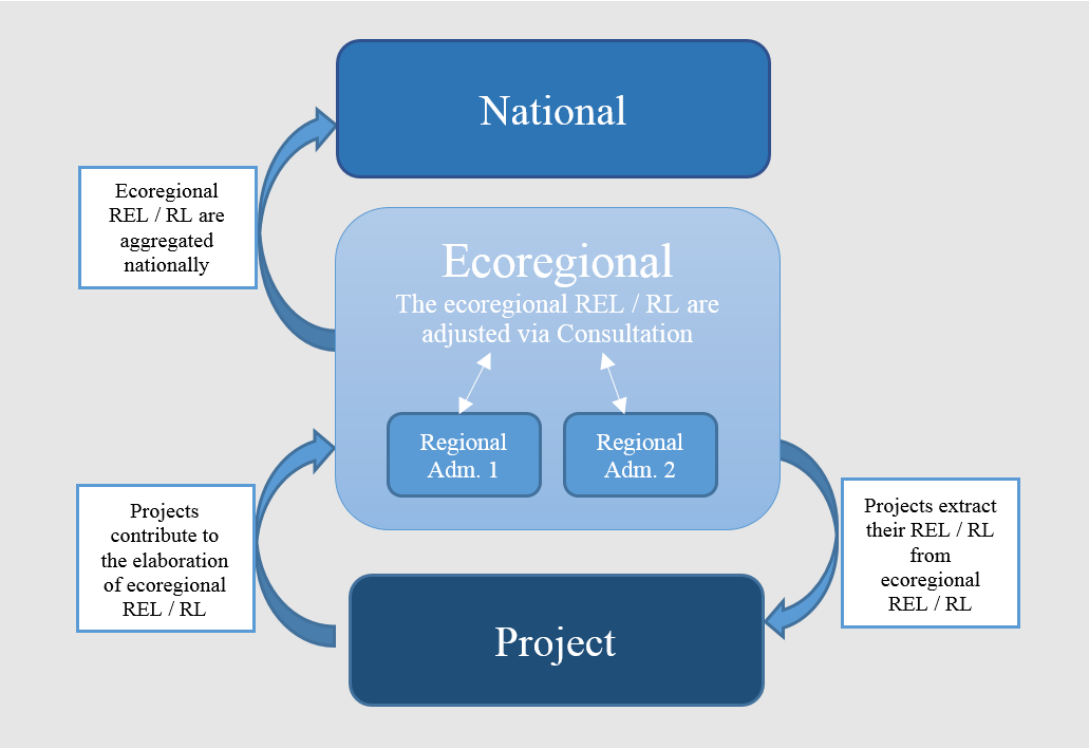


Figure 7: Monitoring system chain from the national to the local level.

It is expected that this chain building up towards the national monitoring system (as illustrated in Figure 7) will be refined as the emission reduction program is carried out and that the implementation of the national monitoring system will be ultimately based on the success of the implementation of eco-regional monitoring system, proposed in the framework of the program.

9.3 Describe how the proposed ER Program monitoring system is consistent with UNFCCC guidance available to date and with the emerging Methodological Framework of the FCPF Carbon Fund

The activities proposed in the emissions reduction program concept were assessed with regard to the texts of the UNFCCC and the emerging FCPF methodological framework. The elements of the assessment, showing how the proposed ER Program monitoring system is consistent with both the UNFCCC guidance and the FCPF Methodological framework are presented in Annex 12.

9.4 Describe any potential role of Indigenous Peoples or local communities in the design or implementation of the proposed ER Program monitoring system

Madagascar recognizes the opportunity and advantages of engaging local communities in monitoring activities and local communities are expected to have important roles in the monitoring system and surveillance through practices that are already implemented in REDD+ pilot projects, including participatory ecological monitoring, conservation pacts or local communities' patrols for the conservation of forests. In addition local communities can play an important role in on the ground validation of GIS analyses, local monitoring/surveillance of fires for land clearing and illegal logging, and data collection for carbon stocks measurements. Local communities and local population have been particular subjects of attention during consultations in the design of the emissions reduction program and special attention was given to the vulnerable populations during these consultations.

The specific engagement of local stakeholders in the ER Program implementation must be defined through a participatory process, although the general principle of participation of the communities in the monitoring of the future emission reduction program has been the object of discussions with local leaders during the presentation of the ER program meeting, held at Antananarivo on August 20, 2015. The implementation of the ER Program will build on the Information and consultation sessions that have been conducted with donors, local communities, local decentralized authorities (region, district, and municipality), deconcentrated technical services, the private sector and civil society.

There is no group that meet the definition of indigenous people, except one community that is not located in the geographical area of the ER Program.

9.5 Describe if and how the proposed ER Program monitoring system would include information on multiple benefits like biodiversity conservation or enhanced rural livelihoods, governance indicators, etc.

In the implementation framework of the emissions reduction program of Madagascar, and in accordance with the proposals in the R-PP, a monitoring plan for the necessary safeguards to the implementation of REDD + is considered imperative. The ER Program development process will identify likely social impacts (land tenure issues, gender inclusion, social protection, community participation, cultural integrity etc.), environmental impacts, and assess co-benefits (poverty reduction, biodiversity conservation, ecosystem services etc.) and will be further informed by the SESA process.

The ER Program will outline the safeguard measures to be undertaken in the monitoring of the ER Program's implementation and the MRV system will also be informed by the ongoing SESA process.

The monitoring on environment and biodiversity is particularly focused on the emergence of trends of indicator species; and the influence of the activities undertaken on the volume and the quality of water in the rivers of each watershed. Monitoring is planned to be included in school curricula in order to strengthen children's awareness and to allow future generations to better understand the cause and effect relationships in their environment.

10. Displacement

10.1 Description of the potential risks of both domestic and international displacement of emissions (leakage)
Please describe the potential risks of both domestic and international displacement of emissions from the proposed ER Program activities. Then also describe how the proposed ER Program activities will minimize the risk of domestic displacement and international displacement (if applicable), via the design of the proposed ER Program and the ER Program activities and the selection of locations. For sub-national programs, pay special attention to identifying domestic risks of displacement of emissions, the proposed ER Program activities to mitigate these risks, which otherwise would contribute to fewer net emission reductions generated by the proposed ER Program, and how these activities are consistent with the design features of the (emerging) national REDD+ strategy to address risks of displacement.

International risks of emissions displacement.
The fact that Madagascar is an island considerably limits the international risks of displacement which are considered to be very low. In addition, the risk of international displacement specifically related to Madagascar's precious wood does not seem viable given that it is also unique. Its exploitation seem little viable.

Domestic risks of emissions displacement.
In the context of Madagascar, the main risks of displacement of emission related to development planned within the project area are low. The program is more likely to attract migrants into the area, which increases the risk of inversions, but reduces the risk of movements of populations towards other provinces.

The history of development projects in Madagascar has demonstrated that when projects begin to generate benefits, an immigration phenomenon is often observed in the project area. This phenomenon is related to poverty - which forces households to abandon their lands and seek opportunities where they exist. In this context, Madagascar's proposal is designed to promote opportunities within the area of application and thus does not seem to pose a significant displacement problem.

There are however some national risks of specific displacement to be considered, which are shown in the following Table 12:

Risk	Description of the risk	Scale of the risk	Mitigation
Illegal trade of precious woods.	The implementation of control measures for the use of forests and the improvement of the management systems of forests are likely to move illicit activities of extraction of precious woods.	The risk is significant in terms of the probability of occurrence, on the other hand the scale of the phenomenon will be probably limited because of the ongoing activities to combat practice across the country as a whole.	Law enforcement and increased collaboration with ongoing programs to fight against this phenomenon.

Illicit artisanal mining exploitation	When legal mining projects are developed, illegal mining is regularly observed in the region where the projects are developing, sometimes with an effect of rushing towards the mineral. The mining projects which will be developed in the regions of Madagascar where the program is not implemented shall not be subjected to the same control of the territory and it seems thus likely that emissions may be accelerated on the edge of mining projects of this type.	The risk exists but is considered low. The development of legal mining projects is now subject to environmental and social impact procedures to limit these problems. Moreover illicit artisanal mining are often unprofitable and lead to desperate circumstances for people without land. The implementation of the emission reduction program should provide opportunities that do not require land ownership that may limit this phenomenon, but with a risk of inversions instead.	Law enforcement and implementation of the planned activities to create "no-land" jobs that will absorb people from this phenomenon before they migrate to another region to generate displacement.
Use of fire for grazing and deforestation	This land use practice is prominent in the western sector of area considered. Herders practicing a form of extensive breeding use fire to activate the regrowth of pastures often with direct effects of deforestation. Control of these practices in areas considered by the emission reduction program could encourage farmers to establish themselves in areas where such practices are uncontrolled.	Risk is considered low since the improvement of breeding and the condition of farmers is integrated into the program proposal, which significantly reduces the risk of encouraging the displacement of farmers to other regions.	Enforcement and monitoring of activities through the implementation of REDD+ concretely at the national level as well as increased collaboration with the police and other security forces.

11. Reversals

11.1 Activities to address risks of reversal of greenhouse gas benefits

Please describe major risks of anthropogenic and non-anthropogenic reversals of greenhouse gas benefits (from e.g., fire, agriculture expansion into forest, changes in commodity prices). Also describe any activities or design features in the proposed ER Program that are incorporated to minimize and/or mitigate the anthropogenic risks or reversals, and how these activities are consistent with the design features of the (emerging) national REDD+ strategy to address risks of reversal.

In the context of Madagascar, the main risks of inversions within the area of the project are associated with the practice of slash and burn agriculture ("Tavy") and uncontrolled extraction of wood energy. Both practices are largely associated with poverty of rural households in Madagascar, a situation exacerbated during periods where households are facing food emergencies. These risks are of anthropogenic origin. The activities of the program are designed particularly to address these practices.

An additional risk, identified through experience, is that success in project/program areas leads to influx of people that are not part of the target population thus leading to unsustainable practices in the target area. This context is particularly witnessed in projects/programs of relatively short lifespan.

The ER Program design focuses on the development of activities that can be inclusive of incoming populations through identification and promotion of "no-land" activities, income generating activities that are not dependent on land ownership, and will limit anarchic land grabs that may be associated with these practices. "No-land" activities are designed to strengthen the value chains that will reduce pressures on forest degradation directly and also indirectly through decreasing the demand for extensive land practices.

The focus on watersheds is designed to be inclusive of populations in contiguous communities thus limiting the most immediate risk of incursions from neighboring populations. These natural geographic/geologic target groups (watersheds) provide a degree of natural impediment to large scale population influxes also enable program design that is tailored to each program area, with the identified activities.

Due to the monitoring of the use of land which will be undertaken, and through the implementation of an inter-sectoral coordination, the risk of significant inversions related to uncontrolled development of mining and industry

sector remains low and seems unlikely. The implementation of legal texts and the obligation of impact assessment already applicable for such projects will help to further limit these risks on the horizon of the program. This inversion anthropogenic risk is considered low and already taken into account. The implementation of legal texts and the obligation of impact assessment already applicable for such projects will help to further limit these risks on the horizon of the program. This inversion anthropogenic risk is considered low and already taken into account.

In any case, deforestation and displacements will be monitored annually across the program region and its surroundings. If displacements are identified and attributed to the program, they can be compensated by reductions in the payments for ERs generated by the program.

12. Expected emission reductions

12.1 Expected Emission Reductions (ERs)

Please provide an estimate of the expected impact of the proposed ER Program on the REL/FRL (as percentage of emissions to be reduced). Based on this percentage, also estimate the volume of ERs, as expressed in tons of CO_2, that would be generated by the ER Program:

a) up to December 31, 2025 (currently the end date of the FCPF)
b) for a period of 10 years; and
c) the lifetime of the proposed ER Program, if it is proposed to continue longer than 10 years.

Using the parameters presented in section 8.2, the calculation is made for the following four stages of implementation of the program for reducing emissions over a period of 10 years as follows in Table 13Table 13 below:

Table 13: Spatial characteristics of the ER program

Years of implementation	Area of implementation	Area
1 - 10	14 watersheds developed during the implementation	4,777,785 ha

The ER program will be implemented for 10 years; the target is to reduce the annual emissions from deforestation by 15% over an initial period of 5 years, with an overall objective of reducing emissions by 21.1% over a 10-year period. It is intended to allow natural regrowth in carbon stocks over an area representing 15% of the area currently covered by degraded humid forests. Table 14 shows the aggregated expected emissions reduction per year from the 14 watersheds for the duration of the program (10 years).

Table 14: Emissions reductions in the program area, implementation of the emissions reductions program for 10 years.

PROGRAM AREA - 14 WATERSHEDS																	
Carbon pool	Emission reduction target for 5 years	Emission reduction target for 10 years	Natural regeneration target for 10 years	Ratio AGB /BGB (GIEC 2006)	Driver T C towards T CO_2 Eq	Vegetation type	REDD+: Activity	Reductions emission potential in CO2 tons per year for the area of implementation (in millions of CO2 tons)									
								Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AGB	15.0%	21.1%			3.67	Natural forest	Deforestation	0.20	0.24	0.29	0.34	0.39	0.45	0.51	0.55	0.57	0.59
	15.0%	21.1%			3.67	Degraded forest	Deforestation	0.07	0.08	0.10	0.12	0.14	0.16	0.18	0.19	0.20	0.20
BGB				23%	3.67	Natural forest	Deforestation	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.13	0.13	0.14
				20%	3.67	Degraded forest	Deforestation	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.04
SOC	1.3%	1.0%			3.67	Combo	Deforestation	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03
AGB			15%		3.67	Degraded forest	Natural regeneration	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32
BGB			15%	20%	3.67	Degraded forest	Natural regeneration	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
							Emissions reductions (total per year)	**3.12**	**3.20**	**3.28**	**3.37**	**3.45**	**3.55**	**3.65**	**3.72**	**3.75**	**3.78**
							Emissions reductions (total per period)	***16.42***					***18.45***				
							Emissions reductions (total for 10 years) in millions of tCO2	***34.87***									

- For the "deforestation" activities, which is related to a total area of 1,540,000 ha of "intact forest", the numbers from year 1 to year 10 represent the sum of ER per year for the 14 watersheds we selected for the program area. The numbers were calculated based on the intact forest area available in each of the watershed (PERR FH data), then i) using the biomass values of the PERRFH and the current deforestation rate within each of the watersheds (calculated at the commune level actually, but summed at the watershed level) and then ii) applying the 15% reduction on the anticipated emissions that was fixed as target.
- The SOC line is the avoided soil carbon loss if we use the corresponding values by avoiding the deforestation. It is related to the emissions reductions we get from soil carbon if we do not deforest these 15% of land.
- The values for Deforestation related aspects vary each year, because we applied the % for each year, we could have used fixed values, but we took into consideration the inputs from the different stakeholders.
- For the degradation activities, we have decided on a "stable" target of setting aside 15% of the area for letting natural regeneration take its course. The numbers therefore represent the potential in removals for the total area of degraded forest for the 14 watersheds of the program area. We took 15% of 1,875,403 ha as our target and apply the values we have planned for degraded forest.

It is clear that the program represents an opportunity to plan for the long term because ensuring an income from the sale of the carbon credits upon the first 10 years of the program and then sustain the development of the program beyond its lifetime. The plan is to upscale the approach to a total number of 39 watersheds by the within the next 15 years after the ER Program completion (see Annex 13).

12.2 Volume proposed for the FCPF Carbon Fund
Please explain the portion of the expected ERs that would be offered to the Carbon Fund, and if other carbon finance providers or buyers have been identified to date, the portions of the expected ERs that would be offered to them.

Because of current variability of the carbon market and the difficulty encountered by three active REDD projects in Madagascar to sell credits verified emission reductions, and because no other buyer has been identified at this point, the entire volume of emission reductions (100%) generated on an initial period of 5 years will be proposed to the FCPF, estimated to be 16.42 million tons of CO_2. A second period of 5 years will be presented to the FCPF with an estimated volume of emission reductions of 18.45 million tons of CO_2. Hence, the total volume of emissions reductions over the 10 year implementation period will be 34.87 million tons of CO_2.

13. Preliminary assessment of the proposed ER Program in the context of the national Strategic Environmental and Social Assessment (SESA) and the Environmental and Social Management Framework (ESMF)[1]

13.1 Progress on SESA/ESMF
Please describe the country's progress in the implementation of SESA and the development of the ESMF, and their contribution or relationship to the proposed ER Program.

The implementation of the SESA framework and the development of the ESMF are integral components of Madagascar's FCPF REDD+ readiness process. The ESMF will consequently form a vital component of all REDD+ related activities in the country including the proposed ER program. There is a strong legal framework that serves as the basis for environmental and social impacts in Madagascar in the area of environmental assessment in general, and hundreds of initiatives (plans, policies, programs and projects) including fifteen SESA have passed through an environmental review. Madagascar benefits from significant experience with environmental assessments through the existence of the well-established mechanisms including: Regulatory Framework (Environmental Charter, National Environmental Policy on the Environment, Forest Policy, Environmental Program, etc.); Institution responsible for of environmental assessment (ONE); environmental units at the Ministerial departmental level; decentralized territorial communities (regions, districts, communes), NGOs and agencies trained in MECIE; several environmental management assessment tools already developed and used: directives and sectoral guides including the forestry sector. For the SESA, a guide has been available since 2008. This guide has been developed based on the experiences of 15 SESA that were conducted and performance criteria of the SESA worldwide.

A working group on social and environmental safeguards issues for REDD+ has been set up to inform the design of the terms of reference for the SESA development and to provide a consultative and review of outputs as they are developed. ONE will be chiefly responsible for overseeing the activities related to the development of the SESA and ESMF and how they are to be applied to the REDD+ Strategy, working in close collaboration with BNCR. A social specialist is in the process of being recruited within BNCR to work on coordinating all of the activities related to risk assessment and mitigation measures for REDD+ activities and producing the SESA, the ESMF and the associated frameworks. A tender has been launched to hire a consulting firm to develop the SESA, ESMF and associated frameworks through a participatory process based on the strategic options for addressing deforestation and forest degradation. The ESMF will set out the structures and procedures for undertaking environmental and social due diligence and for the management of future projects, policies and activities through which the refined REDD+ strategy is implemented. The timeline for the ESMF is the second quarter of 2016.

[1] The SESA is the assessment process to be used in FCPF REDD+ countries during R-PP implementation and REDD+ readiness preparation. The ESMF is an output of SESA that provides a framework to examine the issues and impacts associated with projects, activities, and/or policies/regulations that may occur in the future in connection with the implementation of the national REDD+ strategy but that are not known at the present time.

13.2 Incorporation of SESA outputs and/or outcomes into the proposed ER Program

Based on the progress outlined in 7.1, please describe how the proposed ER Program is expected to make use of the outputs and/or outcomes of the SESA process. Provide an analysis of the ways in which activities planned under the proposed ER Program will rely on the measures and procedures included or to be included in the ESMF. Are there likely to be any gaps or issues regarding the compliance of the proposed ER Program activities with applicable safeguard standards, including the UNFCCC safeguards?

Using a participatory approach (local community engagement, meetings with district level institutions, and organizing regional and national stakeholder workshops), the SESA consultant will facilitate the identification and prioritization of key environmental and social issues, and guide the stakeholders to develop risks and opportunities matrices for the REDD+ strategy options. The SESA results will support the identification and prioritization of key environmental and social risks in the ER Program and suggest mitigation measures to address those risks. The ER Program will respect the principles of the SESA process and consider seriously the outcomes of the SESA.

The envisaged SESA outputs will contribute to the ER Program by prioritizing strategic options in terms of their environmental and social costs and benefits and also by outlining recommendations to enhance socially friendly land use and forest management activities. The development of an ESMF will outline the procedures to be followed for managing potential environmental and social impacts of specific policies, actions and projects during the implementation of the REDD+ strategy options that will be finally selected within the ER Program.

The output of the SESA consultancy will be integrated into Madagascar's overall national REDD+ framework and will guide the implementation of all REDD+ interventions in the country including the proposed ER Program.

The ER Program will also prioritize gender considerations in the REDD+ process to ensure that issues of gender inequality and lack of inclusion of women are avoided in the planning and implementation of activities under the ER Program.

13.3 Feedback and grievance redress mechanisms

Please describe the mechanism(s) that are or will be put in place to resolve any disputes regarding the proposed ER Program.

A grievance management mechanism will be established and will allow all actors, whether they are interested, involved, or affected by REDD+ activities to express themselves freely systematically (see Figure 8). The proposed grievance management mechanism will be integrated directly into existing tools and systems at national, regional and international levels. Procedures for managing complaints are used pursuant to the MECIE Decree, and is already implemented by ONE for investors, and is the basis for major mining projects such as Ambatovy and QMM put in place internal systems of management of grievances. The basis for a grievance management mechanism for REDD+ is already largely in place as it was established for forest resources. Strengthening and capacity building will enable the mechanism to be operational by June 2016 and fully consolidated with national processes by the end of 2016.

Regional committees have been established and are operational in most of the regions of Madagascar (including the areas of the ER Program), supported by the Service Grievance Management and Environmental Control within the Department of the environment, ecology, sea and forests. A register of complaints is installed at the level of each municipality to enable the public to convey their grievances, complaints or other messages and will be strengthened to include grievances related to REDD+ activities. Where that telecommunications infrastructure allow, a toll-free number will also be used to facilitate oral communication. Close monitoring will be implemented through the responsibility of the public, civil society and decentralized authorities (municipalities, regions). Enhancements of capacities at all levels will be carried out to achieve this.

According to the principle of subsidiarity, the problems must be treated and resolved to the greatest extent possible at the local level. A special Committee will be set up in each region within the ecoregion. Given the importance of the role of this Committee, its composition, varying from one region to the other, will be specified after consultation with stakeholders. Their mission is to collect, study and find solutions to the grievances and suggestions will be submitted. It is also called to assess damages, establish responsibility, and take or make appropriate intervention measures while

informing the competent bodies or authorities. It can also refer the problems that it is not able to resolve to the higher bodies.

The competent authorities and other higher authorities presented below are the administrative authorities (regions) and, where appropriate, the managing body or the delegated authority for the ER Program. Management services of complaints within the Department of the Environment, Ecology, Sea and Forests must also be recipient of copies of the complaints and related measures. Finally, in case of necessity, the Office of the Ombudsman of the Republic can be consulted.

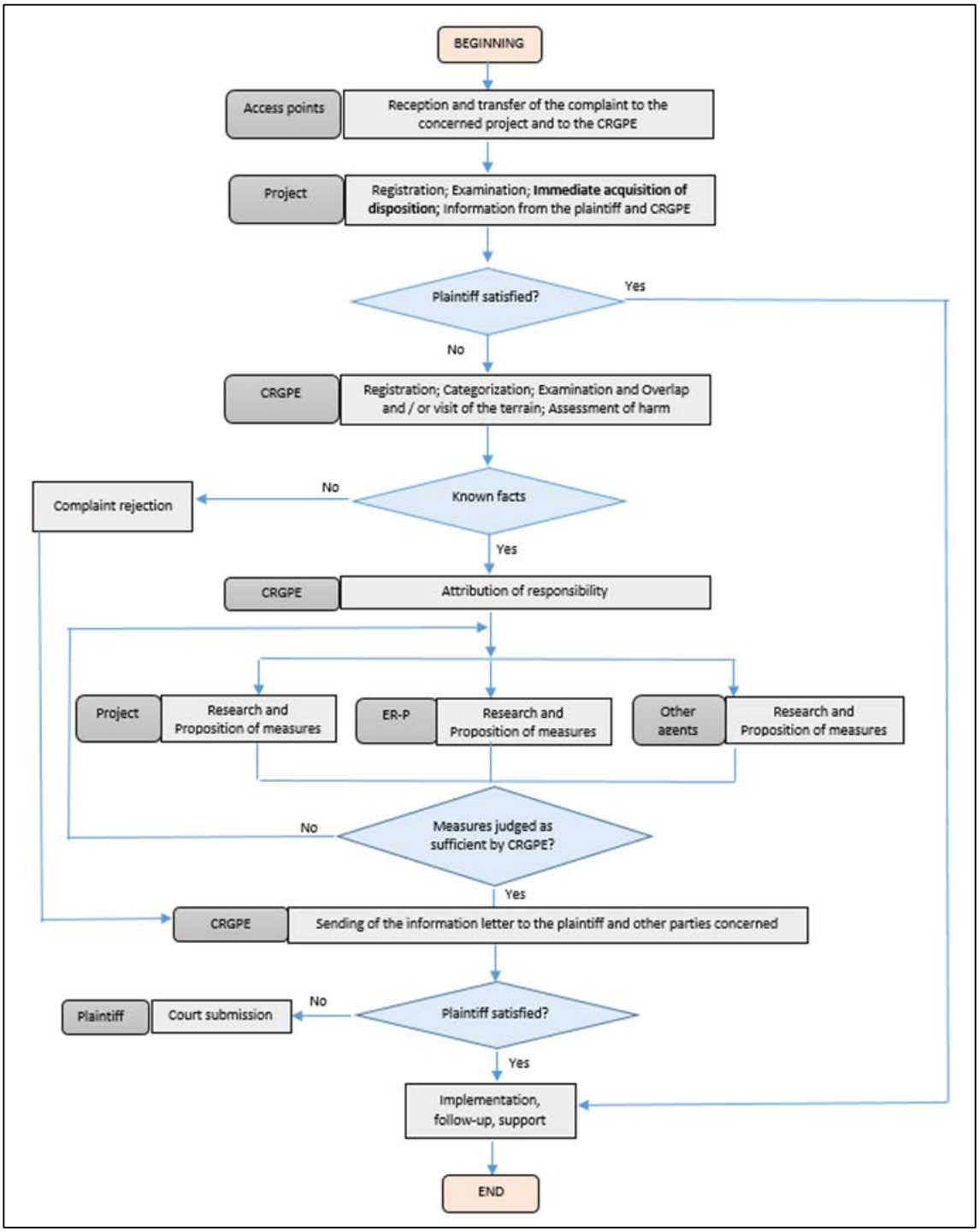


Figure 8: Blueprint for a grievance management mechanism.

14. Land and resource tenure

14.1 Rights to territories and land, and mitigation benefits

Please describe the land use and land tenure context of the proposed ER Program, and if and how rights to territories and land and mitigation benefits from REDD+ are reflected in traditional practices and codified in legal and/or regulatory frameworks.

The proposed ER Program will be implemented under the context provided by Law No. 2005- 019 of October 17, 2005, establishing the principles governing the status of land in Madagascar. This law is the result of a land reform based on an ambitious process of modernizing and decentralizing land administration. The new legal framework was designed and put in place in consultation with all stakeholders in the land sector.

Several important and historically significant changes accompanied the 2005 land reform law. Previously, the Malagasy State was assumed to own occupied but untitled land (a concept introduced in the early colonial period), but under the new law, such land is considered to be private property. Previously, the land administration had been the only authority allowed to validate individual property rights for people who had made an effort to develop their land, but under the new law, local authorities and their new commune land offices were given the authority to formalize untitled land rights, not by delivering land titles but by issuing land certificates (*Certificats Fonciers*) in a transparent local procedure after considering opposing claims.

The communal land windows is a new commune service, legally competent to deal with any "nontitled landholding" and to issue land certificates. The legal value of the land certificates is almost identical to that of land titles. Any transactions permissible with land titles are permissible with land certificates, such as sale, lease, partition, and inheritance. These two guarantees of land rights differ in two ways. A land certificate is reversible—for example, it can be reversed if it has been issued erroneously on property that is already titled. Unlike the boundaries of titled holdings, the boundaries of certified landholdings are not delimited through the insertion of the traditional topographic markers. Instead, their boundaries are agreed upon among the neighbors and ratified by representatives of the local community.

In sum, Madagascar now has two contemporaneous land management systems. The public land administration is in charge of managing State property and titled private property. The communes are in charge of managing non-titled private property.

Figure 9 shows that a large portion of the proposed ER Program counts on established commune land offices, which constitute a strength of the proposed program.

Local communities have the right to manage forest land under the umbrella of Law 96-025, known as GELOSE. The law occupies a central role in the application of community forest management in Madagascar. The law was introduced after acknowledging that the participation of local communities in the management of forest resources and renewable natural resources in general was crucial for achieving better conservation results. The law is based on the principle that sustainable use of resources and land tenure security are crucial for improving local communities' well-being, hence ensuring their engagement. The law foresees the establishment of a contract between three parties: (i) the owner of the resource, be it the State or a local authority, ultimately responsible for the conservation of natural resources; (ii) a group of individuals from the local community legally grouped in an entity called *Vondron'Olona Ifotony* (VOI); and (iii) the municipality, responsible for planning at the local level.

When forests are in the State's domain, community forest management through Law 96-025 is effectively a delegation of a public service emanating from the State in favor of local communities. In fact, according to Law 97-017, text of reference of the forest policy, the forest administration exercises over the whole national territory of Madagascar a mission of public service of sustainable forest management. Through contracts, the VOIs agree to fulfill this public service mission on behalf of the State, under conditions negotiated by mutual agreement. Hence through GELOSE, CFM is intended as a form of 'decentralization', in terms of delegation of the management of forest resources from the central Government to local actors.

The current land tenure law has a number of weakness that will require close monitoring during the ER Program implementation:

- In particular, effective solutions for collective recognition of land rights, which often encompass forest land, are still lacking. Malagasy land reform remains focused on the recognition of individual and family property rights. Even if the land certificate can be issued in the names of several people, the reform contains no viable options for formalizing collective rights over common resources. Moreover, the law on community natural resources management, still lacks a full suite of implementation decrees, making land tenure security still uncertain.
- The momentum for land tenure reform stalled when the major donors decided to leave Madagascar following the political crisis in 2009. External funding to sponsor the reform sharply contracted from US$ 11 million in 2008 to just US$ 1 million in 2009 and 2010 and around US$ 600,000 in 2011 and 2012. Training and local empowerment activities stopped in more than 250 communes. While the end of the crisis in 2013 has meant a resumption in funding, the future of the National Land Tenure Program and the Land Observatory remains volatile as these institutions are entirely supported by donors.
- In May 2015, ten years after the 2005 land tenure reform, the Government approved a new letter of land tenure policy to take into account the lessons learned during the application of the new reform. However, following a two-month strike by the cadaster officers' trade union and tense relations with Parliament, the Government has recently had to revise the letter of land tenure policy, taking a step back from the decentralized system envisaged in the original land tenure reform. At the time of writing this idea note, the debate with stakeholders from various parts of Government, civil society and technical and financial partners was still ongoing.

Going forward, and provided tensions within the land tenure sector are resolved, the ER Program can be envisaged to support a formalization of the certification of traditional collective rights. As stated above, under the current law the matter of communally used land (such as land for forests and grazing) still must be addressed. This can be done by taking account of the helpful provisions of the GELOSE law. Certification of community land in the name of a group (such as a forest users association) could be envisaged.

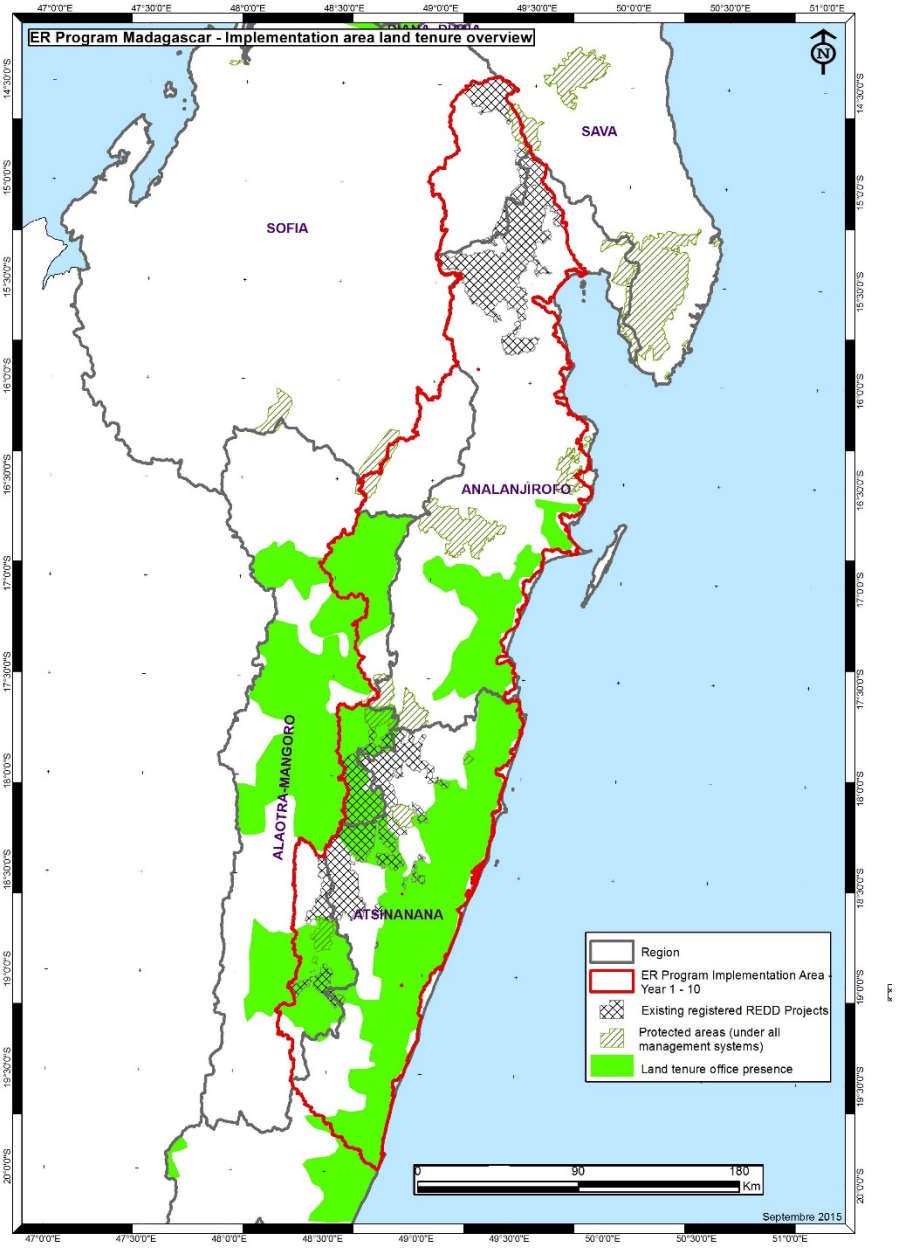


Figure 9: Presentation of the cover of the communal land titling windows within the emissions reduction program implementation area. Source: Comby and al. (2011).

15. Benefit Sharing

15.1 Description of envisioned benefit-sharing arrangement for the proposed ER Program.

Please describe the benefit-sharing arrangements that are envisioned to be used for this proposed ER Program.

The benefit-sharing arrangements of Madagascar's emissions reduction program remain at an embryonic stage and full details are yet to be finalized. However, the following elements can be highlighted:

Building up on the experience of existing REDD projects, of which the benefits distribution scheme is presented in Annex 14, a new distribution scheme is being defined and will be applied to any future REDD-related program. National entities will be responsible for implementation, either directly or through a service provider who will be

remunerated for its service. This distribution scheme, which was already discussed with the different sectors and stakeholders involved during the development of the program is shown in Figure 10 below:

Actors	% of allocated benefits
Municipalities and population	50%
State	20%
BNCR	5%
MRV - Safeguards (for REDD)	10%
Independent verificator	5%
Management costs	2.50%
Marketing	2.50%
Reinvestment	5%
Total	100%

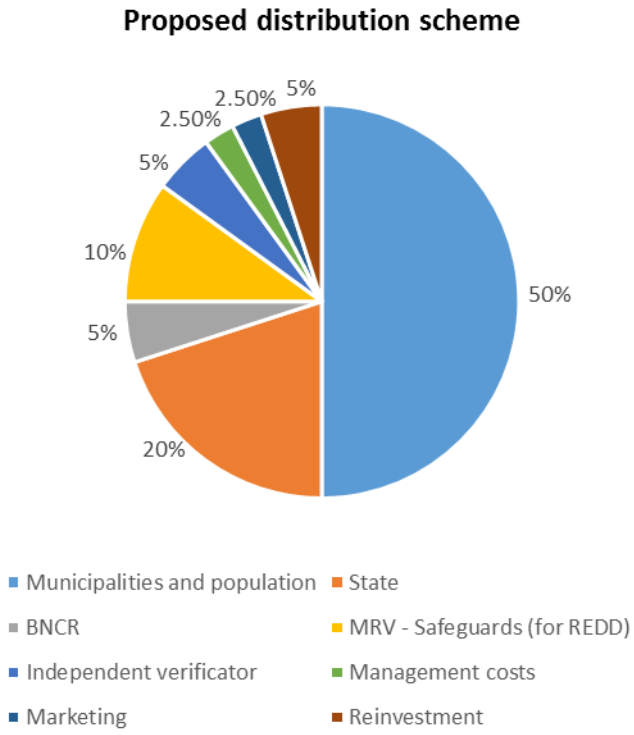


Figure 10: Benefits distribution scheme suggested for implementation in the emissions reduction program.

- Proposed distribution scheme is also considered so as to incorporate a premium (or contingency) corresponding to a "reinvestment" in order to finance the expansion phases but also to absorb any portions of funds representing a penalty for lack of performance of actors within the scheme:
    - It is proposed that all actors are judged on their respective performance during implementation and receive their full share of benefits only if their performance is considered to be optimal. If the performance is not optimal, any difference between the possible share and the level of achievement of this share would then be allocated in the "reinvestment" portion. For example, if an actor reaches a level of achievement of 80 percent and their portion of the benefit-sharing scheme is 20 percent of the total, the actor will only receive 80 percent of the sum representing their share. The difference of 20 percent will be allocated as reinvestment. This suggestion is made in the context of promoting virtuous behavior and a culture of performance among the different actors, but also to accelerate the necessary reinvestment as much as possible;
    - It is also possible that a portion of this part is used for the financing of micro-credit activities. This possibility, remains to be discussed;
    - Tentatively, the share of benefits subject to reinvestment represents 5 percent of the total benefit, and could be "increased" if actors are not performing.
- Distribution scheme also provides for a significant portion of the benefits to be allocated to the operations of the BNCR and the specialized units for MRV and safeguards under REDD+. This dimension is considered essential, in order to ensure the effectiveness and sustainability of these elements, but also so as not to penalize the work of the specialized units if the BNCR is considered non-performing, or vice versa;
- Distribution scheme provides 20 percent of benefits to an entity—labeled indicatively as State—however as it is defined in section 7, the State represents a group of administrative structures as follows:

- All of the parent Ministries and the General Directorates or regional directorates concerned in these jurisdictions;
- This part is also understood to cover a 'Local development fund' which will assume the management of the funds between the State Treasury and communities in particular;
- Finally, a "validation" entity remains to be created, which will evaluate funding applications made by municipalities (*communes*) when they wish to develop projects which have been stipulated for. The role of this validation structure will be to verify that the projects submitted through the mayors or municipal structures represent the wishes of constituents and not just a specific project of a single person or group of privileged persons.
- The State share is therefore being developed and cannot be considered as finalized at this stage.

- Distribution scheme designates a share of 50 percent of benefits to communal municipalities, *communes,* in a broad sense. These municipalities are key players in the emission reduction program and therefore key to ensuring the sustainability of the program. This share will likely be split into three subsets:
  - 5 percent to the *commune* itself, for aspects related to the management of the municipality in the implementation of the emission reduction program and its activities;
  - 5 percent to a structure that brings together the *communes,* known tentatively as a "Public Intercommunal Body" (PIB), which will be active within each watershed, in either through a framework or a broader grouping, such as a region. The grouping of *communes* in a watershed under the aegis of a PIB presents allows for all of the *communes* in a catchment area to be treated equally, regardless of the forest area or intrinsic agricultural areas. This set up remains to be defined;
  - 40 percent to be decided by the inhabitants to use as see fit, decided either by majority vote or by consensus. Proposals falling under this portion of any benefit will be evaluated by the above-mentioned validation structure to ensure that they are in line with the "spirit" of the constituents.
- Finally, the distribution scheme provides a significant share of the benefits to ensure sustainability of an independent auditor, but also marketing and the management of the verified emission reductions credits. These three elements of the benefit-sharing scheme are preliminary and may still be readjusted after assessment of actual costs.

15.2 Link between the envisioned benefit-sharing arrangement and the activities in the proposed ER Program
Please explain how these benefit-sharing arrangements would support the activities identified in section 5.3 to address the drivers of deforestation and forest degradation. Identify, if possible at this stage, potential issues or constraints that may emerge in development of the ER Program that could need additional progress in order to effectively implement the benefit-sharing mechanisms.

The relationship between profit-sharing shares and the proposed activities are summarized in tabular way below (Table 13), specifically for the proposed distribution scheme above:

Table 13: Link between activities and benefit sharing received by stakeholders.

Stakeholder	Share of profits	Responsibility for the activities envisaged	List of the activities implemented (refer to Table 3 in section 5.3)
Municipality and local populations	50%	Municipalities and populations will be the key stakeholders in this program and will implement activities on the ground that will enable the attainment of validated emission reductions credits.	1/2/3/4/5/6/7/8/9/10/11/12 13/14/15/16/17/21/29/30/31 32/33/34/35/36/37/38/39/40 41/42/51/52/54/55/56/57/60
State	20%	The State will both ensure review of the reforms to be implemented and their subsequent implementation. The State will also ensure the implementation of REDD+ in the different administrative bodies to enable an effective and inclusive REDD+ program. It should be noted in	16/17/18/19/20/21/22/23/25 43/44/46/47/48/49/50/51/52 53, 56, 59, 60

		particular that regional forest and environment directorates will carry out the work of forest inventories and analysis of GHG gases other than CO_2, respectively.	
BNCR	5%	The BNCR will coordinate the implementation of the REDD+ mechanism within each Ministerial department and their respective directorates. The BNCR will ensure the effective implementation of the necessary elements of the REDD+ in the country.	23/24/25/26/57
Regional MRV and safeguards unit in REDD+ within the BNCR	10%	This regional cell within the BNCR will assume the responsibilities for measurement, reporting and the prior verification (monitoring and quality control) and the monitoring and compliance with the guarantees under REDD+. This unit will assume, in particular, the work of remote sensing by itself and synthesizing reports from other structures for annual progress reporting on REDD+.	27/28
Independent auditor	5%	The independent auditor will assume the responsibility for verification of measurements but also the quality of analyses and reports at all levels. This structure is required to make field visits to validate certain results.	21/22/23/24/25/26/27/28/57 59
Management fees	2.5%	This share will be used to fund management fees necessary for financial management of funds and various transfers which will be carried out. It is likely that a management authority of the State will be in charge of the process and beneficiary of this part for its functions if the operational performance is adequate.	Activities that are not part of the program
Marketing	2.5%	This share will be used to market validated emission reductions credits. It is likely that a specialized commercial agency will be paid for this work.	30/34/35/54/55
Reinvestment	5%	This share will be used to render the program sustainable and to implement the various phases of expansion anticipated in the 25-year lifetime of the program. This part may also be used to finance micro-credit in the implementation of the program area. There is no specific stakeholder identified to manage this part, and it is likely that the actor of "management costs" will be the manager of this share.	58 + financing of all activities for the expansion phases

A local development committee, composed of representatives of the municipality (mayor and municipal advisors), the fokontany, and the local community will be put in place jointly by the municipality and the local population. Its task will be to decide the type of activities eligible for the use of the 50% share of the benefits from the ER Programme that will be allocated to the municipalities and the local populations. This is to ensure that local populations are actually taken into account.

At this stage it is too complex to identify the constraints in a precise manner. It is important as a first step to finalize the benefit-sharing scheme before identifying the operational modalities and associated constraints. This has not yet been done, and would form part of the development phase of the ERPD.

15.3 Progress on benefit-sharing arrangements
Describe the progress made thus far in the discussion and preparation of the benefit-sharing arrangements, and who has been participating in this process.

The proposals for benefit-sharing of revenues that are generated by the sale of emission reduction credits will be the subject of discussions during the preparation of the program.

The existing REDD pilot projects are all designed on a principle of avoided deforestation in the newly created protected areas and with Community approach. The basis of these projects is, however, quite different and the justification for the benefit sharing can also be different. Existing REDD+ projects are all designed on the principle of avoided deforestation in newly created protected areas. They incur no development costs to generate the ER, and the reason for engaging in REDD+ projects was, at least in part, to generate sustainable funding for the management of protected areas. An immutable facet of the proposal for income generation was that 50 percent of revenues were to be placed at the disposal of the communities living around the periphery of the protected areas.

In order to meet these two objectives, the financing of the management of protected areas and the creation of income for riverine communities of protected areas, the benefit-sharing agreement reached was as follows:

- Government of Madagascar: 20%;
- Implementing Agency: 20%;
- MRV: 10%;
- Community projects: 50%.

One feature of this agreement was that the funds for riparian communities would be routed through an environmental Foundation, Tany Meva, which would receive and approve community grant proposals and oversee their implementation. There were many lessons to be learned from this experience and the prior existence of three REDD+ projects that are of great value to the preparation of the ER-PIN. These lessons include the fact that the Government had capacity constraints and was not able to increase the intensity of activities for guarding, or "policing" forests, in exchange for its share of revenues. In Makira at least, the implementing agent, an international NGO, wasn't able to sell all the carbon credits that were generated, with the result that income was lower than expected. There was therefore not enough money for park management activities. Other means of revenue collection had to substitute for the anticipated revenues. Community projects were much more complex to design and manage than expected, and thus generated higher management costs than assumed. Only the MRV component, contracted to an independent international NGO of the forestry sector, was relatively simple.

The design and preparation process of Madagascar's proposal takes these lessons into account and will ensure that future benefit-sharing schemes are realistic, in terms of actual costs incurred, as well as in terms of activities and options for unrealized options. The main differences as reported in section 15.1 reside in a real payment for actual service, and reinvestment of any portion considered as non-eligible due to lack of effectiveness. This approach is considered to be useful for promoting a high quality work delivery. Nevertheless, these differences do require significant and important work in their design, which remains to be undertaken.

For more information, a more detailed description of current REDD+ projects implemented in Madagascar are to be found in Annex 15.

16. Non Carbon Benefits

16.1 Expected social and environmental benefits
Please describe the environmental and social benefits, other than emission reductions, that the proposed ER Program is planning to achieve; and any other ways in which the ER Program would contribute to broader sustainable development.

An analysis of the non-carbon benefits generated by each activity proposed within the context of the implementation of the program for reducing emissions appears in Annex 16.

It is through improvements to agriculture, and thus to livelihoods, that the co-benefits will be the most important, thanks to the reduction of the practice of Tavy that constitutes the main cause of deforestation. The development of new agricultural practices (intensification and diversification of production), accompanied by the practice of agroforestry will increase the productivity plots, preserve and increase the productivity of the soil and reduce the cost of infrastructure maintenance. This overall improvement will allow households to achieve food stability and dispose of surplus that they will be able to sell to supplement their income. This co-benefit will allow households to get out of a "survival situation" and benefit from food security together with a small additional income.

These agriculture related activities will also have a positive impact on health by diversifying the food supply. Afforestation and reforestation will itself have a very positive impact on the local climate regulation by carbon storing. Moreover, water regulation, which is at the heart of this sector, will be also better managed thanks to the new arrangements and planning put in place; the structure of soils and all fauna and flora will be also better preserved due to new, more environmentally friendly practices.

The development of new forms of energy and improved yields related to the use of wood energy should reduce emissions of CO_2 from deforestation, improve the well-being of populations, but also change their behavior with regard to the use of energy resources. Finally, it is important to note that the sectors linked to the exploitation of forest resources will from now participate in the land tenure security and a better supply of the market.

A key co-benefit of this program is the securing of forest energy resources, allowing the progressive phasing out of the degradation and deforestation process typically associated with the practice of collecting fuelwood. Once implemented, the emissions reduction program will allow households to access new wood thanks to a new management plan, thereby sustaining the resource at the same time as commercializing it.

A significant number of benefits of the proposed strategy are socio-economic and environmental. The plans of the sustainable management of soils will have an anti-erosion effect protecting more effectively the soil and biodiversity. The new governance policy and the strengthening of sectoral policies will foster the creation of new 'non-land' jobs, new markets by supporting the economy as well as securing the land tenure to avoid poor utilization of forest resources. Emissions of CO_2 should also decrease through more sustainable production systems.

Finally, the program will generate benefits for biodiversity. The existing REDD+ projects in Madagascar have started from a principle of forest preservation and the consequent avoided deforestation. They therefore have biodiversity conservation at the heart of their purpose. The present ER program is concentrating on the reconstitution of degraded forest lands, lands from which the forest and its biodiversity have been lost. But the rationale, from the standpoint of the biodiversity co-benefits, is that the reconstitution of these degraded lands will permit the expansion of forest, and the consequent re-uniting of newly-isolated forest fragments. While the quality of such forest (in terms of species richness) will be poor, it will constitute a process of gradual restoration of forests, which will have undoubted biodiversity benefits. We will not rehearse again here, the enormous value of Madagascar's biodiversity, in terms of the exceptionally high levels of endemism, both of plant and animal species.

A vision of co-benefits from the scale-up of the project over 25-year period is presented in Annex 17**.**

16.2 Diversity and learning value
Please describe the innovative features of the proposed ER Program and what learning value the proposed ER Program would bring to the FCPF Carbon Fund.

Several points highlight the innovative aspects of the Madagascar proposed ER Program, including:

The approach itself, which is at the landscape level, allowing the tackling of deforestation issues in a holistic way because the approach considers the watershed i) spatially in its entirety (from the ridges to the bottomlands and the streams) and ii) across different sectors (agriculture, energy, environment, etc.). Therefore, the landscape approach ensures that all dimensions that have contributed to the deforestation and degradation in the first place, will be

addressed across these very functional landscape units. This will in turn contribute to the country's sustainable development. Inter-sectoral collaboration has always been a challenge in Madagascar in the past but the preparation of this ER-program particularly showed the willingness of different ministries (to the highest level of the 3 main sectors: Energy, Agriculture and Environment) to collaborate and work together for a common goal, which is sustainable development.

Subsequent to this first point, the ER Program has a long term vision: in fact, the 10 year timeframe which would be the lifetime of the program will allow to generate income that will then be used to sustain and upscale the implementation of the activities from the initial 14 watersheds in 3 regions to an eventual total of 39 watersheds in 6 regions by the year 25. This long term vision planning was never really possible in the past due to the limitation of interventions of programs/projects to 2 to 5 years on average; which does not allow enough time for real transformational changes to happen on the ground.

The proposed ER program takes into account a big part of the country's forest that has been left out of consideration until now despite its substantial potential in generating carbon stocks: the degraded forests. In the ER Program, this forest stratum will be taken into account in the development of the REL. Since to date, there is no reliable data on the forest growth (carbon stock increment) in Madagascar, the ER Program will help understand more about the humid forest regeneration rate, and have a more precise idea on its potential, not only for carbon but for other dimensions (including watershed protection, soil conservation, fuelwood production and the restoration of the connectivity between forest fragments). This will allow the development of the best management possible for this forest stratum from the ecological, economic and social points of view.

17. Progress on registries

17.1 National registry

Please include a short description of the relationship of the proposed ER Program to national REDD+ activity management arrangements, and if the proposed ER Program will be part of any system to track REDD+ or other emissions reduction activities (e.g., a REDD+ registry).

Article 5 of the decree creating the BNCR establishes that the office will be responsible for the conception and management of a REDD+ registry. The registry will be created over the course of the proposed ER Program preparation.

A complementary decree will establish that the *Bureau National de Coordination pour les Changements Climatiques* (BNC-CC) will be responsible for the conception and management of a national carbon registry (including emissions from reduced deforestation and degradation). Two technicians from BNC-CC have already received training on carbon registry management financed by the Common Market for Eastern and Southern Africa (COMESA). The REDD+ registry will be designed in such a way that allows easy data transfer to the national carbon registry.

The proposed ER Program will be fully aligned with such management arrangements.

Development of the REDD+ registry will follow a phased approach, starting with basic features (capturing core information for each REDD+ project or governmental program, tracking activities and performance, tracking the location of projects or programs with GPS coordinates in order to avoid double counting) and with an increasing complexity depending on capacity and needs.

18. List of acronyms used in the ER-PIN

Please include an explanation of any institutional or other acronyms used. Add rows as necessary.

Acronym	Meaning
AFD	French Development Agency
AGB	Above Ground Biomass

AMVR	Developing rural areas
AP	Protected Areas
BGB	Below Ground Biomass
BNC-CC	National Coordination Office for Climate Change
BNCR	REDD+ National Coordination Office
BVPI	Watersheds and Irrigation Project
CAZ	Corridor Ankeniheny-Zahamena
CBD	Convention on Biological Diversity
CEC	Certificate of Environmental Compliance
CEPF	Critical Ecosystem Partnership Fund
CIME	Interministerial National Steering Committee
CIMF	Interministerial Committee on Mines and Forests
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COAP	Protected Areas Code
COBA	Local Community
COMATSA	Corridor Marojejy-Anjanaharibe-Tsaratanana
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties (to the UNFCCC)
COPIL	Steering Committee
CRGPE	Regional Committee for Management of Environmental Complaints
CRIF	Resources and Land Information Centers
CSO	Civil Society Organization
CTD	Decentralized Territorial Municipalities
DGE	General Directorate for the Environment
DGF	General Directorate for Forests
DREEMF	Regional Director of the Ministry of the Environment, Ecology, Sea and Forests
DRS	Defence and Land Restoration
EIA	Environmental Impact study
ERP	Emissions Reduction Program
ERPA	Emission Reductions Payment Agreement
ERPD	Emission Reductions Program Document
ER-PIN	Emission Reductions Program Idea Note
ERs	Emission Reductions
ESMF	Environmental and Social Management Framework
FAPBM	Madagascar Biodiversity Fund
FCPF	Forest Carbon Partnership Fund
FDL	Local Development Fund
FFEM	French Global Environment Facility
Fin. Management	Financial Management
FKL	Fokonolona
FKT	Fokontany

GCF	Contractualized Forest Management
GDP	Gross domestic product
GELOSE	Local Management of Renewable Natural Resources
GIS	Geographic Information System
GIZ	German Corporation for International Cooperation
GoM	Government of Madagascar
HCPF	Holistic Conservation Program for Forests
HDI	Human development index
IFDD	Institute of la Francophonie for the sustainable development
IGA	Income Generating Activities
INDDL	National Institute for Decentralization and Local Development
INSTAT	National Statistical Institute of Madagascar
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
KoloAla	Sustainable forest management system
LTLP	Land Tenure Local Plan
MAEP	Ministry of Agriculture, Livestock and Fisheries
MECIE	Decree for Environmental Compliance of Investments
MEF	Ministry of Environment and Forests
MEEMF	Ministry of Environment, Ecology, Sea and Forests
MFI	Micro Finance Institution
MGP	Complaints Management Mechanism
MMU	Minimum Mapping Unit
MNP	Madagascar National Parks
MRV	Monitoring, Reporting and Verification
NAP	New Protected Areas
NDP	National Development Plan
NGO	Non-Governmental Organization
NLP	National Land Program
ONE	National Office for the Environment
OPCI	Inter-Communal Public Entity
OPJ	Judicial Police Officer
PA Management	Public Assistance Management
PADAP	Sustainable Agriculture Program based on Landscape Approach
PND	National Development Plan
PNDR	National Rural Development Program
PANA	National Action Program of Adaptation
PASR	Populations Affected by the REDD+ Strategy
PE3	Environmental Program – 3rd Phase
PEEDD	National Education Policy on Sustainable Development relative to the Environment
PERR-FH	REDD Eco-Regional Project in the Eastern Rainforest
PFNL	Non-Harvestable Forest Products

PGE	State General Policy
PGESS	Plan of Environmental Management and Social Security
PLOF	Local Plan of Land Occupation
PND	National Development Plan
PNDR	National Rural Development Program
PNIA	National Agricultural Investment Plan
PPP	Public Private Partnership
PSAEP	Sector Policy for Agriculture, Livestock, and Fisheries
PSE	Payment for Ecosystem Services
QMM	QIT Madagascar Minerals
RAMSAR	Convention on Wetlands of International Importance
REDD / REDD+	Reducing Emissions from Deforestation and Forest Degradation
REL / RL / FRL	Reference Emission Level/ Reference Level / Forest Reference Level
RLIC	The Resource and Land Information Centres
R-PIN	Readiness Plan Idea Note
R-PP	Readiness Preparation Proposal
SAPM	Madagascar Protected Areas System
SCV	Systems of Permanent Vegetal Coverage
SEA	Strategic Environmental Assessment
SESA	Strategic Environmental and Social Assessment
SIFEE	International Francophone Secretariat Francophone for Environmental Evaluation
SNAT	National Land-Use Plan
SNSF	National Forest Monitoring System
SRA	System of Enhanced Rice Production
SRAP	REDD+ Strategy Affected Populations
SRI	System of Rice Intensification
STD	Decentralized Technical Services
TFP	Technical and Financial Partners
TGRN	Natural Resource Management Transfers
TPI	Court of First Instance
TPP	Titled Private Property
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
USD	United States Dollars
VCU / VCS	Verified Carbon Units / Verified Carbon Standard
VOI	Vondron'Olona Ifotony (legally binding local associations within a village)
WCS	Wildlife Conservation Society
ZAF	Land management zones

Annexes

Annex 1: Endorsement Letter of the Emissions Reduction Program Idea Note (ER-PIN).

REPOBLIKAN'I MADAGASIKARA
Fitiavana - Tanindrazana - Fandrosoana

Antananarivo, 11 SEPT 2015

The Minister of the Environment, Ecology,
Sea and Forestry
The Minister of Agriculture
Le Minister of Energy and Hydrocarbons

to

Madam Ellysar BAROUDY
Executive Secretary of the Forest Carbon Partnership Fund
WASHINGTON
UNITED STATES

N° 476 -15/MEEMF/Mi

Subject: Endorsement Letter of the Emissions Reduction Program Idea Note(ER-PIN) in Madagascar.

Madam,

In our capacity as Minister of Environment, Ecology, Sea and Forestry, Minister of Agriculture and Minister of Energy and Hydrocarbons in Madagascar, we confirm that the ideas notes referred to above:

(a) is in line with the national priorities of our government, the National Development Program implementation and commitments to international conventions on the environment, agriculture and energy;

(b) has been discussed with relevant stakeholders, including civil society, local communities and vulnerable populations basis.

Also, we are pleased to affirm our support for the candidacy of Madagascar to the FCPF process of preparing an Emission Reduction Program (ER-PIN) and are committed to implement in case of its approval.

Sincerly Yours

LE MINISTRE DE L'ENVIRONNEMENT, DE L'ECOLOGIE, DE LA MER ET DES FORETS

Raivo BEBOARIMISA

Ministre de l'Energie et des Hydrocarbures

Gatien HORACE

LE MINISTRE DE L'AGRICULTURE

RAVATOMANGA Roland

Annex 2: The list of measures, projects and programs implemented in the territory of Madagascar delimiting country's forest protection engagement.

- The Environment Charter, 1990 (last update in 2014);
- The National Action Plan for Environment; (PNAE), 1990;
- The creation of Madagascar National Parks system (MNP), 1991, continuously being updated;
- Ratification of the National Biodiversity Strategy, 1995;
- The Act 96-025 on the Local Management of Renewable Natural Resources (GELOSE), 1996;
- The Act 97-1200 on National Forestry Policy, 1997 (now under supervision);
- The Act 97-017 modificating Forest Legislation, 1997;
- The Action Plan for Rural Development (PADR), 1999;
- The decree 2001-122 fixing implementation conditions of state owned forests (named GCF, Contractualized Forest Management), 2001;
- The creation of the System of Protected Areas, 2003, (currently being updated);
- Decree for Environmental Compliance of Investments (MECIE), 2004;
- National reforestation strategy (NRS), 2004;
- Policy Note on Rural Development, 2004;
- Establishment of the Inter-Ministerial Mining and Forest Commission and the Interministerial Committee on Mines and Forests (CIMF), both in 2004;
- The National Program for Rural Development (PNDR), 2005;
- The National Action Program of Adaptation (PANA), 2006;
- The Agriculture, Livestock, and Fisheries Sector Policy (PSAEP), 2008;
- Sectorial Program for Agriculture (PSA), 2008;
- The National Strategy for Country Planning, 2008, and consecutive elaboration of 22 country planning regional schemes (in progress);
- The National Policy on Climate Change, 2010;
- The Environment Policy for Sustainable Development, signed in December 2013 (currently in process of validation);
- The New Act on Decentralization (2014);
- The Protected Areas Code (COAP), as amended on February 26, 2015;
- Numerous decrees for final establishment of protected areas recently adopted by the Malagasy Government, 2015;
- The New Energy Policy; currently being developed
- The Land Policy paper (in process of validation);
- Act on Public Private Partnership (PPP) expected late 2015.

A deeper description of main laws and measures guiding country's forest protection management:

National Land Program (NLP)

Madagascar has initiated a vast program called the National Land Program to solve its two main causes of deforestation and forest degradation, the traditional practice of slash and burn agriculture ('Tavy') and clearing. These two factors aggravate land shortage of Madagascar, further aggravated by population growth. Moreover, much state land used for agricultural purposes and forest land (protected areas, national forest estate) is not titled and demarcated, which causes the reluctance of the private sector to invest in forestry. Hence, the anticipated National Land Program aims to establish a land management regime favorable for private investment, agricultural production, management, protection and renewal of natural resources and the development of decentralized authorities in providing territorial and fiscal management tools, and strengthening social cohesion at the local and communal levels. As part of this strategy, communal land titling windows were already created and land certificates were distributed to the COBA, as for example in Alaotra-Mangoro region. Moreover, the Interministerial Forest and Land Tenure Committee was created to address and clarify legal situations in forest areas (parks, protected areas, etc.) as well as to avoid overlaps between forests and mining or forests and agricultural operations, respectively.

The preparation of the National Land-Use Plan (SNAT).
Improved land use planning has been conducted as part of the land planning National Policy; the National Land-Use Plan (SNAT) was launched in 2008. The SNAT is a tool which ensures synergy and coherence of sector interventions across the country.

The act 96-025 on the Local Management of Renewable Natural Resources (GELOSE)
GELOSE concerns management transfers of all types of natural resources while Contracted Forest Management without patrimonial negotiation is only for forest resources. The lack of land security and mediator failed to involve decentralized community. The evaluation of delegated management (Resolve, 2004) highlighted a reduction in forest clearing and greater community responsibility over resources. It also demonstrated the displacement pressure towards other areas (the phenomenon of leakage).

Decree for Environmental Compliance of Investments (MECIE)
The most important mineral resources in Madagascar lie beneath forests: this creates a permanent conflict between the two sectors. The damage is particularly severe for small and illegal mining operations that develop chaotically. For large mines, the implementation of the mining administration legislation MECIE assists mine administration to control them in general. A mining-forests Interministerial Committee was set up to deal on a case by case basis where mining sites are superimposed over forests issues.

National reforestation strategy (NRS)
Despite vast potential of the use of renewable sources of energy (solar, wind, biomass etc.), more than 90% of Malagasy population still uses timber as its main energetic resource. Hence, a National reforestation strategy was developed in 2004 to promote trees plantation for energetic purposes (followed by further regional and local strategies). Since that time, more than 140 000 ha of peasant plantings of eucalyptus as well as 65 000 ha of industrial plantations of pine were launched as part of these strategies.

Annex 3: Relation between activities in the proposed ER Program and the emerging REDD+ strategy.

Topic		Proposed activity	Puller of the emerging REDD+ strategy															
			Strategic option 1: Improve the national policy framework of the				Strategic option 2: Create incentives for sustainable management				Strategic option 3: Enhance monitoring, forest control and law				Strategic option 4: Develop and promote alternatives to			
			Sub-option 1.1 : Harmonize the protection and production strategy	Sub-option 1.2 : Complete and improve legal framework	Sub-option 1.3 : Promote public and private stakeholders integration	Sub-option 1.4 : Assist the integration of others sectors linked to REDD+	Sub-option 2.1 : Improve forest sector planning	Sub-option 2.2 : Promote sustainable management of forest resources	Sub-option 2.3 : Encourage afforestation and restoration of forest degraded areas	Sub-option 2.4 : Improve efficiency in use of wood-based forest products	Sub-option 3.1 : Enhance monitoring and forest control	Sub-option 3.2 : Improve law enforcement	Sub-option 3.3 : Building stakeholders capacities	Sub-option 3.4 : Monitor the sector governance	Sub-option 4.1 : Harmonize the expansion of agricultural lands	Sub-option 4.2 : Optimize agricultural production systems and livestock	Sub-option 4.3 : Promote rural development	Sub-option 4.4 : Reorganize mining industry
AGRICULTURE	1	Agroforestry													X	X		
	2	Agricultural cash-crops sector (coffee, cacao, vanilla, pepper, clove, pink pepper)																
	3	Terrace cultivation																
	4	Development of Micro-irrigation systems																
	5	Contour farming																
	6	Development of conservation agriculture and agroecology																
	7	Improvement of agricultural techniques (natural fertilizer, techniques, seeds)											X			X		
	8	Hydro-agricultural infrastructures (water control, irrigation, draining system) – setting up and standards																
	9	Maintenance of hydro-agricultural infrastructures																
	10	Fish farming and integrated livestock-fish farming																
	11	Rice-fish culture																
	12	Development of Apiculture													X	X		
	13	Development of nurseries for wood and planting material																
AGROFORESTRY	14	Crops and plants protection against pests and insects																
FORESTRY - ENERGY	15	Afforestation and reforestation (fuelwood and timber, private or communal – development of this sector with private company)	X						X	X								
GOVERNANCE - REDD	16	Increase protected areas management transfers			X													
	17	Accompanying development of fuelwood (carbonization, improved stoves) and alternative energy (biofuels, biogaz) sectors								X								
	18	Labeling homemade products																
	19	Promoting stakeholder's synergy (law application)										X						
	20	Taxes and charges collection of homemade products																
	21	Land tenure																
	22	National strategy reinforcement and implementation of administrative reforms		X							X			X	X			
	23	Intersectoral advocacy then involvement of the local, regional and national authorities in the REDD+ programme			X	X												
	24	Environmental NGOs involvement in the REDD+ programme			X													
	25	Development of public and private partnerships for the REDD+ programme (local people, community, private sector, government)			X													
	26	Creation of a spatial and technical database – REDD+ setting																
	27	Development of the MRV system (measurement, analysis and reporting)																
	28	Development of the social and environmental safeguards system				X												

Topic		Proposed activity	Puller of the emerging REDD+ strategy															
			Strategic option 1: Improve the national policy framework of the				Strategic option 2: Create incentives for sustainable management				Strategic option 3: Enhance monitoring, forest control and law				Strategic option 4: Develop and promote alternatives to			
			Sub-option 1.1 : Harmonize the protection and production strategy	Sub-option 1.2 : Complete and improve legal framework	Sub-option 1.3 : Promote public and private stakeholders integration	Sub-option 1.4 : Assist the integration of others sectors linked to REDD+	Sub-option 2.1 : Improve forest sector planning	Sub-option 2.2 : Promote sustainable management of forest resources	Sub-option 2.3 : Encourage afforestation and restoration of forest degraded areas	Sub-option 2.4 : Improve efficiency in use of wood-based forest products	Sub-option 3.1 : Enhance monitoring and forest control	Sub-option 3.2 : Improve law enforcement	Sub-option 3.3 : Building stakeholders capacities	Sub-option 3.4 : Monitor the sector governance	Sub-option 4.1 : Harmonize the expansion of agricultural lands	Sub-option 4.2 : Optimize agricultural production systems and livestock	Sub-option 4.3 : Promote rural development	Sub-option 4.4 : Reorganize mining industry
INCOME GENERATING ACTIVITIES (IGAs)	29	Development of service providers (supply center, facilities, etc.)																
	30	Development of market gardens and subsistence crops for livelihood and selling in all watersheds areas with contour farming and terrace cultivation (including growing off-season crops)													X	X		
	31	Development of short-cycle livestock farming (pig and chicken)													X	X		
	32	Development of the basketry sector as an utilitarian object															X	
	33	Storage and processing structures for IGA's products depending on communal services as well as water and energy availability															X	
	34	Local market – development and renovation, strategic choices depending on communal services as well as water and energy availability															X	
	35	Valorization of forest resources (timber and non-timber forest products, essential oils)						X		X								
CAPACITY BUILDING	36	Technical assistance, awareness, capacity building linked with specific training on erosion (processing and prevention)											X					
	37	Technical assistance, awareness, capacity building with specific training on agroforestry and afforestation											X					
	38	Technical assistance, awareness, capacity building with specific training on terrace cultivation and irrigation											X					
	39	Contou farming planning																
	40	Technical assistance, awareness, capacity building with specific training on conservation agriculture and agroecology											X					
	41	Technical assistance, awareness, capacity building with specific training on agricultural techniques improvement											X					
	42	Technical assistance, awareness, capacity building with specific training on crops and plants protection against pests and insects											X					
RESOURCE MANAGEMENT - FOREST - PROTECTION	43	Active ecosystem restoration for degraded forests	X						X									
	44	Passive ecosystem restoration with natural regeneration for degraded forests	X						X									
	45	Firefighting (awareness and firewall management)	X															
	46	Conservation / protection	X					X										

Topic		Proposed activity	Puller of the emerging REDD+ strategy															
			Strategic option 1: Improve the national policy framework of the				Strategic option 2: Create incentives for sustainable management				Strategic option 3: Enhance monitoring, forest control and law				Strategic option 4: Develop and promote alternatives to			
			Sub-option 1.1 : Harmonize the protection and production strategy	Sub-option 1.2 : Complete and improve legal framework	Sub-option 1.3 : Promote public and private stakeholders integration	Sub-option 1.4 : Assist the integration of others sectors linked to REDD+	Sub-option 2.1 : Improve forest sector planning	Sub-option 2.2 : Promote sustainable management of forest resources	Sub-option 2.3 : Encourage afforestation and restoration of forest degraded areas	Sub-option 2.4 : Improve efficiency in use of wood-based forest products	Sub-option 3.1 : Enhance monitoring and forest control	Sub-option 3.2 : Improve law enforcement	Sub-option 3.3 : Building stakeholders capacities	Sub-option 3.4 : Monitor the sector governance	Sub-option 4.1 : Harmonize the expansion of agricultural lands	Sub-option 4.2 : Optimize agricultural production systems and livestock	Sub-option 4.3 : Promote rural development	Sub-option 4.4 : Reorganize mining industry
LAND USE PLANNING	47	DRS (Soil Defence and Restoration)																
	48	Anti-erosion measures (Lavaka)																
	49	Land use planning: urban area, fields and forestry sector; governance structures, plans, water distribution system and electricity					X								X			
	50	Construction and route maintenance for transporting IGA and agricultural products																
ENERGY	51	Pico and Micro Waterpower - depending on locations – generation, distributing, selling	X															
	52	Dissemination of improved stoves construction techniques and monitoring	X							X								
	53	Development of alternative energy																
TOURISM	54	Seaside tourism																
	55	Community based ecotourism (welcoming and tourist guiding)																
AWARENESS - EDUCATION	56	Energy efficiency awareness																
	57	Community awareness for REDD+ programme (landscape approach)			X													
ECONOMY	58	Promotion of saving, loans, access to microcredit, local cooperative development															X	
LAW - JUSTICE	59	Law enforcement		X								X						
SOCIAL	60	Awareness and setting-up of family planning in rural and urban areas																

Annex 4: Relation between activities in the proposed ER Program and key elements of the national development framework.

Topic		Proposed activity	Puller of the emerging REDD+ strategy		PND		Climate Change National Strategy		Letter on Sector Policy Agriculture, Livestock, Fisheries	
			Link	Ministry	Link	Ministry	Link	Ministry	Link	Ministry
AGRICULTURE	1	Agroforestry	X	Ministry of Agriculture			X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	2	Development of agricultural cash-crops sector (coffee, cacao, vanilla, pepper, clove, pink pepper)	X	Ministry of Agriculture			X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	3	Terrace cultivation					X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	4	Development of Micro-irrigation systems								
	5	Contour farming								
	6	Development of conservation agriculture and agroecology					X	Ministry of Agriculture	X	Ministry of Agriculture
	7	Improvement of agricultural techniques (natural fertilizer, techniques, seeds)	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training, Ministry of Agriculture	X	Ministry of Agriculture	X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	8	Hydro-agricultural infrastructures (water control, irrigation, draining system) – setting up and standards			X	Ministry of Agriculture, Ministry of Water, Hygiene and Sanitation	X	Ministry of Agriculture	X	Ministry of Agriculture, Ministry of Water, Hygiene and Sanitation
	9	Maintenance of hydro-agricultural infrastructures			X	Ministry of Agriculture, Ministry of Water, Hygiene and Sanitation	X	Ministry of Agriculture	X	Ministry of Agriculture, Ministry of Water, Hygiene and Sanitation
	10	Fish farming and integrated livestock-fish farming					X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	11	Rice-fish culture					X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	12	Development of Apiculture	X	Ministry of Agriculture	X	Ministry of Agriculture, Ministry of Livestock, Ministry of Economy and Planning	X	Ministry of Agriculture	X	Ministry of Higher Education and Research
	13	Development of nurseries for wood and planting material					X	Ministry of Agriculture		
AGROFORESTRY	14	Crops and plants protection against pests and insects								
FORESTRY - ENERGY	15	Afforestation and reforestation (fuelwood and timber, private or communal – development of this sector with private company)	X	Ministry of Environment, Ministry of Energy and Oils						
GOVERNANCE - REDD	16	Increase protected areas management transfers	X	Ministry of Environment						
	17	Accompanying development of fuelwood (carbonization, improved stoves) and alternative energy (biofuels, biogaz) sectors	X	Ministry of Energy and Oils			X	Ministry of Energy and Oils		
	18	Labeling homemade products								
	19	Promoting stakeholder's synergy (law application)	X	Ministry of Justice						
	20	Taxes and charges collection of homemade products								
	21	Land tenure	X		X	?			X	Ministry of Agriculture, Ministry of National Planning ?
	22	National strategy reinforcement and implementation of administrative reforms	X	Ministry of Environment, Ministry of Justice	X	Ministry of Environment, Ministry of Justice				
	23	Intersectoral advocacy then involvement of the local, regional and national authorities in the REDD+ programme	X	Ministry of Industry, Private Sector Development						
	24	Environmental NGOs involvement in the REDD+ programme	X	Ministry of Industry, Private Sector Development						
	25	Development of public and private partnerships for the REDD+ programme (local people, community, private sector, government)	X	Ministry of Industry, Private Sector Development	X	Ministry of Industry, Private Sector Development	X	Ministry of Industry, Private Sector Development		
	26	Creation of a spatial and technical database – REDD+ setting	X	Ministry of Environment						
	27	Development of the MRV system (measurement, analysis and reporting)	X	?						
	28	Development of the social and environmental safeguards system	X							

Topic		Proposed activity	Puller of the emerging REDD+ strategy		PND		Climate Change National Strategy		Letter on Sector Policy Agriculture, Livestock, Fisheries	
			Link	Ministry	Link	Ministry	Link	Ministry	Link	Ministry
INCOME GENERATING ACTIVITIES (IGAs)	29	Development of service providers (supply center, facilities, etc.)			X	Ministry of Agriculture, Ministry of Livestock, Ministry of Economy and Planning				
	30	Development of market gardens and subsistence crops for livelihood and selling in all watersheds areas with contour farming and terrace cultivation (including growing off-season crops)	X	Ministry of Agriculture,				Ministry of Agriculture	X	Ministry of Higher Education and Research
	31	Development of short-cycle livestock farming (pig and chicken)	X	Ministry of Agriculture, Ministry of Livestock	X			Ministry of Livestock	X	Ministry of Higher Education and Research
	32	Development of the basketry sector as an utilitarian object	X	Ministry of Agriculture, Ministry of Economy and Planning, Ministry of Industry, Private Sector Development	X	Ministry of Agriculture, Ministry of Livestock, Ministry of Economy and Planning				
	33	Storage and processing structures for IGA's products depending on communal services as well as water and energy availability	X	Ministry of Agriculture, Ministry of Economy and Planning, Ministry of Industry, Private Sector Development	X	Ministry of Agriculture, Ministry of Livestock, Ministry of Economy and Planning			X	Ministry of Agriculture, Ministry of Economy and Planning
	34	Local market – development and renovation, strategic choices depending on communal services as well as water and energy availability	X	Ministry of Agriculture, Ministry of Economy and Planning, Ministry of Industry, Private Sector Development	X	Ministry of Agriculture, Ministry of Livestock, Ministry of Economy and Planning				
	35	Valorization of forest resources (timber and non-timber forest products, essential oils)	X	Ministry of Environment, Ministry of Energy and Oils						
CAPACITY BUILDING	36	Technical assistance, awareness, capacity building linked with specific training on erosion (processing and prevention)	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training		Ministry of Agriculture, Ministry of Livestock, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Employment, Technical Education and Vocational Training
	37	Technical assistance, awareness, capacity building with specific training on agroforestry and afforestation	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training		Ministry of Agriculture, Ministry of Livestock, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Employment, Technical Education and Vocational Training
	38	Technical assistance, awareness, capacity building with specific training on terrace cultivation and irrigation	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training		Ministry of Agriculture, Ministry of Livestock, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Employment, Technical Education and Vocational Training
	39	Contou farming planning								
	40	Technical assistance, awareness, capacity building with specific training on conservation agriculture and agroecology	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training		Ministry of Agriculture, Ministry of Livestock, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Employment, Technical Education and Vocational Training
	41	Technical assistance, awareness, capacity building with specific training on agricultural techniques improvement	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training		Ministry of Agriculture, Ministry of Livestock, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Employment, Technical Education and Vocational Training
	42	Technical assistance, awareness, capacity building with specific training on crops and plants protection against pests and insects	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Higher Education and Research, Ministry of Employment, Technical Education and Vocational Training		Ministry of Agriculture, Ministry of Livestock, Ministry of Employment, Technical Education and Vocational Training	X	Ministry of Employment, Technical Education and Vocational Training
RESOURCE MANAGEMENT - FOREST - PROTECTION	43	Active ecosystem restoration for degraded forests	X	Ministry of Environment						
	44	Passive ecosystem restoration with natural regeneration for degraded forests	X	Ministry of Environment						
	45	Firefighting (awareness and firewall management)	X		X	Ministry of Environment				
	46	Conservation / protection	X	Ministry of Environment	X	Ministry of Environment		Ministry of Environment		

Topic		Proposed activity	Puller of the emerging REDD+ strategy		PND		Climate Change National Strategy		Letter on Sector Policy Agriculture, Livestock, Fisheries	
			Link	Ministry	Link	Ministry	Link	Ministry	Link	Ministry
LAND USE PLANNING	47	DRS (Soil Defence and Restoration)								
	48	Anti-erosion measures (Lavaka)								
	49	Land use planning: urban area, fields and forestry sector; governance structures, plans, water distribution system and electricity	X	Ministry of Agriculture, Ministry of National Planning ?	X	Ministry of National Planning ?		Ministry of National Planning ?	X	Ministry of National Planning ?
	50	Construction and route maintenance for transporting IGA and agricultural products								
ENERGY	51	Pico and Micro Waterpower - depending on locations – generation, distributing, selling	X	Ministry of Energy and Oils	X	Ministry of Energy and Oils				
	52	Dissemination of improved stoves construction techniques and monitoring	X	Ministry of Environment, Ministry of Energy and Oils	X	Ministry of Energy and Oils				
	53	Development of alternative energy			X	Ministry of Energy and Oils		Ministry of Energy and Oils		
TOURISM	54	Seaside tourism	X	Ministry of Environment,Ministry of Tourism, Transport and Meteorology	X	Ministry of Tourism, Transport and Meteorology				
	55	Community based ecotourism (welcoming and tourist guiding)	X	Ministry of Environment, Ministry of Tourism, Transport and Meteorology	X	Ministry of Tourism, Transport and Meteorology				
AWARENESS - EDUCATION	56	Energy efficiency awareness								
	57	Community awareness for REDD+ programme (landscape approach)	X	Ministry of Industry, Private Sector Development						
ECONOMY	58	Promotion of saving, loans, access to microcredit, local cooperative development	X	Ministry of Economy and Planning	X	Ministry of Economy and Planning			X	Ministry of Economy and Planning
LAW - JUSTICE	59	Law enforcement	X	Ministry of Justice	X	Ministry of Justice				
SOCIAL	60	Awareness and setting-up of family planning in rural and urban areas			X	Ministry of Population, Social Welfare and for the Promotion of Women				

Annex 5: Description of anticipated activities in each watershed type or transversely.

Topic		Proposed activity	Watershed 1 - Indian				Watershed 2 - Wester				Watershed 3 - Western				Description of proposed activity
			Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	
AGRICULTURE	1	Agroforestry		X	X	X		X	X	X		X	X	X	Development of agriculture and livestock with trees
	2	Development of agricultural cash-crops sector (coffee, cacao, vanilla, pepper, clove, pink pepper)		X	X			X	X			X	X		Supply of selected plants, support for installation and crops maintenance, development of processing and marketing industries, identify sales methods, capacity building and support provided to producers with, if needed, development of agricultural cooperatives for production and selling, support for tax management
	3	Terrace cultivation		X	X			X	X			X	X		Ground stabilization, integration of monitored irrigation from water springs in slopes, integration of reservoirs in the implementation
	4	Development of Micro-irrigation systems			X	X			X	X			X	X	Development of irrigation system allowing a water supply on request from springs or reservoirs
	5	Contour farming		X	X			X	X			X	X		Implementation of agricultural development following contour lines in areas where it is possible (gradient less than 60%)
	6	Development of conservation agriculture and agroecology		X	X	X		X	X	X		X	X	X	Development of "zero-tillage, permanent soil coverage, crop rotation" agriculture, association of agriculture with protection systems using biological materials and development of fodder plants to keep the structure and the texture of soils
	7	Improvement of agricultural techniques (natural fertilizer, techniques, seeds)		X	X	X		X	X	X		X	X	X	Development of composting, seeds producer groups, use of fallow, intensive rice fields systems, improved rice fields systems, storage products systems
	8	Hydro-agricultural infrastructures (water control, irrigation, draining system) – setting up and standards				X				X				X	Rehabilitation and hydroagricultural development – specific building standards including outlets and bottlenecks opening to decrease submersion time
	9	Maintenance of hydro-agricultural infrastructures				X				X				X	Liability of stakeholders working in shallows according to the law 2014-042 which governs maintenance and management of hydro-agricultural infrastructures, there is a possibility to set-up multiannual contracts
	10	Fish farming and integrated livestock-fish farming				X				X				X	Creation of fish pond, introduction and development of fish farming with a link between markets and sellers including products packaging and carriage
	11	Rice-fish culture				X				X				X	Development of fish farming complementary activities associated to cropping calendar for rice fields
	12	Development of Apiculture		X	X	X		X	X	X		X	X	X	Hives and colonies supply, processing and selling products, support for creation and follow-up, promotion of melliferous species planting
	13	Development of nurseries for wood and planting material		X	X			X	X			X	X		Development of trees' production potential for afforestation and agroforestry, agricultural plants for farmers; producers' support to have an output linked to market and demand, support to nurseries and plants creation, capacity building for species reproduction and nurseries' production – management - contractualisation
AGROFORESTRY	14	Crops and plants protection against pests and insects		X	X	X		X	X	X		X	X	X	Make available any insectides and pesticides allowing pests control in order to improve agricultural productivity – this sector will be developed thanks to service providers and Neem plantations (insectide and biological repellent)
FORESTRY - ENERGY	15	Afforestation and reforestation (fuelwood and timber, private or communal – development of this sector with private company)	X	X			X	X			X	X			Development of fuelwood and timber stocks in a quick cycle for local use or selling
GOVERNANCE - REDD	16	Increase protected areas management transfers	X	X	X		X	X	X		X	X	X		Capacity building and support for COBA, strengthening of monitoring and evaluation systems for management transfers
	17	Accompanying development of fuelwood (carbonization, improved stoves) and alternative energy (biofuels, biogaz) sectors	X	X	X		X	X	X		X	X	X		Capacity building, awareness for alternative forms of energy and wood transformation activities into energy use, creation of experimental site for test
	18	Labeling homemade products	X	X	X	X	X	X	X	X	X	X	X	X	Standards development and setting, marketing, support for labeling process, label production
	19	Promoting stakeholder's synergy (law application)	X	X	X	X	X	X	X	X	X	X	X	X	Awareness, information and training workshops, media of information dissemination on current laws
	20	Taxes and charges collection of homemade products	X	X	X	X	X	X	X	X	X	X	X	X	Acknowledgement of agents for collection of taxes, support for production checkpoints, tax revenues formal account of registrations, implementation of laws regarding to forests
	21	Land tenure	X	X	X	X	X	X	X	X	X	X	X	X	Demarcation of parcels of land for exploitation, local state ownership recognition or formal certification, support and information for stakeholders during the process
	22	National strategy reinforcement and implementation of administrative reforms	X	X	X	X	X	X	X	X	X	X	X	X	Workshops focused on cross-policy – discussion and consultation, monitoring and evaluation for laws application, indicator definition, development of a process for internal evaluation, soft-assistance for local projects – decentralization and devolution
	23	Intersectoral advocacy then involvement of the local, regional and national authorities in the REDD+ programme	X	X	X	X	X	X	X	X	X	X	X	X	Regional worshops for direct or indirect stakeholders, development of collaborative frameworks and strategic priorities for authorities
	24	Environmental NGOs involvement in the REDD+ programme	X	X	X	X	X	X	X	X	X	X	X	X	Regional worshops for direct or indirect stakeholders, evaluation and implementation of partnerships and management transfers
	25	Development of public and private partnerships for the REDD+ programme (local people, community, private sector, government)	X	X	X	X	X	X	X	X	X	X	X	X	Regional worshops for direct or indirect stakeholders
	26	Creation of a spatial and technical database – REDD+ setting	X	X	X	X	X	X	X	X					
	27	Development of the MRV system (measurement, analysis and reporting)	X	X	X	X	X	X	X	X					
	28	Development of the social and environmental safeguards system	X	X	X	X	X	X	X	X	X	X	X	X	

Topic		Proposed activity	Watershed 1 - Indian				Watershed 2 - Wester				Watershed 3 - Western				Description of proposed activity
			Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	
INCOME GENERATING ACTIVITIES (IGAs)	29	Development of service providers (supply center, facilities, etc.)		x	x	x		x	x	x		x	x	x	Creation of non agricultural jobs in order to ensure implementation of people (or organizations) who provide material / seeds / management of devices and infrastructures – this must be develop with small projects, interests groups or agricultural cooperatives, think about diseases and insects control sector as well as veterinary aspects (products and monitoring)
	30	Development of market gardens and subsistence crops for livelihood and selling in all watersheds areas with contour farming and terrace cultivation (including growing off-season crops)		x	x	x		x	x	x		x	x	x	Implementation of market gardens and subsistence crops in all watersheds developed lands with irrigation, full sector development with products transformation, selling, support and monitoring of farmers + capacity building
	31	Development of short-cycle livestock farming (pig and chicken)			x	x			x	x			x	x	Stock supply, veterinary monitoring, livestock management, transformation and sale of seal products, support and training by specialists
	32	Development of the basketry sector as an utilitarian object		x	x	x		x	x	x		x	x	x	Revitalisation of base material plantation in shallows and lower slopes, support in products transformation and production for utilitarian vocation (daily usage, commerce, industry)
	33	Storage and processing structures for IGA's products depending on communal services as well as water and energy availability		x	x	x		x	x	x		x	x	x	Implementation of infrastructures with strategic positioning allowing storage and transformation for agricultural products, processing before sale or disposal, structures connection with water, electricity and access roads, maintenance and security
	34	Local market – development and renovation, strategic choices depending on communal services as well as water and energy availability		x	x	x		x	x	x		x	x	x	Implementation or rehabilitation of infrastructures for local markets on the basis of a strategic choice in the location within each watershed, connection with water, electricity and access roads, maintenance and security
	35	Valorization of forest resources (timber and non-timber forest products, essential oils)	x	x	x		x	x	x		x	x	x		Development of forestry sectors, sustainable acquisition of resources, transformation and selling, support
CAPACITY BUILDING	36	Technical assistance, awareness, capacity building linked with specific training on erosion (processing and prevention)	x	x	x		x	x	x		x	x	x		Information and communication workshops, training of agricultural extension agents in order to support projects, designation of areas, make available any tools or supports needed
	37	Technical assistance, awareness, capacity building with specific training on agroforestry and afforestation		x	x	x		x	x	x		x	x	x	Agronomists and forestry engineer and technicians in order to support project implementation, information, training and communication workshops, preparation of training materials, farmer field school methodology
	38	Technical assistance, awareness, capacity building with specific training on terrace cultivation and irrigation		x	x	x		x	x			x	x		Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists and hydraulic engineers
	39	Contou farming planning		x	x			x	x			x	x		Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists and hydraulic engineers
	40	Technical assistance, awareness, capacity building with specific training on conservation agriculture and agroecology		x	x	x		x	x	x		x	x	x	Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists
	41	Technical assistance, awareness, capacity building with specific training on agricultural techniques improvement		x	x	x		x	x	x		x	x	x	Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists
	42	Technical assistance, awareness, capacity building with specific training on crops and plants protection against pests and insects		x	x	x		x	x	x		x	x	x	Training for technical specialists (new techniques), information and awareness toward farmers to use these products, support and implementation with agronomists, need to develop this sector in both local and sub-regional scale
RESOURCE MANAGEMENT - FOREST - PROTECTION	43	Active ecosystem restoration for degraded forests	x	x	x	x	x	x	x	x	x	x	x	x	Plants breeding, collection and propagation, development and management of nurseries, implementation of restoration area, awareness and capacity building for local communities
	44	Passive ecosystem restoration with natural regeneration for degraded forests	x	x	x	x	x	x	x	x	x	x	x	x	Awareness and involvement of local communities to prevent restoration areas (natural regeneration), management of bushfires and grazing
	45	Firefighting (awareness and firewall management)	x	x	x	x	x	x	x	x	x	x	x	x	Preventive and active struggle, silvicultural operations, awareness and information of stakeholders, capacity building, material supply for firefighting, law enforcement
	46	Conservation / protection	x	x	x	x	x	x	x	x	x	x	x	x	General support (budget, team, material and capacity building) to existing structures of protected areas; this includes managers, administration (local or regional), local groups and undertakings, strengthen controls

Topic		Proposed activity	Watershed 1 - Indian				Watershed 2 - Wester				Watershed 3 - Western				Description of proposed activity
			Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley bottom	Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	Area 1 - Ridge	Area 2 - Midslope	Area 3 - Lower slope	Area 4 - Valley Bottom	
LAND USE PLANNING	47	DRS (Soil Defence and Restoration)	X	X	X		X	X	X		X	X	X		Installation of materials in order to prevent erosion and lavakas can be adjusted depending on the ground nature and problem to solve, this can include afforestation and conservation agriculture
	48	Anti-erosion measures (Lavaka)	X	X	X		X	X	X		X	X	X		Specific for lavakas
	49	Land use planning: urban area, fields and forestry sector; governance structures, plans, water distribution system and electricity	X	X	X	X	X	X	X	X	X	X	X	X	Preliminary study validated by stakeholders, implementation of the land use planning, development support, implementation of management structures – integrate with official plans and discuss if necessary
	50	Construction and route maintenance for transporting IGA and agricultural products		X	X	X		X	X	X		X	X	X	Creation or maintenance of access roads, development of sustainable routes for production, capacity building for maintenance and rehabilitation, management of quarrying (environmental impact assessments), development of a maintenance process with taxes which includes capacity building for budget management, municipalities empowerment
ENERGY	51	Pico and Micro Waterpower - depending on locations – generation, distributing, selling		X	X			X	X			X	X		Assessment of potential in project sites, marketing for investors, need to offer good conditions for private investors – market opening, thought about the possibilities of location, Payments for Environmental Services (PES)
	52	Dissemination of improved stoves construction techniques and monitoring			X	X			X	X			X	X	Awareness and training of stakeholders in order to use and build improved stoves from base materials
	53	Development of alternative energy	X	X	X	X	X	X	X	X	X	X	X	X	Preliminary study to assess potential of new energies such as solar, wind and bio energy. Think about other possibility
TOURISM	54	Seaside tourism				X				X					Attract private investors in order to develop tourism in Madagascar
	55	Community based ecotourism (welcoming and tourist guiding)	X	X	X		X	X	X	X		X	X	X	Attract private investors in order to develop tourism in Madagascar
AWARENESS - EDUCATION	56	Energy efficiency awareness	X	X	X	X	X	X	X	X	X	X	X	X	Development and publishing of a book / comic book of good practices (water and electricity use every day). Adapt it for urban and rural areas
	57	Community awareness for REDD+ programme (landscape approach)	X	X	X	X	X	X	X	X	X	X	X	X	Production and dissemination of media with regional specificity, awareness regional workshops for direct or indirect stakeholders (authorities, communities, NGOs, etc.)
ECONOMY	58	Promotion of saving, loans, access to microcredit, local cooperative development	X	X	X	X	X	X	X	X	X	X	X	X	Awareness / information on credit and micro credit, saving, incitement to develop local groups and cooperatives for production / management, support and implementation of these projects, microfinance institution – incitement to do it in the programme area, support to stakeholders engaged with microcredits
LAW - JUSTICE	59	Law enforcement	X	X	X	X	X	X	X	X	X	X	X	X	Capacity building of authorities (material and human resources, devices, control infrastructures, training, education), improvement of security conditions and controls
SOCIAL	60	Awareness and setting-up of family planning in rural and urban areas	X	X	X	X	X	X	X	X	X	X	X	X	Awareness and information workshops, support for medical advice, improvement of medical care and decentralized health services, contraception campaigns – contraceptive methods

Annex 6: Link between the anticipated activities within each type of watershed and the thematic of deforestation and forest degradation causes.

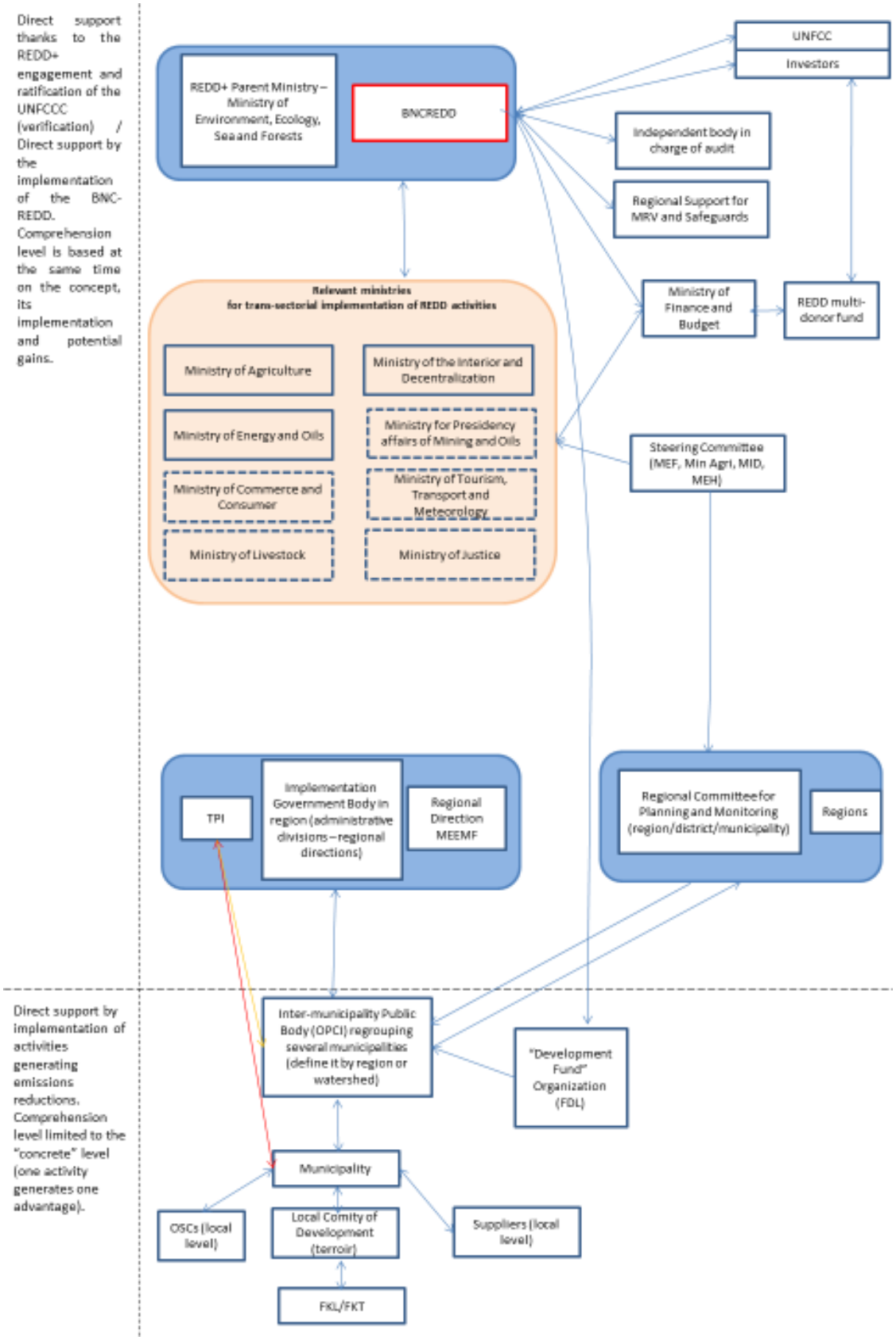
Topic		Proposed activity	Drivers of deforestation																																					
			Agriculture									Energy	Resources exploitation											Socioeconomic context								Ranching					Environnement			Capacity building	Poverty	Food security
			Slash and burn agriculture	Slash and burn agriculture, agricultural cash-crops sector	Slash and burn agriculture, rice fields in low-lying areas	No cultivated land	Expansion of farmland	Rejection of new agricultural techniques	Stimulants (cannabis, khat, etc.)	Forest clearing, land enhancement and appropriation	Non-compliance with cropping calendar	Fuelwood	Logging	Illegal logging	Logging to generate incomes	Strong demand for wood wich highly increase logging	Illegal timber exploitation or without planning	Ignorance of forests law	Large-scale mining exploitation	Small mining exploitation	Illegal mining exploitation	Mining exploitation with no specifications	Mining exploitation to generate incomes	Poverty	Lack of capacities for the administration (human, budget and material)	High birth rate and migration	High unemployed rate	Lack of intersectoral synergy	Corruption	Political context	State of mind	Grazing	Grassland extent by burning	Extensive cattle breeding	Cattle and goat breeding	Opening of the roads for the purpose of cattle thefts	Natural hazards and cyclones	Intentional fires	Uncontrolled fires	Lack of support for local communities		
AGRICULTURE	1	Agroforestry	X	X	X			X				X	X			X																										X
	2	Agricultural cash-crops sector (coffee, cacao, vanilla, pepper, clove, pink pepper)	X	X	X										X								X				X															X
	3	Terrace cultivation	X	X	X	X																																				X
	4	Development of Micro-irrigation systems	X	X	X	X																																				X
	5	Contour farming	X	X	X	X																																				
	6	Development of conservation agriculture and agroecology	X	X	X			X																																		X
	7	Improvement of agricultural techniques (natural fertilizer, techniques, seeds)	X	X	X			X																X		X	X				X										X	X
	8	Hydro-agricultural infrastructures (water control, irrigation, draining system) – setting up and standards	X	X	X	X																																				X
	9	Maintenance of hydro-agricultural infrastructures	X	X	X																																					
	10	Fish farming and integrated livestock-fish farming													X								X	X			X														X	X
	11	Rice-fish culture						X							X								X	X		X	X														X	X
	12	Development of Apiculture													X								X	X			X														X	X
	13	Development of nurseries for wood and planting material	X										X		X								X	X			X														X	X
AGROFORESTRY	14	Crops and plants protection against pests and insects	X			X	X	X					X																													
FORESTRY - ENERGY	15	Afforestation and reforestation (fuelwood and timber, private or communal – development of this sector with private company)										X	X	X	X	X	X																									
GOVERNANCE - REDD	16	Increase protected areas management transfers											X																							X						
	17	Accompanying development of fuelwood (carbonization, improved stoves) and alternative energy (biofuels, biogaz) sectors										X												X			X														X	
	18	Labeling homemade products																																								
	19	Promoting stakeholder's synergy (law application)							X					X			X	X	X	X	X	X							X	X						X						
	20	Taxes and charges collection of homemade products																							X				X		X											
	21	Land tenure	X	X	X							X	X			X	X															X	X			X						
	22	National strategy reinforcement and implementation of administrative reforms	X									X	X			X		X							X			X	X	X												
	23	Intersectoral advocacy then involvement of the local, regional and national authorities in the REDD+ programme																										X												X		
	24	Environmental NGOs involvement in the REDD+ programme																										X												X		
	25	Development of public and private partnerships for the REDD+ programme (local people, community, private sector, government)																										X												X		
	26	Creation of a spatial and technical database – REDD+ setting											X	X	X	X	X	X	X	X	X	X	X		X		X															
	27	Development of the MRV system (measurement, analysis and reporting)																							X																	
	28	Development of the social and environmental safeguards system											X	X	X	X	X	X	X	X	X	X	X	X	X												X	X	X		X	

Topic		Proposed activity	Drivers of deforestation																																					
			Agriculture									Energy	Resources exploitation											Socioeconomic context								Ranching					Environnement			Capacity building	Poverty	Food security
			Slash and burn agriculture	Slash and burn agriculture, agricultural cash-crops sector	Slash and burn agriculture, rice fields in low-lying areas	No cultivated land	Expansion of farmland	Rejection of new agricultural techniques	Stimulants (cannabis, khat, etc.)	Forest clearing, land enhancement and appropriation	Non-compliance with cropping calendar	Fuelwood	Logging	Illegal logging	Logging to generate incomes	Strong demand for wood wich highly increase logging	Illegal timber exploitation or without planning	Ignorance of forests law	Large-scale mining exploitation	Small mining exploitation	Illegal mining exploitation	Mining exploitation with no specifications	Mining exploitation to generate incomes	Poverty	Lack of capacities for the administration (human, budget and material)	High birth rate and migration	High unemployed rate	Lack of intersectoral synergy	Corruption	Political context	State of mind	Grazing	Grassland extent by burning	Extensive cattle breeding	Cattle and goat breeding	Opening of the roads for the purpose of cattle thefts	Natural hazards and cyclones	Intentional fires	Uncontrolled fires	Lack of support for local communities		
INCOME GENERATING ACTIVITIES (IGAs)	29	Development of service providers (supply center, facilities, etc.)	X	X	X																											X	X									X
	30	Development of market gardens and subsistence crops for livelihood and selling in all watersheds areas with contour farming and terrace cultivation (including growing off-season crops)													X								X	X			X														X	X
	31	Development of short-cycle livestock farming (pig and chicken)													X								X				X					X	X	X	X							X
	32	Development of the basketry sector as an utilitarian object													X								X				X															
	33	Storage and processing structures for IGA's products depending on communal services as well as water and energy availability	X	X	X	X	X																											X	X							X
	34	Local market – development and renovation, strategic choices depending on communal services as well as water and energy availability																																								X
	35	Valorization of forest resources (timber and non-timber forest products, essential oils)											X		X	X																										
CAPACITY BUILDING	36	Technical assistance, awareness, capacity building linked with specific training on erosion (processing and prevention)	X																		X				X												X			X		
	37	Technical assistance, awareness, capacity building with specific training on agroforestry and afforestation	X	X	X							X																												X		
	38	Technical assistance, awareness, capacity building with specific training on terrace cultivation and irrigation	X	X	X																																			X		
	39	Contou farming planning	X	X	X																																			X		
	40	Technical assistance, awareness, capacity building with specific training on conservation agriculture and agroecology	X	X	X																																			X		
	41	Technical assistance, awareness, capacity building with specific training on agricultural techniques improvement	X	X	X	X	X	X		X	X																					X	X							X		
	42	Technical assistance, awareness, capacity building with specific training on crops and plants protection against pests and insects	X	X	X	X	X	X																																X		
RESOURCE MANAGEMENT - FOREST - PROTECTION	43	Active ecosystem restoration for degraded forests											X																									X	X			
	44	Passive ecosystem restoration with natural regeneration for degraded forests											X																									X	X			
	45	Firefighting (awareness and firewall management)																															X					X	X			
	46	Conservation / protection																																			X	X	X			

Topic		Proposed activity	Drivers of deforestation																																					
			Agriculture									Energy	Resources exploitation											Socioeconomic context								Ranching					Environnement			Capacity building	Poverty	Food security
			Slash and burn agriculture	Slash and burn agriculture, agricultural cash-crops sector	Slash and burn agriculture, rice fields in low-lying areas	No cultivated land	Expansion of farmland	Rejection of new agricultural techniques	Stimulants (cannabis, khat, etc.)	Forest clearing, land enhancement and appropriation	Non-compliance with cropping calendar	Fuelwood	Logging	Illegal logging	Logging to generate incomes	Strong demand for wood wich highly increase logging	Illegal timber exploitation or without planning	Ignorance of forests law	Large-scale mining exploitation	Small mining exploitation	Illegal mining exploitation	Mining exploitation with no specifications	Mining exploitation to generate incomes	Poverty	Lack of capacities for the administration (human, budget and material)	High birth rate and migration	High unemployed rate	Lack of intersectoral synergy	Corruption	Political context	State of mind	Grazing	Grassland extent by burning	Extensive cattle breeding	Cattle and goat breeding	Ouverture des pistes aux fins de vols de bœufs	Natural hazards and cyclones	Intentional fires	Uncontrolled fires	Lack of support for local communities		
LAND USE PLANNING	47	DRS (Soil Defence and Restoration)	X																		X																					
	48	Anti-erosion measures (Lavaka)				X	X	X							X						X	X																	X			
	49	Land use planning: urban area, fields and forestry sector; governance structures, plans, water distribution system and electricity										X	X			X	X																									
	50	Construction and route maintenance for transporting IGA and agricultural products																							X															X		
ENERGY	51	Pico and Micro Waterpower - depending on locations – generation, distributing, selling										X																														
	52	Dissemination of improved stoves construction techniques and monitoring										X																														
	53	Development of alternative energy										X																														
TOURISM	54	Seaside tourism																						X			X				X										X	
	55	Community based ecotourism (welcoming and tourist guiding)																						X			X				X									X	X	
AWARENESS - EDUCATION	56	Energy efficiency awareness										X																														
	57	Community awareness for REDD+ programme (landscape approach)																													X									X		
ECONOMY	58	Promotion of saving, loans, access to microcredit, local cooperative development	X	X	X	X	X		X	X														X							X			X	X					X	X	
LAW - JUSTICE	59	Law enforcement	X	X	X																															X						
SOCIAL	60	Awareness and setting-up of family planning in rural and urban areas																								X																

Annex 7: Institutional Arrangements.

The following chart shows how the different stakeholders and agency enter in relation to each other in the proposed ER Program.



Annex 8: Reference Level and Expected Emissions Reductions – Approach for establishing the Reference Emission Level (REL) and / or Forest Reference Level (FRL).

National definition of forest.

The preliminary official definition of the forest in Madagascar, including in the context of the implementation of the REDD + is based the following:

Definition of the forest in Madagascar - August 2015	Key numbers
Minimal area considered	1 ha
Area of the canopy cover projected on the ground	≥ 30%
Minimal vegetation height on the surface	5 m

Using 30% of canopy cover as threshold, the definition of the forest in Madagascar is in accordance with the recommendations of the IPCC, which are accepted by the UNFCCC. The definition of the IPCC (2006) to confirm the 'forest' context, used in the context of the proposal is:

- Land occupying an area of more than 0.5 ha with trees reaching 5 meters or higher and canopy trees cover of more than 10 percent, or trees able to reach these thresholds in situ. The definition excludes predominantly agricultural or urban lands.
- Forest is determined by the presence of trees as well as by the absence of other predominant types of land uses. Trees should be able to reach a minimum height of 5 meters in situ. Are included; i) reforestation areas where trees have the potential to reach those thresholds (canopy cover of 10 percent, 5 meters high), as well as ii) temporarily cleared areas, due to human interventions or natural phenomena, but for which regeneration intervention is planned.

This definition indicates well that recently cleared forest areas (changed in other in type of land use in the past 20 years) may be considered in areas where a forest regeneration policy is planned.

Forest strata taken into account under the approach adopted for the emissions reduction program.

Based on this definition of forest, and the fact that the proposal focuses on the humid forests ecoregion of Madagascar, it is justified to consider the following vegetation types as eligible under this terminology:

- Intact humid forests → Primary humid forest
- Degraded humid forests → Secondary humid forest, for which it is important to consider the following variations:
    - Secondary forest with continuous canopy;
    - Secondary forest with discontinuous canopy;
    - Degraded forest with high degree of degradation;
    - Highly degraded forest with potential for forest regeneration over the program lifetime.

The current forest definition adopted by Madagascar allows to include many types of vegetation with the specification of canopy cover projected to the ground. There are terminology differences across the various work conducted in Madagascar for the past 15 years. Some phyto-sociological groups classified in the forest sector by the CEPF working group are classified under the term wooded savanna by the national forest board. According the canopy cover indications, it is however possible to include these groups within the current forest definition in Madagascar at this point. A field verification is necessary, however, for the next step, to allow a selection of a more appropriate terminology.

The map on

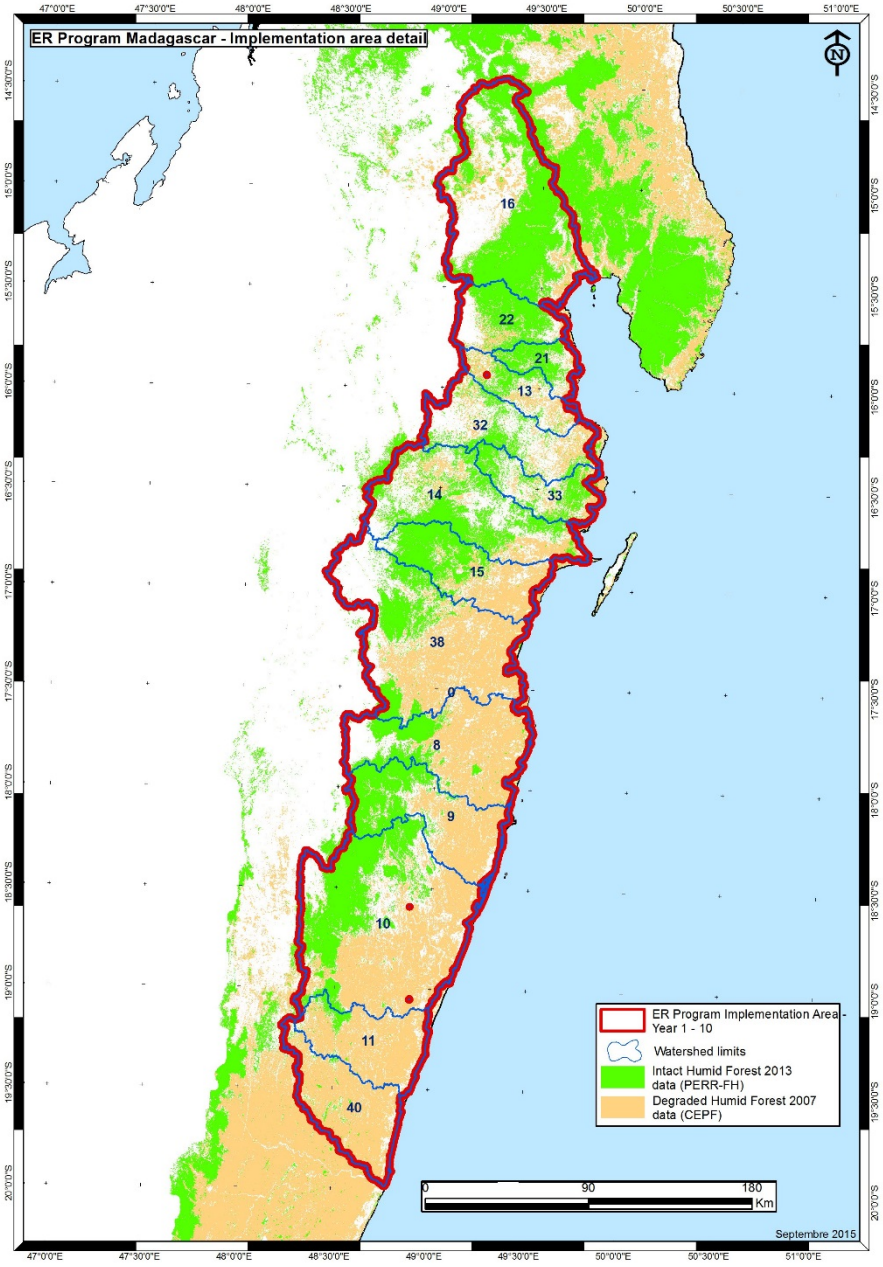


Figure 11 below shows the elements of the forest vegetation which will be taken into account as baseline for the proposal in the context of the ER - PIN. The situation for the whole area are shown in Figure 2.

Figure 11: Geographical location of the forest types considered in the implementation area of the emissions reduction program. Source: CEPF (2007) and PERR-FH (2014 and 2015).

Reference period for the reference emission level.

Based on satellite imagery, the analyses of historical deforestation will comply with the following:

- Referring to the R-PP and the UNFCCC, as well as REDD + related texts:
  - 3 dates over the last 10 years with a minimum of 2 years between each date; the last date will be used as benchmark map;
  - Minimum Mapping Unit (MMU) of 1 ha; this threshold can be increased up to 3ha for "unmanaged" forests with low probabilities of being deforested;
  - Natural/artificial regeneration are not taken into account in the calculation of deforestation rate.
- Referring to FCPF framework documents:
  - End date of the reference period corresponding to the most recent date before 2011;
  - Date of beginning of reference period preceding the date of end of approximately 10 years.

In accordance with the recommendations of the GOFC-GOLD Sourcebook, Landsat-type images will be used. For the humid forests ecoregion considered for the emission reduction program, the 2005-2010-2013 years will be studied; with the understanding that taking into account the year 2013 (after this limit announced 2011) in the analysis will require a validation from FCPF.

This approach has the merit of building on the sub-national project work on measuring historic deforestation in the eco-zone of the humid forests of Madagascar (particularly for intact humid forests, with canopy cover > 75% per ha) over these years. This approach reduces the magnitude of the work remaining to be done, especially on the speed of the deforestation process within degraded humid forests areas (forests with canopy cover representing 10-75% per ha) during the historic period analysis.

REDD + eligible activities proposed under the ER - PIN.

The two key activities in the ER - PIN proposal activities will be:

- Deforestation → measured via deforestation monitoring on a yearly basis through satellite imagery analysis;
- Increase in carbon stocks → measured by field inventories, conducted in the considered forest strata.

The following data can therefore be expected:

- *Status-quo* → forest land remaining forest land without significant change in biomass;
- Deforestation → Forest land converted in non-forest land/other land categories with significant biomass loss;
- Biomass increment → Forest land remaining forest land but subject to a management measure allowing biomass increase;
- Afforestation → Non-forest land / other land converted to forest land with a goal of over 25 years management, with the related biomass increment corresponding.

REDD+ carbon pools eligible for REDD+ and proposed under the ER-PIN.
The three following carbon pools will be considered in the ER - PIN proposal:

- Above-ground biomass;
- Below-ground biomass;

There are specific data to the humid forest of Madagascar in two forest strata considered for the emission reduction program. These data are related to the carbon in biomass and soil. They are the result of recent scientific studies (2012) published in the scientific literature, as well as very recent studies (2014) conducted under projects related to the implementation of REDD+ in Madagascar, at the ecoregion sub-national scale. Complementary forest inventories are planned for the implementation of REDD + in Madagascar according to the 2013methodology, or its eventual amendment, in order to increase precision towards the delineation of the forest groups in strata and to cover forests areas not explored previously. Once these new data are available, estimates made in the context of the present ER - PIN will be adjusted.

As data on below-ground carbon biomass is absent, the IPCC Tables will be used. Studies will be carried out on this carbon pool during the implementation of the REDD+ readiness, however it is unlikely that these studies will be conducted before the emission reduction program is implemented. The necessary adjustments will be made upon completion of the work.

Probable REDD+ tiers accounting and uncertainty in the accounting of carbon stocks (emission factors).
Overall, provided the level of uncertainty and the relevant forest areas, the calculation to be undertaken in the context of the start-up phase, associated with the FCPF contract will not claim to go beyond Tier I. In light of the REDD+ implementation proposal in the R-PP document, it is likely that this situation will persist for at least 10 years from the date of implementation of the emission reduction program. However, it is possible to move towards the Tier II with a validated national methodology on the biomass and soil carbon accounting during the 5 to 10 year period. A possible progression towards Tier III is also possible between year 10 and year 25 of the emission reduction program.

In the light of the available data, the following tiers are expected and the related uncertainties are summarized below in Table 15 below.

Table 15: Expected tiers and related uncertainties.

Carbon pool	Forest strata	Data	Tiers	Uncertainty
Carbon in above-ground biomass	Intact humid forest - primary forest	Scientific studies and projects conducted in the stratum, at a sub-national scale and ecoregion	Tier II	5 10%
	Degraded humid forest - secondary forest	Scientific studies conducted in the stratum at a local level	Tier II	> 15%
Carbon in below-ground biomass	Intact humid forest - primary forest	No national data available - the IPCC figures recommended	Tier I	> 15%
	Degraded humid forest - secondary forest	No national data available - IPCC	Tier I	> 15%

		fogures are recommended		
Soil carbon	Intact humid forest - primary forest	Studies and scientific projects conducted in the stratum at a sub-national scale and ecoregion	Tier II	5 10%
	Degraded humid forest - secondary forest	No national data available - IPCC figures recommended	Tier I	> 15%

8.1.7. Probable REDD + accounting tiers and uncertainty related to changes in land use (activity data).

In general, the calculation to be undertaken under the ER-PIN cannot pretend to go beyond Tier I in light of the restriction in the geographical extent of available data on the intact humid forest (primary forest). Nevertheless, provided the REDD + implementation proposal in the R-PP document, it is likely that this situation will be resolved in the first 5 years of implementation, in the start-up area under the FCPF contract; and which will provide a Tier III equivalent measure of the activity data as summarized in Table 16 below.

Table 16: Tier III equivalent measure of the activity data.

Activities	Forest strata	Data	Third party	Uncertainty
Forest land remaining forest land	Intact humid forest - primary forest	Scientific studies and projects in the stratum at a sub-national scale and ecoregion	Tier III	5 10%
	Degraded humid forest - secondary forest	Scientific studies in the stratum at a local to national level	Tier II	> 15%
Deforestation - Forest land converted to non-forest lands	Intact humid forest - primary forest	No national data available – IPCC figures recommended	Tier I	> 15%
	Degraded humid forest - secondary forest	No national data available - IPCC figures recommended	Tier I	> 15%
Biomass increment	Intact humid forest - primary forest	Scientific studies and projects in the stratum at a sub-national scale and ecoregion	Tier III	5 10%
	Degraded humid forest - secondary forest	No national data, a few localized studies - IPCC figures recommended and data studies to determine a range of possibilities	Tier I	> 15%
Afforestation	Planted forest - several types to be defined	No national data – figures of the IPCC recommended	Tier I	> 15%

8.1.8. Deductions in connection with the "risk of reversal" and "uncertainties" for the calculation of emission reductions.

In agreement with criteria 21 of the FCPF methodological framework, the following subtractions should be planned to be placed as buffer reserve; as explained in Table 17 below:

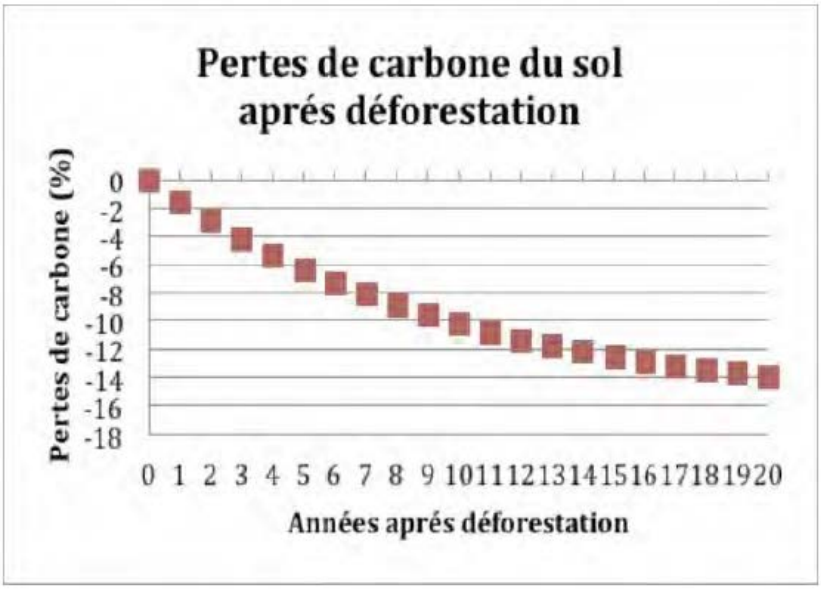
Table 17: Subtractions to be planned as buffer reserve.

Element considered	Description of the risk and assessment	Deduction suggested
Risks of reversal	The proposal made under the emission reduction program is based on large geographical areas fo which risks of reversal are real. However, it is considered that in the context of the suggested activities, the risks of reversals are unlikely to affect large areas of implimentation significantly; therefore, it is suggested to apply the lower range of the buffer reserve (according to the FCPF framework).	10%
Uncertainty in calculations of emission reductions	Based on scientific literature available on the subject of measurement of biomass in Madagascar and in the ecoregion of	4%

	the humid forests in particular, including studies in different strata of this ecoregion, the uncertainties of calculations will not exceed the value of 100%. In the light of the quality of the data on the intact humid forests (i.e. 45% of the forest area in the zone of application) and preliminary data availability on biomass within the degraded forests; and provided that the proposal made in the context of the ER - PIN is conservative in its approach; it seems appropriate to consider that the uncertainties will be > 15% but ≤ 30%.	

The buffer reserve to plan for the reduction of emissions program proposal of Madagascar is therefore in the order of 14%.

Annex 9: Carbon loss over the implementation period.



Temps après déforestation [ans]	Somme des perte de C [%]
1	-1,5
2	-2,9
3	-4,2
4	-5,3
5	-6,3
6	-7,3
7	-8,1
8	-8,9
9	-9,6
10	-10,2

Annex 10: Preliminary assessment of the rate of deforestation and annual emissions by region.

Regions covered by the reducing emissions programme in 25 years of implementation	Surface area of the communes concerned (ha) per region by the PERR-FH analysis	Surface area of remaining rainforests in 2005 (ha)	Surface area of remaining rainforests in 2010 (ha)	Surface area of remaining rainforests in 2013 (ha)	Remaining rainforest loss between 2005 and 2010 (ha) – 4 years period	Remaining rainforest loss between 2010 and 2013 (ha) – 4 years period	Average deforestation rate per year between 2005 and2010 (%) for remaining rainforests	Average deforestation rate per year between 2010 and2013 (%) for remaining rainforests	Average aerial biomass (AGB) of remaining rainforests (T C)	Biomass stock of remaining rainforests in 2005 (T C)	Biomass stock of remaining rainforests in 2010 (T C)	Biomass stock of remaining rainforests in 2013 (T C)	Annual emissions between 2005 and 2013 (T C) for remaining rainforests	Annual emissions between 2005 and 2013 (T CO2 eq) for remaining rainforests (T CO2 Eq = 3.67 x T C)
ALAOTRA MANGORO	2,632,644	563,225	535,293	515,942	-27,932	-19,351	-1.30%	-1.25%	122.70	69,107,708	65,680,451	63,306,083	-828,803	-3,041,709
ANALANJIROFO	2,192,367	1,049,455	1,027,054	1,002,666	-22,401	-24,388	-0.55%	-0.81%	122.70	128,768,129	126,019,526	123,027,118	-820,144	-3,009,930
ATSINANANA	2,110,314	364,297	354,791	343,412	-9,506	-11,379	-0.67%	-1.10%	122.70	44,699,242	43,532,856	42,136,652	-366,084	-1,343,529
DIANA	1,906,362	450,984	440,867	429,807	-10,117	-11,060	-0.57%	-0.86%	122.70	55,335,737	54,094,381	52,737,319	-371,203	-1,362,313
SAVA	2,403,917	814,708	805,227	794,460	-9,481	-10,767	-0.29%	-0.45%	122.70	99,964,672	98,801,353	97,480,242	-354,919	-1,302,551
SOFIA	3,109,675	678,025	668,976	645,796	-9,049	-23,180	-0.34%	-1.20%	122.70	83,193,668	82,083,355	79,239,169	-564,928	-2,073,287
Total	14,355,279	3,920,694	3,832,208	3,732,083	-88,486	-100,125	-0.58%	-0.89%		481,069,154	470,211,922	457,926,584	-3,306,081	-12,133,319

Annex 11: Forest Monitoring system - Description of approach and capacity for measurement and reporting on ERs.

Approach for measuring and reporting of emission reductions during the start-up phase of the emission reduction program (5 years).

The national office for REDD coordination (BNCR) will ensure the coordination of the necessary measures for the duration of the emission reduction program during the initial period of FCPF contract and will thus ensure that the data are analyzed and reported adequately. The following elements are suggested:

- The BNCR will develop a public REDD geo-Portal, on which will be grouped and published different datasets as their development. This geo-portal will also be the custodian of the REDD + registry, and through which the grievance and redress mechanism will be also administered. It is planned to develop the geo-portal based on existing models, including the elements developed by the PERR-FH project (http://www.perr-fh-mada.net/), but also inspired example of the geo-portal of the national forest monitoring system of the Democratic Republic of the Congo (http://www.rdc-snsf.org/portal/)).
- The remote sensing unit, which will be established within the BNCR will ensure the spatial analysis of the evolution of deforestation for the years 2017 (original state just before the period of implementation of the emissions reduction program), followed by the years 2021 and 2023, who will represent the two initial follow-up periods to be implemented during the period of application of the emission reduction program under the FCPF contract. The following elements have to be noted:
    - It is expected to achieve the tier II and tier III in places where the available satellite images are of high resolutions;
    - The results of the various analyses will be published on a public geo-portal which will be managed by the BNCR;
    - The monitoring of deforestation through a methodology based on satellite imagery analysis should evolve towards a capacity to undertake annual assessment by the end of the FCPF contract. This situation should then evolve towards a mechanism with automation that will allowing a bi-annual , then monthly monitoring at by the completion of the implementation of the period of emission reduction program implementation. This progressive enhancement of deforestation monitoring is necessary to enable almost real-time monitoring and make more effective the control of deforestation actions by the administration in the related sectors.
- The General Directorate for Forests (DGF) will mobilize its field agents to conduct additional forest inventories through the regional forests offices in the regions. Like the analysis by remote sensing, three periods of measurements are planned during the same years (2017, 2021 and 2023), to gradually build a detailed database and robust emission factors and absorption in the area of implementation of the emission reduction program. For consistency with the priority exploration of humid forests ecoregion, it is specifically planned to sample the following strata:
    - Inventories within the intact humid forests, especially to improve the definition of carbon stocks according to the altitudinal gradients;
    - The degraded humid forests; in particular of particular interest are the following variations to define the potential in terms of carbon stocks recovery:
        - Degraded humid forest with continuous canopy - degradation of the understory;
        - Degraded humid forest with discontinuous canopy;
        - Degraded humid forest where a revival of the secondary forest succession is obvious;
        - Very degraded humid forest subject to invasion by local or exotic invasive species;
    - Mosaic of forest fragments within agricultural areas;
    - It is planned to achieve tier II for carbon stocks in aboveground biomass, and tier I for below-ground biomass carbon stocks;
    - Soil carbon will be measured according to methods to reach tier III like the work already undertaken in Madagascar.
- The General Directorate for the Environment (DGE) will implement the necessary efforts for the realization of the gas inventory from non-CO_2 greenhouse effects of other activities as part of its work on the national communication to the UNFCCC However it is expected that this analysis remains at tier I for lack of qualified staff to conduct the necessary measurements for achieving tier II during the start-up phase of the emission reduction program bound by the FCPF contract.
- The internal services of the above administrative structures will undertake the analysis, as well as ensuring the monitoring and quality assurance of the collected and analyzed information.

- The regional monitoring unit for the safeguards in REDD+, under the BNCR will conduct field follow-ups of the initial assessment and the monitoring of social and environmental safeguards in REDD + as necessary; as well as the analysis of the collected information.
- The BNCR submit internally verified and consolidated reports to the independent verification body (ONE is a likely institution to undertake this role), who will conduct the following tasks:
    - Verification on the ground of a significant sample of inventory plots (it is expected that at least 5% of the plots will be verified) to master the plots locations and the quality of the recording of information from the field;
    - Verification of the data analysis process conducted in order to ensure that the right equations are used and that there is adequate representation of the data in their context;
    - Verification of the spatial analysis on a significant sample of satellite images (it is expected that at least 5% of the images will be verified).
    - Verification of the social and environmental guarantees report.
- The validated report will be made available to the public on the geo-portal of the BNCR before being submitted to the FCPF in order to activate the first payment in 2021 and the second in 2023, upon completion of the phase of the emissions reduction program under the FCPC contract.

The approach suggested above is in accordance with the national REDD+ strategy of Madagascar as described in the R-PP and also complies with the recommendations of the UNFCCC for MRV under REDD+. With the suggested methodology, Madagascar thus will test, in a comprehensive way, the MRV methodology associated with REDD+, as required by the FCPF methodological framework.

Capacity for measurement and reporting of emission reductions during the start-up phase of the emission reduction program (5 years).

The capacity of the structures described above for the measures and reporting is variable and can be described as follows:

- Remote sensing within the BNCR unit:
    - This unit is yet to be created,
    - A group of civil servants of the State — already trained in the techniques of analysis of remote management - exists and will be part of the unit. These agents will follow by end of 2017 a series of complementary trainings to update their knowledge and to get familiar with the national methodology that will be chosen, to then develop it;
    - Tools and equipment for the activities of the unit have yet to be acquired;
    - The geo-portal will have to be developed and its automatic "backup" mechanism should be set up as well.
- Regional monitoring unit for REDD + safeguards under the BNCR:
    - This regional unit is yet to be created;
    - A group of civil servants will be trained in monitoring of social and environmental safeguards techniques under REDD + and these agents will be integrated within the unit. They will follow by the end of 2017 a series of training programs to update and develop their knowledge to get familiar with the chosen national methodology;
    - Tools and equipment for the activities of the unit have yet to be acquired.
- The General Directorate for Forests (DGF) and regional forests directorates:
    - These structures already exist;
    - These structures have qualified and competent personnel, able to carry out the necessary measures for the planned forest inventories;
    - The personnel need additional training to ensure they master specific monitoring methods; forest inventories and data analyses under REDD +
    - Regional offices need investments in modern equipment for undertaking inventories, including transportation means to enable them reach the sites, but also the set of tools and equipment required to undertake data analysis and reporting, as well as for the backup and the transmission of information to the central office;
    - The regional branches also need to be provided budget to cover their running costs; allowing them to implement the inventory campaigns with adequate logistical conditions. A budget is also necessary to ensure data collection and analyses, as well as reports.

- The General Directorate for the Environment (DGE) is in similar situation to that of the DGF, to which, the following elements have to be considered:
    - During the years of implementation of the emission reduction program, agents will be trained on the measurement of greenhouse gases according to a methodology that will allow to achieve Tier;
    - In the same way, the equipment associated with this procedure must be acquired.
- The internal services of the above administrative structures that will ensure quality monitoring and quality assurance for the collected and analyzed information must also receive specific training to ensure comprehensive assessment of the work undertaken by the administrative structures.
- Apart from the special case of greenhouse gases inventory, other than CO_2, the independent verification body (probably ONE) has human capacity, with adequate levels of training to perform the necessary verifications for forest inventory and remote sensing analysis. In the case of greenhouse gases, the independent verification body must benefit from specific training. It seems appropriate to provide those trainings at the same time as those that would be provided to DGE's agents. However, it will be essential to provide the independent verification body with operating budgets to enable them carry out the necessary field verifications.

Approach, measuring capacity and reporting of emission reductions after the start-up phase of the emission reduction program (5 years).

With the first five years of experience, it is expected that the suggested approach will be validated, consolidated and strengthened in terms of implementation capacity. At this preliminary stage, there is no different vision or alternative strategy yet, and the presented elements should therefore demonstrate their validity and their ability to meet the requirements for REDD + implementation during this start-up phase.

It is obvious that the capacities of the structures will increase both in personnel and in mastering intrinsic techniques and methods in order to allow to move to an annual measure of the different parameters from year 6 to year 10.

Annex 12: Consistency of the ER Program monitoring system with UNFCCC guidance and with emerging Methodological Framework of the FCPF Carbon Fund.

TABLE A: Assessment of the concept with regards to the UNFCCC texts.

COP	MRV/safeguards	Decisions text	ERPIN Madagascar
COP15-D04	MRV	Recognizing the need for full and effective engagement of indigenous peoples and local communities in, and the potential contribution of their knowledge to, monitoring and reporting of activities relating to decision 1/CP.13, paragraph 1 (b) (iii) (p 12);	Local communities have been contacted and a process of engagement began in order to be sure of their agreement. The programme of Madagascar foresees to involve these populations as much as possible and to use their knowledge.
		1. Requests developing country Parties, on the basis of work conducted on the methodological issues set out in decision 2/CP.13, paragraphs 7 and 11, to take the following guidance into account for activities relating to decision 2/CP.13, and without prejudging any further relevant decisions of the Conference of the Parties, in particular those relating to measurement and reporting: a) To identify drivers of deforestation and forest degradation resulting in emissions and also the means to address these; b) To identify activities within the country that result in reduced emissions and increased removals, and stabilization of forest carbon stocks; c) To use the most recent Intergovernmental Panel on Climate Change guidance and guidelines, as adopted or encouraged by the Conference of the Parties, as appropriate, as a basis for estimating anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes; d) To establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems that: (i)Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes; (ii)Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities; (iii)Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties (p 12-13);	Madagascar proposal is based on preliminary studies which identified important drivers for deforestation in the ecozone remaining rainforests. This proposal suggests to do so with degraded forest of the programme area to decide which activities should be implemented to increase absorptions. GIEC methodological guidelines and data as well as "country" data are used if no other data are available. It also aims to implement a national mechanism of forest monitoring based on an international approach on the Madagascar ecozone scale. These subnational mechanisms will be gathered in a public and national platform that ensures a free access to data, analysis, results, reports and other information relatives to land tenure and REDD+ register. Madagascar proposal draws on remote sensing and land-based measurements, for forest carbon and greenhouse gaz, for "Measuring" modalities. The proposal establishes current uncertainties and presents a coherent and reaching plan to reduce it in a 10 years period according to the implementation strategy of the REDD+ programme in the country.
		3. Encourages, as appropriate, the development of guidance for effective engagement of indigenous peoples and local communities in monitoring and reporting (p 13);	Madagascar proposal considers local communities as major stakeholder for guarantying emission reductions. They're also direct beneficiaries of the activities planned, still on the base of a sensitive approach of their will and agreement.

COP	MRV/safeguards	Decisions text	ERPIN Madagascar
COP16-D01	Safeguard	2. When undertaking the activities referred to in paragraph 70 of this decision, the following safeguards should be promoted and supported: (a) That actions complement or are consistent with the objectives of national forest Programmemes and relevant international conventions and agreements; (b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty; (c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples; (d) The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision; (e) That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivize th protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits; (f) Actions to address the risks of reversals; (g) Actions to reduce displacement of emissions (p 29-30);	Madagascar proposal is based on the implementation of a system that promote guarantee of social and environmental safeguards. Peoples and communities' rights are the first safeguard: it will be secured with involvement and exchanges with communities in their living places, and monitoring of indicators for society and social factors. Thanks to this process, their will and wishes will be regularly consulted. Respect of biodiversity, environmental quality and ecosystem services are taken into account with proceeding which are going to assess impacts of activities on these aspects. For each activity implemented in a watershed, changes about biodiversity and environmental quality will be tracked. This monitoring will be done every year and integrated in a public platform available for all. Generally, every single activity has been though for reducing deforestation and forest degradation. This have to be done in a manner consistent to reduce inverse and displacement problems of emissions in the programme ecozone then at a national level.
COP17-D02	Safeguard	Also recognizing that policy approaches and positive incentives for mitigation actions in the forest sector, as referred to in decision 1/CP.16, paragraph 70, can promote poverty alleviation and biodiversity benefits, ecosystem resilience and the linkages between adaptation and mitigation, and should promote and support the safeguards referred to in decision 1/CP.16, appendix 1, paragraph 2(c–e) (p 15), 63. Agrees that, regardless of the source or type of financing, the activities referred to in decision 1/CP.16, paragraph 70, should be consistent with the relevant provisions included in decision 1/CP.16, including the safeguards in its appendix I, in accordance with relevant decisions of the Conference of the Parties (p 15); 67. Notes that non-market-based approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests as a non-market alternative that supports and strengthens governance, the application of safeguards as referred to in decision 1/CP.16, appendix I, paragraph 2(c–e), and the multiple functions of forests, could be developed (p 15);	See above with respect of safeguards.

COP	MRV/safeguards	Decisions text	ERPIN Madagascar
COP17-D02	MRV	37. Also requests the Subsidiary Body for Scientific and Technological Advice to develop general guidelines for domestic measurement, reporting and verification of domestically-supported nationally appropriate mitigation actions (p 9); Recognizing that the guidelines for international measurement, reporting and verification referred to in decision 1/CP.16, paragraph 61, correspond to the guidelines determined for the international consultation and analysis of nationally appropriate mitigation actions of developing country Parties (p 13),	See above, MRV connection.
COP17-Annexe 3	MRV	13. Parties should provide information on the description of domestic measurement, reporting and verification arrangements (p 41);	Madagascar proposal will provide a report every 2.5 years during the first period of 5 years on national MRV system. After this period, a report will be done every year.
COP17-D12	Safeguards and MRV	Guidance on systems for providing information on how safeguards are addressed and respected and modalities relating to forest reference emission levels and forest reference levels as referred to in decision 1/CP.16: every details of this decision is about safeguards and modalities relating to forest reference emission.	See above, MRV and safeguards connections.
COP19-D09	Safeguards	4. Agrees that developing countries seeking to obtain and receive results-based payments in accordance with decision 2/CP.17, paragraph 64, should provide the most recent summary of information on how all of the safeguards referred to in decision 1/CP.16, appendix I, paragraph 2, have been addressed and respected before they can receive results-based payments (p 24);	See above with MRV and safeguards connections.
COP19-D12		The timing and the frequency of presentations of the summary of information on how all the safeguards referred to in decision 1/CP.16, appendix I, are being addressed and respected.	See above, MRV and safeguards connections.
COP 19-D14	MRV	Modalities for measuring, reporting and verifying: most complete decision on this topic.	See above, MRV and safeguards connections.

TABLE B: Assessment of the concept with regards to the texts of the FCPF Methodological Framework.

FCPF criterion	Indicator	Methodological framework text	ERPIN Madagascar
Criterion 1 :	NA	The proposed ER Programme is ambitious, demonstrating the potential of the full implementation of the variety of interventions of the national REDD+ strategy, and is implemented at a jurisdictional scale or Programmematic scale.	What is suggested by Madagascar proposal is a program-oriented approach thanks to which at least 3 implementation options of the REDD+ strategy can be tested (fight against deforestation, increase of carbon stocks in natural forests, preservation of stocks).
	Indicateur 1.1	The ER Programme Measures aim to address a significant portion of forest-related emissions and removals.	The proposed activities deal with an important aspect of the emissions due to deforestation (15% of decrease) and to removals (improvement on a specific area which represents 15% of the potential).
Criterion 2	Indicateur 2.1	The Accounting Area is of significant scale and aligns with one or more jurisdictions; or a national-government-designated area (e.g., ecoregion) or areas.	The Accounting Area represents 4.8 million of hectare, i e8.8% of Madagascar national territory during the started period of 10-year. The implementation area then extends to 25% of the national territory. An ecoregion strategy is selected and tropical forests' ecoregion is the first tested area.
Criterion 3	NA	The ER Programme can choose which sources and sinks associated with any of the REDD+ Activities will be accounted for, measured, and reported, and included in the ER Programme Reference Level. At a minimum, ER Programmes must account for emissions from deforestation. Emissions from forest degradation also should be accounted for where such emissions are significant.	Madagascar proposal will follow deforestation as well as natural increase of carbon stocks. If it is possible, pre-existent informations will be used for the calculations. If there is no data, these informations will be completed with additional measures according to CCNUCC indications.
Criterion 5	NA	The ER Programme uses the most recent Intergovernmental Panel on Climate Change (IPCC) guidance and guidelines, as adopted or encouraged by the Conference of the Parties as a basis for estimating forest-related greenhouse gas emissions by sources and removals by sinks.	Madagascar proposal use the most recent data provided by the GIEC and COPs for estimating emissions when national data are not available.
Criterion 6	NA	Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country's or ER Programme's policies exempt sources of information from being publicly disclosed or shared, the information should be made available to independent reviewers and a rationale is provided for not making these data publicly available. In these cases, reasonable efforts should be made to make summary data publicly available to enable reconstruction.	Methodology and data are documented and associated uncertainty assessed in the Madagascar proposal. Underlying assumptions are explained and progress will be gathered in a public platform available on internet with a free access. An audit structure will be created to check all the data submitted by the government of Madagascar.

FCPF criterion	Indicator	Methodological framework text	ERPIN Madagascar
Criterion 7	NA	Sources of uncertainty are systematically identified and assessed in Reference Level setting and Measurement, Monitoring and reporting.	See above.
Criterion 8	NA	The ER Programme, to the extent feasible, follows a process of managing and reducing uncertainty of activity data and emission factors used in Reference Level setting and Measurement, Monitoring and reporting.	See above.
Criterion 10	NA	The development of the Reference Level is informed by the development of a Forest Reference Emission Level or Forest Reference Level for the UNFCCC.	Methodologies suggested by the CCNUCC are used to establish necessaries reference levels.
Criterion 14	NA	Robust Forest Monitoring Systems provide data and information that are transparent, consistent over time, and are suitable for measuring, reporting and verifying emissions by sources and removals by sinks, as determined by following Criterion 3 within the proposed Accounting Area.	MRV system considered by Madagascar proposal rests on 4 pillars used by most of the countries partners for the CCNUCC REDD+ programme. On this basis, Madagascar support the existing solutions.
Criterion 16	NA	Community participation in Monitoring and reporting is encouraged and used where appropriate.	Madagascar proposal foresees to involve local people to implement programme activities. Step by step, trained people from local community will become measurement and notification officer to involve more and more populations in the programme.
Criterion 17	NA	The ER Programme is designed and implemented to prevent and minimize potential displacement.	Madagascar approach is more likely supposed to generate reversals than displacements. Arrival of migrants in programme areas is more a benefit for the proposal than an inconvenience.
Criterion 18	NA	The ER Programme is designed and implemented to prevent and minimize the risk of reversals and address the long-term sustainability of ERs.	Madagascar proposal is aware of reversal risks even if there is a small probability for it to happen. This proposal aim to perpetuate activities limiting reversal possibilities. The reducing emissions programme will be implemented during 25 years, this time period is appropriate to allow populations to realize its importance in order to decrease reversals problem. A surveillance mechanism will be created and FCPF will be contacted if needed.

FCPF criterion	Indicator	Methodological framework text	ERPIN Madagascar
Criterion 24	NA	The ER Programme meets the World Bank social and environmental safeguards and promotes and supports the safeguards included in UNFCCC guidance related to REDD+.	See above concerning social and environmental safeguards under the CCNUCC. Safeguards are considered and monitored.
Criterion 26	NA	An appropriate Feedback and Grievance Redress Mechanism (FGRM) developed during the Readiness phase or otherwise exist(s), building on existing institutions, regulatory frameworks, mechanisms and capacity.	Madagascar proposal will set-up a MRR system adapted to local conditions but based on existing international systems to ensure effective implementation. It will be the same model than the one used by mining exploitations. This MRR system has a Profit Sharing Plan and details beneficiaries rights in terms of benefits uses.
Criterion 27	NA	The ER Programme describes how the ER Programme addresses key drivers of deforestation and degradation.	A complete part of the Madagascar proposal explains key factors and specific strategies needed to fight against these factors.
Criterion 29	NA	The ER Programme provides a description of the benefit-sharing arrangements for the ER Programme, including information specified in Indicator 30.1, to the extent known at the time.	A shared key for benefits is currently designing. Although this process just began, important matters for partner's performance and reward associated are presented. This aspect will be considered before the development of REDD+ strategy in Madagascar and points for which the country will take action will be integrated in case of a contract with FCPF.
Criterion 30	NA	The Benefit Sharing Plan will elaborate on the benefit-sharing arrangements for Monetary and Non-Monetary Benefits, building on the description in the ER Programme Document, and taking into account the importance of managing expectations among potential Beneficiaries.	The current key uses economic benefits and will evolve to incorporate non economic parts. Process ongoing.
Criterion 34	NA	Non-Carbon Benefits are integral to the ER Programme.	A preliminary assessment of non carbon benefits has been undertaken. It expects that one USD invested in a reducing emissions programme returns 14 USD of non carbon benefits. Such assessments will improve in the future.
Criterion 36	NA	The ER Programme Entity demonstrates its authority to enter into an ERPA and its ability to transfer Title to ERs to the Carbon Fund.	Entity choice is ongoing and will be validated at the highest level of the country.
Criterion 38	NA	Based on national needs and circumstances, ER Program host country selects an appropriate arrangement to ensure that any ERs from REDD+ activities under the ER Programme are not generated more than once; and that any ERs from REDD+ activities under the ER Programme sold and transferred to the Carbon Fund are not used again by any entity for sale, public relations, compliance or any other purpose.	Madagascar will set-up a REDD+ public register online, available for every stakeholder. This measure will provide benefits recording associated to emissions reductions reported. This is important to avoid duplicate claims.

Annex 13: Vision for the potential upscaling of the ER Program.

Table C: Emissions reductions in the sector of expansion 1, implementation from the year 11 of the emissions reduction program. The section highlighted in green indicates the share of emissions reductions output within the context of the initial emissions reduction program of 25 years.

EXPANSION SECTOR 1 - 7 WATERSHEDS

Carbon pool	Emission reduction target for 5 years	Emission reduction target for 10 years	Natural regeneration target for 10 years	Ratio AGB /BGB (GIEC 2006)	Driver T C toward s T CO_2 Eq	Vegetation type	REDD+: Activity	Reductions emission potential in CO2 tons per year for the area of implementation (in millions of CO2 tons)																						10 years summary (T of CO_2)	% of reductions depending on pools
								Years 11	Years 12	Years 13	Years 14	Years 15	Years 16	Years 17	Years 18	Years 19	Years 20	Years 21	Years 22	Years 23	Years 24	Years 25	Years 26	Years 27	Years 28	Years 29	Years 30	Years 31	Years 32	Years 33	Years 34	Years 35		
AGB	15.0%	21.1%			3.67	Natural forest	Deforestation	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.13	6.9%
	15.0%	21.1%			3.67	Degraded forest	Deforestation	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04	2.2%
BGB				23%	3.67	Natural forest	Deforestation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	1.6%
				20%	3.67	Degraded forest	Deforestation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.4%
SOC	1.3%	1.0%			3.67	Combo	Deforestation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.3%
AGB			15%		3.67	Degraded forest	Natural regeneration	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.12	1.37	73.8%
BGB			15%	20%	3.67	Degraded forest	Natural regeneration	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.27	14.8%
							Reductions emission total per year	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.18	0.18	0.19	0.19	0.19	0.19		
							Reductions emission total per period	***0.90***					***0.96***					***0.99***					***0.99***					***0.93***						
							Reductions emission total for 10 years	**1.86**																											

Table D: Emissions reductions in the sector of expansion 2, implementation from the year 16 of the emissions reduction program. The section highlighted in green indicates the share of emissions reductions output within the context of the initial emissions reduction program of 25 years.

EXPANSION SECTOR 2 - 10 WATERSHEDS

Carbon pool	Emission reduction target for 5 years	Emission reduction target for 10 years	Natural regeneration target for 10 years	Ratio AGB /BGB (GIEC 2006)	Driver T C toward s T CO_2 Eq	Vegetation type	REDD+: Activity	Reductions emission potential in CO2 tons per year for the area of implementation (in millions of CO2 tons)																						10 years summary (T of CO_2)	% of reductions depending on pools
								Years 16	Years 17	Years 18	Years 19	Years 20	Years 21	Years 22	Years 23	Years 24	Years 25	Years 26	Years 27	Years 28	Years 29	Years 30	Years 31	Years 32	Years 33	Years 34	Years 35	Years 36	Years 37	Years 38	Years 39	Years 40		
AGB	15.0%	21.1%			3.67	Natural forest	Deforestation	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.52	5.9%
	15.0%	21.1%			3.67	Degraded forest	Deforestation	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.21	2.4%
BGB				23%	3.67	Natural forest	Deforestation	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.12	1.4%
				20%	3.67	Degraded forest	Deforestation	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.5%
SOC	1.3%	1.0%			3.67	Combo	Deforestation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.3%
AGB			15%		3.67	Degraded forest	Natural regeneration	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.58	0.58	0.58	0.58	0.58	0.58	6.58	74.7%
BGB			15%	20%	3.67	Degraded forest	Natural regeneration	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12	1.32	14.9%
							Reductions emission total per year	0.83	0.84	0.85	0.87	0.88	0.89	0.90	0.91	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94	0.94	0.95	0.86	0.86	0.87	0.87	0.87	0.87		
							Reductions emission total per period	***4.27***					***4.54***					***4.64***					***4.63***					***4.34***						
							Reductions emission total for 10 years	**8.81**																											

Table E: Emissions reductions in the sector of expansion 3, implementation from the year 20 of the emissions reduction program. The section highlighted in green indicates the share of emissions reductions output within the context of the initial emissions reduction program of 25 years.

EXPANSION SECTOR 3 - 8 WATERSHEDS

Carbon pool	Emission reduction target for 5 years	Emission reduction target for 10 years	Natural regeneration target for 10 years	Ratio AGB /BGB (GIEC 2006)	Driver T C towards T CO_2 Eq	Vegetation type	REDD+: Activity	Reductions emission potential in CO2 tons per year for the area of implementation (in millions of CO2 tons)																						10 years summary (T of CO_2)	% of reductions depending on pools
								Years 21	Years 22	Years 23	Years 24	Years 25	Years 26	Years 27	Years 28	Years 29	Years 30	Years 31	Years 32	Years 33	Years 34	Years 35	Years 36	Years 37	Years 38	Years 39	Years 40	Years 41	Years 42	Years 43	Years 44	Years 45		
AGB	15.0%	21.1%			3.67	Natural forest	Deforestation	0.09	0.12	0.14	0.16	0.18	0.21	0.24	0.26	0.27	0.28	0.29	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.37	0.38	0.38	0.39	0.39	1.94	9.8%
	15.0%	21.1%			3.67	Degraded forest	Deforestation	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.71	3.6%
BGB				23%	3.67	Natural forest	Deforestation	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.45	2.2%
				23%	3.67	Degraded forest	Deforestation	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.16	0.8%
SOC	1.3%	1.0%			3.67	Combo	Deforestation	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.09	0.4%
AGB			15%		3.67	Degraded forest	Natural regeneration	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.22	1.22	1.22	1.22	1.22	1.22	13.77	69.3%
BGB			15%	20%	3.67	Degraded forest	Natural regeneration	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.24	0.24	0.24	0.24	0.24	0.24	2.75	13.9%
							Reductions emission total per year	1.81	1.85	1.89	1.93	1.97	2.02	2.06	2.10	2.11	2.13	2.14	2.15	2.16	2.17	2.19	2.20	2.21	2.22	2.23	2.06	2.07	2.07	2.08	2.08	2.09		
							Reductions emission total per period	***9.45***					***10.42***					***10.81***					***10.92***					***10.39***						
							Reductions emission total for 10 years	**19.87**																											

Annex 14: Existing benefit-sharing arrangement of Madagascar's emissions reduction program.

The benefit-sharing arrangements of Madagascar's emissions reduction program remain embryonic and full details are still to be finalized. For now, the existing distribution scheme retains these characteristics:

- The existing distribution scheme is contractually established within pre-existing REDD+ projects which will be integrated into the emissions reduction program implementation area and will participate in the emissions reduction program. This scheme is based on a compensatory sharing structure and also an entity known as a "delegated manager" that ensures the implementation of the activities required in the context of REDD+ projects. In this context the delegated manager must be self-financing through this mechanism in order to sustain activities over the long term. This distribution appears in Figure B below.

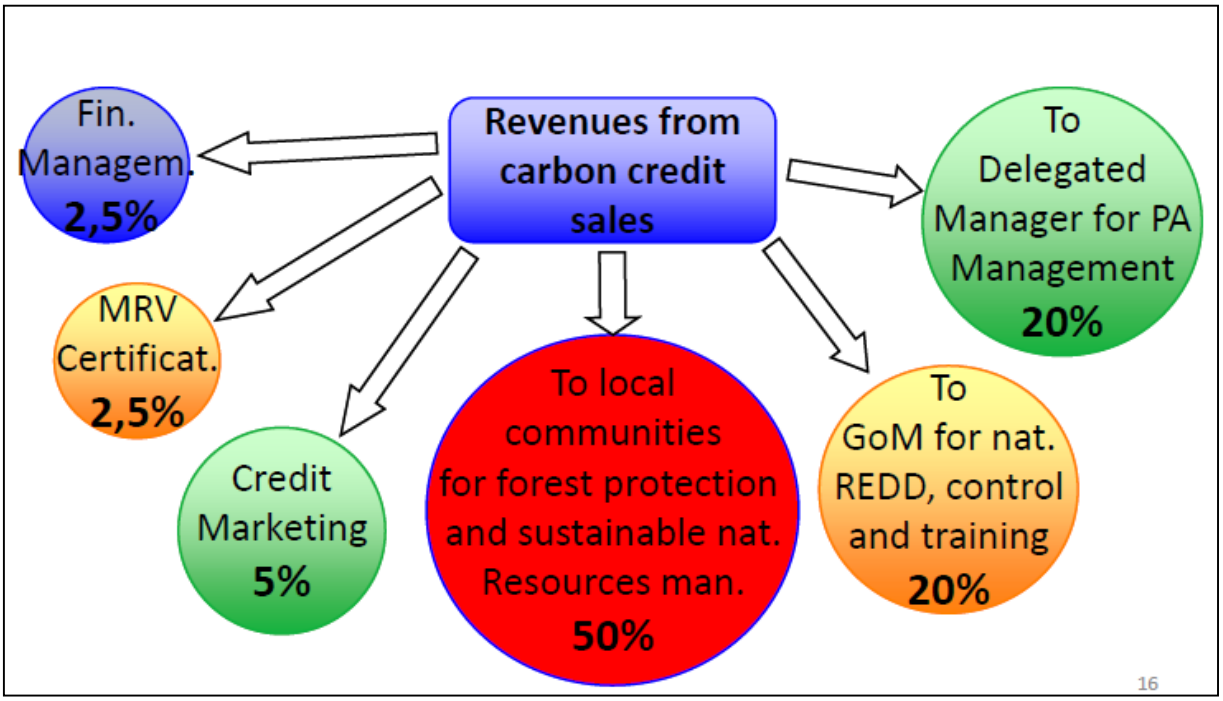


Figure B: Existing distribution scheme (GoM represents the Government of Madagascar, also presented as State in the scheme No. 2; the Delegated Manager represents the delegated managers of REDD+ projects). Source: PERR-FH (2014).

Annex 15: Existing REDD+ projects in Madagascar.

Box 1: REDD+ pilot projects in Madagascar.

1) Makira REDD Pilot Project.

The development of the Makira project was launched in 2001, but it was not until 2003 that the MEF formally gave WCS the responsibility for creating the new Makira Protected Area, taking into consideration alternative financing options, including REDD+. The project officially started in 2005 with a lifespan of 30 years. During this period, it is estimated that in its project area (360,060 ha) the project would generate >38 million tonnes of emission reductions from avoided deforestation. The central activity of the project to reduce deforestation was the creation and sustainable management of the new Makira Protected Area. In parallel, the project supports many agricultural and social activities on the periphery of the PA, particularly support for the transfer of the management of forest resources to local communities, enhancing rice productivity (SRI and SRA) and the promotion of income generating activities (ecotourism, vanilla, cocoa, etc.). Thanks to these interventions, the project has generated a total of 830,000 tCO2-e of VCS verified emission reductions over the first 5 years. In 2013, the first sales contracts of nearly 70,000 Verified Carbon Units VCS (VCU) generated by the Makira Project were signed between Government and voluntary buyers Zoo Zürich and Microsoft.

2) CAZ REDD+ pilot project.

The CAZ (Ankeniheny-Zahamena) REDD+ project was designed in 2004 and started in 2007. The project includes a significant part of the Eastern Humid Forest (325,000 hectares) and a projected emission reductions of 15 '750'840 tCO2e during the first ten years of operation. To accomplish this, the project's strategy is to implement activities including the establishment of the CAZ protected area CAZ whose peripheral management is entrusted to local communities - thus reinforcing their usage rights of forest resources.

3) The Holistic Conservation Program for Forests (HCPF) REDD+ Initiative.

Funded entirely by Air France, the first phase of Holistic Conservation Program for Forests began in October 2008 and was completed in December 2012. A second phase is under way and will be completed in October 2017. After the first pilot phase included 5 intervention sites (515,000 ha) of humid and spiny forests, HCPF will only include 300,000 hectares and two intervention sites in humid forest areas: the COMATSA (Corridor Marojejy-Anjanaharibe Tsaratanana) and Beampingaratsy (Anosy region). The activities to reduce deforestation and forest degradation revolve around the creation of 2 New Protected Areas and fifty Natural Resource Management Transfers (TGRN). In parallel, the HCPF is reinforcing its support for the development of alternatives to shifting cultivation, *tavy,* by increasing rice yields (SRI, SRA), supporting income generating activities and diversification of crops (market gardening, poultry farming , beekeeping, cash crops, etc.). With multiple research initiatives (see Component 3 of the R-PP), the potential for reducing emissions from deforestation was estimated at 35 MtCO2e by 2030 (5 sites for the first phase). For the same period, the potential for increasing forest carbon stocks has been estimated at 2.57 MtCO2e.

Annex 16: The co-benefits expected from the implementation of the emission reduction program of Madagascar through different activities. The Table also underlines the ecosystem services which would be stimulated or the recipients of the planned activities.

Topic		Proposed activity	Description of proposed activity	Co-benefits				Ecosystem services			
				Climatic	Socio-economic	Environmental	Others	Provisioning	Regulating	Habitat	Cultural
AGRICULTURE	1	Agroforestry	Development of agriculture and livestock with trees	Carbon capture and storage	Employment opportunities, better incomes, lower costs for maintenance of hydro-agricultural infrastructures, wood production	Erosion reduction, water regulation (water distribution system), biodiversity conservation	Improvement of agricultural techniques	X		X	
	2	Agricultural cash-crops sector (coffee, cacao, vanilla, pepper, clove, pink pepper)	Supply of selected plants, support for installation and crops maintenance, development of processing and marketing industries, identify sales methods, capacity building and support provided to producers with, if needed, development of agricultural cooperatives for production and selling, support for tax management	Climate change adaptation	Employment opportunities, better incomes			X			
	3	Terrace cultivation	Ground stabilization, integration of monitored irrigation from water springs in slopes, integration of reservoirs in the implementation				Improvement of agricultural techniques	X	X		
	4	Development of Micro-irrigation systems	Development of irrigation system allowing a water supply on request from springs or reservoirs			Water regulation (water distribution system)	Improvement of agricultural techniques		X		
	5	Contour farming	Implementation of agricultural development following contour lines in areas where it is possible (gradient less than 60%)				Improvement of agricultural techniques	X	X		
	6	Development of conservation agriculture and agroecology	Development of "zero-tillage, permanent soil coverage, crop rotation" agriculture, association of agriculture with protection systems using biological materials and development of fodder plants to keep the structure and the texture of soils	Carbon capture and storage		Soil protection, biodiversity conservation	Improvement of agricultural techniques	X	X	X	
	7	Improvement of agricultural techniques (natural fertilizer, techniques, seeds)	Development of composting, seeds producer groups, use of fallow, intensive rice fields systems, improved rice fields systems, storage products systems	Mitigation and adaptation measures	Employment opportunities, better incomes and higher agricultural production	Erosion reduction, soil fertility improvement	Behaviour modification	X			
	8	Hydro-agricultural infrastructures (water control, irrigation, draining system) – setting up and standards	Rehabilitation and hydroagricultural development – specific building standards including outlets and bottlenecks opening to decrease submersion time		Acquisition of new techniques, employment opportunities, better incomes and higher agricultural production	Soil fertility improvement, water regulation (water distribution system)	Behaviour modification, improvement of agricultural techniques		X		
	9	Maintenance of hydro-agricultural infrastructures	Liability of stakeholders working in shallows according to the law 2014-042 which governs maintenance and management of hydro-agricultural infrastructures, there is a possibility to set-up multiannual contracts		Employment opportunities, better incomes, sustained agricultural production	Soil fertility improvement, water regulation (water distribution system)			X		
	10	Fish farming and integrated livestock-fish farming	Creation of fish pond, introduction and development of fish farming with a link between markets and sellers including products packaging and carriage	Vulnerability reduction	Acquisition of new techniques, employment opportunities, better incomes and higher agricultural production, new markets		Behaviour modification	X			
	11	Rice-fish culture	Development of fish farming complementary activities associated to cropping calendar for rice fields	Vulnerability reduction	Acquisition of new techniques, employment opportunities, better incomes and higher agricultural production, new markets		Behaviour modification	X			
	12	Development of Apiculture	Hives and colonies supply, processing and selling products, support for creation and follow-up, promotion of melliferous species planting		Acquisition of new techniques, employment opportunities, better incomes and higher agricultural production, new markets		Behaviour modification	X			
	13	Development of nurseries for wood and planting material	Development of trees' production potential for afforestation and agroforestry, agricultural plants for farmers; producers' support to have an output linked to market and demand, support to nurseries and plants creation, capacity building for species reproduction and nurseries' production – management - contractualisation	Carbon capture and storage	Acquisition of new techniques, employment opportunities, better incomes and higher agricultural production			X			
AGROFORESTRY	14	Crops and plants protection against pests and insects	Make available any insectides and pesticides allowing pests control in order to improve agricultural productivity – this sector will be developed thanks to service providers and Neem plantations (insectide and biological repellent)		Higher agricultural production				X		
FORESTRY - ENERGY	15	Afforestation and reforestation (fuelwood and timber, private or communal – development of this sector with private company)	Development of fuelwood and timber stocks in a quick cycle for local use or selling	Carbon capture and storage	Employment opportunities, better incomes, land tenure, market supply	Creation of forest buffer zones, erosion control, water and biomass protection	Behaviour modification	X	X	X	
GOVERNANCE - REDD	16	Increase protected areas management transfers	Capacity building and support for COBA, strengthening of monitoring and evaluation systems for management transfers	Emissions reduction, adaptation action (refuge for biodiversity)	Employment opportunities, new infrastructures, better incomes and devices	Biodiversity conservation, water and biomass protection	Behaviour modification, culture ?		X	X	
	17	Accompanying development of fuelwood (carbonization, improved stoves) and alternative energy (biofuels, biogaz) sectors	Capacity building, awareness for alternative forms of energy and wood transformation activities into energy use, creation of experimental site for test	Emissions reduction	Employment opportunities, better incomes, land tenure, market supply, capacity building	Biodiversity conservation, water and biomass protection	Behaviour modification	X			
	18	Labeling homemade products	Standards development and setting, marketing, support for labeling process, label production		Better incomes, new market	Sustainable management of resources	Behaviour modification				
	19	Promoting stakeholder's synergy (law application)	Awareness, information and training workshops, media of information dissemination on current laws		Land tenure, capacity building		Behaviour modification				
	20	Taxes and charges collection of homemade products	Acknowledgement of agents for collection of taxes, support for production checkpoints, tax revenues formal account of registrations, implementation of laws regarding to forests				Behaviour modification				
	21	Land tenure	Demarcation of parcels of land for exploitation, local state ownership recognition or formal certification, support and information for stakeholders during the process	Emissions reduction thanks to sustainable production systems		Clearing diminution					
	22	National strategy reinforcement and implementation of administrative reforms	Workshops focused on cross-policy – discussion and consultation, monitoring and evaluation for laws application, indicator definition, development of a process for internal evaluation, soft-assistance for local projects – decentralization and devolution	Emissions reduction							
	23	Intersectoral advocacy then involvement of the local, regional and national authorities in the REDD+ programme	Regional worshops for direct or indirect stakeholders, development of collaborative frameworks and strategic priorities for authorities		Capacity building						
	24	Environmental NGOs involvement in the REDD+ programme	Regional worshops for direct or indirect stakeholders, evaluation and implementation of partnerships and management transfers			Biodiversity conservation					
	25	Development of public and private partnerships for the REDD+ programme (local people, community, private sector, government)	Regional worshops for direct or indirect stakeholders								
	26	Creation of a spatial and technical database – REDD+ setting									
	27	Development of the MRV system (measurement, analysis and reporting)									
	28	Development of the social and environmental safeguards system				Biodiversity conservation					

Topic		Proposed activity	Description of proposed activity	Co-benefits				Ecosystem services			
				Climatic	Socio-economic	Environmental	Others	Provisioning	Regulating	Habitat	Cultural
INCOME GENERATING ACTIVITIES (IGAs)	29	Development of service providers (supply center, facilities, etc.)	Creation of non agricultural jobs in order to ensure implementation of people (or organizations) who provide material / seeds / management of devices and infrastructures – this must be develop with small projects, interests groups or agricultural cooperatives, think about diseases and insects control sector as well as veterinary aspects (products and monitoring)		Employment opportunities, new markets, better incomes						
	30	Development of market gardens and subsistence crops for livelihood and selling in all watersheds areas with contour farming and terrace cultivation (including growing off-season crops)	Implementation of market gardens and subsistence crops in all watersheds developed lands with irrigation, full sector development with products transformation, selling, support and monitoring of farmers + capacity building		Employment opportunities, new markets, better incomes			X			
	31	Development of short-cycle livestock farming (pig and chicken)	Stock supply, veterinary monitoring, livestock management, transformation and sale of seal products, support and training by specialists		Acquisition of new techniques, employment opportunities, better incomes, higher agricultural production		Behaviour modification	X			
	32	Development of the basketry sector as an utilitarian object	Revitalisation of base material plantation in shallows and lower slopes, support in products transformation and production for utilitarian vocation (daily usage, commerce, industry)		Acquisition of new techniques, employment opportunities, better incomes, higher agricultural production		Behaviour modification				
	33	Storage and processing structures for IGA's products depending on communal services as well as water and energy availability	Implementation of infrastructures with strategic positioning allowing storage and transformation for agricultural products, processing before sale or disposal, structures connection with water, electricity and access roads, maintenance and security	Vulnerability reduction	Employment opportunities, better incomes		Behaviour modification, management capacity, highest quality of products				
	34	Local market – development and renovation, strategic choices depending on communal services as well as water and energy availability	Implementation or rehabilitation of infrastructures for local markets on the basis of a strategic choice in the location within each watershed, connection with water, electricity and access roads, maintenance and security		New markets						
	35	Valorization of forest resources (timber and non-timber forest products, essential oils)	Development of forestry sectors, sustainable acquisition of resources, transformation and selling, support	Emissions reduction, adaptation measure (refuge for biodiversity)	Employment opportunities, better incomes and devices	Biodiversity conservation, water and biomass protection	Behaviour modification, culture ?	X		X	
CAPACITY BUILDING	36	Technical assistance, awareness, capacity building linked with specific training on erosion (processing and prevention)	Information and communication workshops, training of agricultural extension agents in order to support projects, designation of areas, make available any tools or supports needed	Carbon capture and storage	Capacity building, acquisition of new techniques and knowledges		Behaviour modification		X		X
	37	Technical assistance, awareness, capacity building with specific training on agroforestry and afforestation	Agronomists and forestry engineer and technicians in order to support project implementation, information, training and communication workshops, preparation of training materials, farmer field school methodology	Carbon capture and storage	Capacity building, acquisition of new techniques and knowledges		Behaviour modification	X	X	X	X
	38	Technical assistance, awareness, capacity building with specific training on terrace cultivation and irrigation	Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists and hydraulic engineers		Capacity building, acquisition of new techniques and knowledges	Water regulation	Behaviour modification		X		X
	39	Contou farming planning	Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists and hydraulic engineers		Capacity building, acquisition of new techniques and knowledges		Behaviour modification				
	40	Technical assistance, awareness, capacity building with specific training on conservation agriculture and agroecology	Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists		Capacity building, acquisition of new techniques and knowledges	Soils protection, biodiversity conservation	Behaviour modification	X	X	X	X
	41	Technical assistance, awareness, capacity building with specific training on agricultural techniques improvement	Training for technical specialists (new techniques), information and awareness toward farmers to use new agricultural techniques, support and implementation with agronomists		Capacity building, acquisition of new techniques and knowledges		Behaviour modification	X			X
	42	Technical assistance, awareness, capacity building with specific training on crops and plants protection against pests and insects	Training for technical specialists (new techniques), information and awareness toward farmers to use these products, support and implementation with agronomists, need to develop this sector in both local and sub-regional scale		Capacity building, acquisition of new techniques and knowledges		Behaviour modification		X		X
RESOURCE MANAGEMENT - FOREST - PROTECTION	43	Active ecosystem restoration for degraded forests	Plants breeding, collection and propagation, development and management of nurseries, implementation of restoration area, awareness and capacity building for local communities	Emissions reduction	Employment opportunities, better incomes, land tenure	Erosion control, biodiversity conservation, water and biomass protection	Behaviour modification	X	X	X	
	44	Passive ecosystem restoration with natural regeneration for degraded forests	Awareness and involvement of local communities to prevent restoration areas (natural regeneration), management of bushfires and grazing	Emissions reduction	Employment opportunities, better incomes, land tenure	Erosion control, biodiversity conservation, water and biomass protection	Behaviour modification	X	X	X	
	45	Firefighting (awareness and firewall management)	Preventive and active struggle, silvicultural operations, awareness and information of stakeholders, capacity building, material supply for firefighting, law enforcement		Capacity building	Biodiversity conservation		X	X	X	
	46	Conservation / protection	General support (budget, team, material and capacity building) to existing structures of protected areas; this includes managers, administration (local or regional), local groups and undertakings, strengthen controls	Emissions reduction, adaptation measure (refuge for biodiversity)	Building materials, right of use, property ?	Biodiversity conservation, water and biomass protection	Behaviour modification, culture ?	X	X	X	

Topic		Proposed activity	Description of proposed activity	Co-benefits				Ecosystem services			
				Climatic	Socio-economic	Environmental	Others	Provisioning	Regulating	Habitat	Cultural
LAND USE PLANNING	47	DRS (Soil Defence and Restoration)	Installation of materials in order to prevent erosion and lavakas can be adjusted depending on the ground nature and problem to solve, this can include afforestation and conservation agriculture			Soils protection, biodiversity conservation			X		
	48	Anti-erosion measures (Lavaka)	Specific for lavakas	Carbon capture and storage, vulnerability reduction	Employment opportunities, lower costs for maintenance of hydro-agricultural infrastructures, wood production	Erosion reduction, water regulation (water distribution system) and biodiversity conservation	Behaviour modification		X		
	49	Land use planning: urban area, fields and forestry sector; governance structures, plans, water distribution system and electricity	Preliminary study validated by stakeholders, implementation of the land use planning, development support, implementation of management structures – integrate with official plans and discuss if necessary	Emissions reduction, adaptation measure (refuge for biodiversity)	Employment opportunities, new infrastructures, better incomes and materials	Biodiversity conservation, water and biomass protection	Behaviour modification, culture ?		X		
	50	Construction and route maintenance for transporting IGA and agricultural products	Creation or maintenance of access roads, development of sustainable routes for production, capacity building for maintenance and rehabilitation, management of quarrying (environmental impact assessments), development of a maintenance process with taxes which includes capacity building for budget management, municipalities empowerment		Better materials	Environmental protection					
ENERGY	51	Pico and Micro Waterpower - depending on locations – generation, distributing, selling	Assessment of potential in project sites, marketing for investors, need to offer good conditions for private investors – market opening, thought about the possibilities of location, Payments for Environmental Services (PES)	Emissions reduction	Employment opportunities, better incomes and well-being improvement	Energy control	Behaviour modification, well-being improvement	X	X		
	52	Dissemination of improved stoves construction techniques and monitoring	Awareness and training of stakeholders in order to use and build improved stoves from base materials	Emissions reduction	Employment opportunities, better incomes	Energy control	Behaviour modification, well-being improvement	X	X		
	53	Development of alternative energy	Preliminary study to assess potential of new energies such as solar, wind and bio energy. Think about other possibility	Emissions reduction	Employment opportunities, better incomes	Energy control	Behaviour modification, well-being improvement	X	X		
TOURISM	54	Seaside tourism	Attract private investors in order to develop tourism in Madagascar		Employment opportunities, better incomes						X
	55	Community based ecotourism (welcoming and tourist guiding)	Attract private investors in order to develop tourism in Madagascar		Employment opportunities, better incomes						X
AWARENESS - EDUCATION	56	Energy efficiency awareness	Development and publishing of a book / comic book of good practices (water and electricity use every day). Adapt it for urban and rural areas	Emissions reduction	Employment opportunities, better incomes	Energy and water control	Behaviour modification, well-being improvement				
	57	Community awareness for REDD+ programme (landscape approach)	Production and dissemination of media with regional specificity, awareness regional workshops for direct or indirect stakeholders (authorities, communities, NGOs, etc.)		Capacity building						
ECONOMY	58	Promotion of saving, loans, access to microcredit, local cooperative development	Awareness / information on credit and micro credit, saving, incitement to develop local groups and cooperatives for production / management, support and implementation of these projects, microfinance institution – incitement to do it in the programme area, support to stakeholders engaged with microcredits		Employment opportunities, better incomes						
LAW - JUSTICE	59	Law enforcement	Capacity building of authorities (material and human resources, devices, control infrastructures, training, education), improvement of security conditions and controls		Land tenure, capacity building		Behaviour modification				
SOCIAL	60	Awareness and setting-up of family planning in rural and urban areas	Awareness and information workshops, support for medical advice, improvement of medical care and decentralized health services, contraception campaigns – contraceptive methods	Emissions reduction	Demography regulation		Well-being improvement				X

Annex 17: Non Carbon Benefits - 2

Table F: Presentation of the valorization of the profit in ecosystem services during the implementation period of the emissions reduction program of Madagascar – profits obtained from the reconstruction of degraded natural forests.

EVALUATION OF THE BENEFITS RENDERED BY ECOSYSTEM SERVICES IN DEGRADED FORESTS OF THE REDUCING EMISSIONS PROGRAMME APPLICATION AREA

STARTING AREA - 14 WATERSHEDS - YEARS 1 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance – assessment based on biomass level	Present value of services in USD per ha	Ecosystem services planned level of improvement after 25 years of regeneration	Ecosystem services projected value after 25 years of regeneration	Benefit per ha in USD for a 25 years period	Application surface for natural regeneration of degraded forests	Benefits from ecosystem services restoration for 25 years
Provisioning	$ 1,828	25	32%	$ 585	60%	$ 1,097	$ 512	281310	$ 143,985,941
Regulating	$ 2,529	24	32%	$ 809	60%	$ 1,517	$ 708	281310	$ 199,201,556
Habitat	$ 39	11	32%	$ 12	60%	$ 23	$ 11	281310	$ 3,071,910
Cultural	$ 867	9	32%	$ 277	60%	$ 520	$ 243	281310	$ 68,290,925
Total	$ 5,263			$ 1,684					$ 414,550,332

EXPANSION SECTOR 1 - 7 WATERSHEDS - YEARS 11 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services planned level of performance – assessment based on biomass level	Budgeted value of services in USD per ha	Ecosystem services planned level of improvement after 15 years of regeneration	Ecosystem services projected value after 15 years of regeneration	Benefit per ha in USD for a 15 years period	Application surface for natural regeneration of degraded forests	Benefits from ecosystem services restoration for 15 years
Provisioning	$ 1,828	25	32%	$ 585	50%	$ 914	$ 329	16633	$ 5,472,939
Regulating	$ 2,529	24	32%	$ 809	50%	$ 1,265	$ 455	16633	$ 7,571,697
Habitat	$ 39	11	32%	$ 12	50%	$ 20	$ 7	16633	$ 116,764
Cultural	$ 867	9	32%	$ 277	50%	$ 434	$ 156	16633	$ 2,595,754
Total	$ 5,263			$ 1,684					$ 15,757,154

EXPANSION SECTOR 2 - 10 WATERSHEDS - YEARS 16 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services planned level of performance – assessment based on biomass level	Budgeted value of services in USD per ha	Ecosystem services planned level of improvement after 10 years of regeneration	Ecosystem services projected value after 10 years of regeneration	Benefit per ha in USD for a 10 years period	Application surface for natural regeneration of degraded forests	Benefits from ecosystem services restoration for 10 years
Provisioning	$ 1,828	25	32%	$ 585	45%	$ 823	$ 238	88640	$ 21,064,362
Regulating	$ 2,529	24	32%	$ 809	45%	$ 1,138	$ 329	88640	$ 29,142,107
Habitat	$ 39	11	32%	$ 12	45%	$ 18	$ 5	88640	$ 449,404
Cultural	$ 867	9	32%	$ 277	45%	$ 390	$ 113	88640	$ 9,990,592
Total	$ 5,263			$ 1,684					$ 60,646,465

EXPANSION SECTOR 3 - 8 WATERSHEDS - YEARS 21 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services planned level of performance – assessment based on biomass level	Budgeted value of services in USD per ha	Ecosystem services planned level of improvement after 5 years of regeneration	Ecosystem services projected value after 5 years of regeneration	Benefit per ha in USD for a 5 years period	Application surface for natural regeneration of degraded forests	Benefits from ecosystem services restoration for 5 years
Provisioning	$ 1,828	25	32%	$ 585	40%	$ 731	$ 146	166760	$ 24,387,041
Regulating	$ 2,529	24	32%	$ 809	40%	$ 1,012	$ 202	166760	$ 33,738,964
Habitat	$ 39	11	32%	$ 12	40%	$ 16	$ 3	166760	$ 520,292
Cultural	$ 867	9	32%	$ 277	40%	$ 347	$ 69	166760	$ 11,566,501
Total	$ 5,263			$ 1,684					$ 70,212,799

Table G: Presentation of the valorization of the profit in ecosystem services during the implementation period of the emissions reduction program of Madagascar – profits obtained from the reconstruction of the border area of the intact natural forests.

EVALUATION OF THE BENEFITS RENDERED BY ECOSYSTEM SERVICES IN REMAINING FORESTS OF THE REDUCING EMISSIONS PROGRAMME APPLICATION AREA

STARTING AREA - 14 WATERSHEDS - YEARS 1 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Present value of services in USD per ha	Ecosystem services planned level of improvement after 25 years of regeneration	Ecosystem services projected value after 25 years of regeneration	Benefit per ha in USD for a 25 years period	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services restoration for 25 years
Provisioning	$ 1,828	25	90%	$ 1,645	99%	$ 1,810	$ 165	308,000	$ 50,672,226
Regulating	$ 2,529	24	90%	$ 2,276	99%	$ 2,504	$ 228	308,000	$ 70,103,971
Habitat	$ 39	11	90%	$ 35	99%	$ 39	$ 4	308,000	$ 1,081,081
Cultural	$ 867	9	90%	$ 780	99%	$ 858	$ 78	308,000	$ 24,033,271
Total	$ 5,263			$ 4,737					$ 145,890,549

EXPANSION SECTOR 1 - 7 WATERSHEDS - YEARS 11 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Budgeted value of services in USD per ha	Ecosystem services planned level of improvement after 15 years of regeneration	Ecosystem services projected value after 15 years of regeneration	Benefit per ha in USD for a 15 years period	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services restoration for 15 years
Provisioning	$ 1,828	25	90%	$ 1,645	96%	$ 1,755	$ 110	20,469	$ 2,245,018
Regulating	$ 2,529	24	90%	$ 2,276	96%	$ 2,428	$ 152	20,469	$ 3,105,936
Habitat	$ 39	11	90%	$ 35	96%	$ 37	$ 2	20,469	$ 47,897
Cultural	$ 867	9	90%	$ 780	96%	$ 832	$ 52	20,469	$ 1,064,787
Total	$ 5,263			$ 4,737					$ 6,463,638

EXPANSION SECTOR 2 - 10 WATERSHEDS - YEARS 16 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Budgeted value of services in USD per ha	Ecosystem services planned level of improvement after 10 years of regeneration	Ecosystem services projected value after 10 years of regeneration	Benefit per ha in USD for a 10 years period	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services restoration for 10 years
Provisioning	$ 1,828	25	90%	$ 1,645	94%	$ 1,718	$ 73	79,971	$ 5,847,509
Regulating	$ 2,529	24	90%	$ 2,276	94%	$ 2,377	$ 101	79,971	$ 8,089,907
Habitat	$ 39	11	90%	$ 35	94%	$ 37	$ 2	79,971	$ 124,755
Cultural	$ 867	9	90%	$ 780	94%	$ 815	$ 35	79,971	$ 2,773,408
Total	$ 5,263			$ 4,737					$ 16,835,579

EXPANSION SECTOR 3 - 8 WATERSHEDS - YEARS 21 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Budgeted value of services in USD per ha	Ecosystem services planned level of improvement after 5 years of regeneration	Ecosystem services projected value after 5 years of regeneration	Benefit per ha in USD for a 5 years period	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services restoration for 5 years
Provisioning	$ 1,828	25	90%	$ 1,645	92%	$ 1,682	$ 37	244,895	$ 8,953,354
Regulating	$ 2,529	24	90%	$ 2,276	92%	$ 2,327	$ 51	244,895	$ 12,386,779
Habitat	$ 39	11	90%	$ 35	92%	$ 36	$ 1	244,895	$ 191,018
Cultural	$ 867	9	90%	$ 780	92%	$ 798	$ 17	244,895	$ 4,246,476
Total	$ 5,263			$ 4,737					$ 25,777,627

Table H: Presentation of the valorization of the profit in ecosystem services during the implementation period of the emissions reduction program of Madagascar – profits obtained from the maintaining of the interior area of the intact natural forests.

EVALUATION FOR MAINTAINING ECOSYSTEM SERVICES IN REMAINING FORESTS OF THE REDUCING EMISSIONS PROGRAMME APPLICATION AREA

STARTING AREA - 14 WATERSHEDS - YEARS 1 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Present value of services in USD per ha	Application surface for maintenance of remaining natural forests (80% of surface areas)	Benefits from ecosystem services maintenance for 25 years
Provisioning	$ 1,828	25	95%	$ 1,737	1,232,002	$ 2,139,493,979
Regulating	$ 2,529	24	95%	$ 2,403	1,232,002	$ 2,959,945,444
Habitat	$ 39	11	95%	$ 37	1,232,002	$ 45,645,659
Cultural	$ 867	9	95%	$ 824	1,232,002	$ 1,014,738,118
Total	$ 5,263			$ 5,000		$ 6,159,823,200

EXPANSION SECTOR 1 - 7 WATERSHEDS - YEARS 11 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Budgeted value of services in USD per ha	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services maintenance for 15 years
Provisioning	$ 1,828	25	95%	$ 1,737	81,875	$ 142,184,472
Regulating	$ 2,529	24	95%	$ 2,403	81,875	$ 196,709,262
Habitat	$ 39	11	95%	$ 37	81,875	$ 3,033,476
Cultural	$ 867	9	95%	$ 824	81,875	$ 67,436,508
Total	$ 5,263			$ 5,000		$ 409,363,719

EXPANSION SECTOR 2 - 10 WATERSHEDS - YEARS 16 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Budgeted value of services in USD per ha	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services restoration for 10 years
Provisioning	$ 1,828	25	95%	$ 1,737	319,886	$ 555,513,333
Regulating	$ 2,529	24	95%	$ 2,403	319,886	$ 768,541,148
Habitat	$ 39	11	95%	$ 37	319,886	$ 11,851,761
Cultural	$ 867	9	95%	$ 824	319,886	$ 263,473,774
Total	$ 5,263			$ 5,000		$ 1,599,380,017

EXPANSION SECTOR 3 - 8 WATERSHEDS - YEARS 21 TO 25

Ecosystem services	USD value per ha for 1 ha of remaining tropical forest (according to De Groot et al. 2012)	Nb of planned activities for improving the ecosystem services performance, by category	Ecosystem services present level of performance in remaining forests – speculative estimation	Budgeted value of services in USD per ha	Application surface for natural regeneration of remaining forests (20% of surface areas)	Benefits from ecosystem services restoration for 5 years
Provisioning	$ 1,828	25	95%	$ 1,737	979,579	$ 1,701,137,239
Regulating	$ 2,529	24	95%	$ 2,403	979,579	$ 2,353,488,007
Habitat	$ 39	11	95%	$ 37	979,579	$ 36,293,409
Cultural	$ 867	9	95%	$ 824	979,579	$ 806,830,408
Total	$ 5,263			$ 5,000		$ 4,897,749,063